z/OS
2.5

JES3 Diagnosis

IBM

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Note

Before using this information and the product it supports, read the information in "Notices" on page 383.

This edition applies to Version 2 Release 5 of z/OS® (5650-ZOS) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this document

This document supports z/OS (5650-ZOS). This document is intended for any JES3 complex that runs z/OS MVS.

This document provides information for debugging JES3 and installation-written extensions of JES3. It describes the tools that JES3 users can use for debugging.

Who should use this document

This document is intended for system programmers and IBM® service representatives or anyone who is responsible for diagnosing and correcting problems in JES3. Users of this publication must have a working knowledge of JES3 functions.

How to use this document

This document contains information used by the system programmer for diagnosing JES3 problems.

This document is divided into the following sections:

- **Chapter 1, "Diagnosing, Resolving, and Reporting JES3 Problems," on page 1**

  Discusses a general methodology for diagnosing JES3 problems and includes topics about:

  - Collecting an exact description of the problem.
  - Gathering relevant system supplied data.
  - Determining the system's status.
  - Publications that assist in diagnosis.
  - Recommendation for using JES3 dumps and Dump Core.
  - Viewing the contents of a dump
  - Viewing the JES3 control blocks
  - Types of problems in JES3 and associated address spaces.
  - Abends in JES3 address spaces
  - Miscellaneous JES3 problems areas
  - JES3 system abends in user address space
  - Problems in the FSS address space
  - Problems in the JES3DLOG address space
  - Problems in the JESXCF address space
  - Problems in the BDT address space
  - Typical JES3 problems and their resolution
  - Job related diagnosis
  - Reporting a problem to IBM.
- **Chapter 2, "General Diagnosis," on page 27**

  Discusses facilities and tools used for general system diagnosis. This discussion includes the format of trace tables and use of JES3 diagnostic facilities, such as descriptions of:

  - JES3 Trace Tables
  - FSS Trace Output
  - SNA RJP Trace Output
  - Dump Job Traces

  - Output Service Output
  - Networking Logging Facility
  - IOERR Output
  - GTF Trace Output
  - Job Validation SNAP Output
- **Chapter 3, "Using IPCS to View JES3 Information," on page 141**

  Discusses using the interactive problem control system (IPCS) to diagnose JES3 problems.
- **Chapter 4, "JES3 Formatted dump," on page 167**

  Discusses how to identify areas in a formatted dump of a JES3 or C/I Functional Subsystem (FSS).
- **Chapter 5, "JES3 Monitoring Facility," on page 293**

  This section provides a description on how system programmers can use the JES3 Monitoring Facility (JMF) to obtain statistical data of the system.
- **Chapter 6, "Reading a JMF hardcopy report," on page 323**

  This section provides a description of the JMF hardcopy report and a description of how to generate a report using SMF records.
- **Chapter 7, "JES3 Recovery," on page 365**

  This section describes the following recovery procedures:
  - JES3 and C/I Functional Subsystem Failsoft
  - Alternate CPU Recovery
  - Reconfiguring a Processor Complex
  - Checkpoint/Restart
  - Restarting JES3 After a Failure
  - JES3 Checkpoint Data Sets
  - Dynamic System Interchange
  - BSC RJP Recovery
  - Recovering from Output Writer Functional Subsystem Failures
  - Recovering from SAPI Failures
  - Recovering from Spool I/O Errors
  - Recovering from C/I Functional Subsystem Address Space Failures

Where to find more information

The following table lists documents that contain information related to the information provided in this document.

When this document references information in other documents, the shortened version of the document title is used. The following table shows the complete titles and order numbers of the documents that you might need while you are using this document.

Most licensed documents were declassified in OS/390® V2R4 and are now included on the z/OS Online Library Collection. The remaining licensed documents appear in unencrypted documentManager softcopy and PDF form on the z/OS Licensed Product Library.

Title	Order Number
z/OS DFSMSdfp Checkpoint/Restart	SC23-6862
z/OS MVS System Messages, Vol 5 (EDG-GLZ)	SA38-0672

How to send your comments to IBM

We invite you to submit comments about the z/OS product documentation. Your valuable feedback helps to ensure accurate and high-quality information.

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To help us better process your submission, include the following information:

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Summary of changes

This information includes terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations for the current edition are indicated by a vertical line to the left of the change.

Note: IBM z/OS policy for the integration of service information into the z/OS product documentation library is documented on the z/OS Internet Library under IBM z/OS Product Documentation Update Policy (www-01.ibm.com/servers/resourcelink/svc00100.nsf/pages/ibm-zos-doc-update-policy?OpenDocument).

Summary of changes for z/OS JES3 Diagnosis for Version 2 Release 5 (V2R5)

The following content is new, changed, or no longer included in V2R5.

New

The following content is new.

- None.

Changed

The following content is changed.

- Updated description of the JES3 Global Processor Section. For more information, see "Description of the JMF hardcopy report" on page 325.

Deleted

The following content was deleted.

- None

Summary of changes for z/OS Version 2 Release 4 (V2R4)

This information contains no technical changes for this release.

Summary of changes for z/OS Version 2 Release 3 (V2R3)

The following changes are made for z/OS Version 2 Release 3 (V2R3).

Changed

- Information about TGM JES3 spool tracking is added. See Table 2 on page 19, "TGM" on page 291
- With APAR OA50282, Table 5 on page 62 is updated to include additional event IDs.
- With APAR OA48214, "Spool trace event table" on page 64 is updated to include event types ALC SYMB, SDS INCR, and SYMB LOG. Also, with APAR OA49076, updated event types BF CKPT and IATXSIO.
- With APAR OA47813,"Allocated OSS pool" on page 187, is updated to add a column for FLAG2.
- With APAR OA49166, "NJE Resident node table" on page 250 is updated.

Chapter 1. Diagnosing, Resolving, and Reporting JES3 Problems

This chapter provides a general methodology for diagnosis and problem solving in the JES3 and associated address spaces. In addition, the information required for reporting problems to IBM is identified.

Diagnostic methodology

Diagnosis can be a difficult task. But you increase the difficulty if you do not diagnose in a disciplined way. Discipline cannot replace experience or intuition, but it can structure your diagnosis effort and save you valuable time.

This publication contains debugging techniques and guidelines that have been proven to be the most useful to system programmers that have experience in debugging JES3 problems. These techniques are presented in terms of a debugging “approach”. This debugging approach is summarized in the following steps:

1. First, eliminate any obvious problems by executing the MVS command `F JES3,CHK` and examining the output. This command executes in the background of a running system to avoid interfering with JES3 operations; as a result, the command could return false positives. If you are in doubt about the results, reissue the command and then address any problems. As an alternative, this function can be run in IPCS by using the `OPTION=CHK` parameter.
2. Obtain an exact description of the problem and the events that lead to the problem.
3. Gather relevant data from the information the system has provided in order to isolate the problem.
4. Analyze the information. Try to pinpoint the functional area where the problem occurred.
5. Determine if the system has provided you with enough information to diagnose the problem. If you do not have enough information:
   - Determine what additional information is needed
   - Use the available diagnostic tools and commands to gather the information. You can use DUMP CORE to supplement the information provided in the JES3 dump, or to gather information when a JES3 dump is not provided.
6. Pinpoint the problem to a module within the function.
   - If the problem is an installation problem, continue diagnosing.
   - If the problem is in IBM provided code, start searching problem reporting. See *z/OS Problem Management* for more information about search arguments.
7. Correct the problem if possible. Otherwise, report the problem to your IBM Support Center.

Gathering relevant system supplied data

After you have the external symptom identified, you can gather additional information by using commands that are described in *z/OS JES3 Commands*. Depending on the external symptom and the command that is issued, you can obtain either a portion or a complete JES3 dump to help you determine the problem.

Solving JES3 problems

The specific actions you might take in solving a JES3 problem is further refined into the following topics:

- Obtaining an exact description of the problem
- Determining the system events preceding the problem
- Determining the status of the system

- Documentation to Assist in Diagnosing JES3 Problems
- Recommendations for use of JES3 Dumps and Dump Core
- Viewing the contents of dumps - segments
- Viewing the contents of dumps - control blocks
- Types of problems in JES3 and associated address spaces
- JES3 address space performance problems
- Hangs and loops in the JES3 address space
- Abends in the JES3 address space
- Miscellaneous JES3 problem areas
- JES3 problems in a user address space
- Problems in the FSS address space
- Problems in the JES3DLOG address space
- Problems in the JESXCF address space
- Problems in the BDT address space
- Job related Diagnosis
- Reporting a problem to IBM

Obtaining an exact description of the problem

You should obtain an exact description of the problem and recent events that preceded the problem. A description of the problem can be obtained from:

- The operator who experienced the problem.
- Messages documented in the MLOG portion of the dump (if a JES3 dump is provided)
- The formatted dump (if provided)

You can use DUMP CORE to supplement the information provided in the JES3 dump, or to gather information when a JES3 dump is not provided.

Relevant data can also be gathered from:

- The failsoft logout (message IAT3713) that was issued to describe the error.

  The failsoft logout is obtained from either the SYSLOG or from the queue of action messages retained by the active action message retention facility. See *z/OS JES3 Commands* for the commands that are used to display the commands.

Determining the Status of the System

You need to determine the status of the system. This includes the following items:

- What maintenance has been applied - JES3 and non-JES3
- What user and OEM code can affect JES3 operations
- What hardware changes have been made
- Any Production/workload changes
- What Initialization stream changes have been made

Documentation that can Assist in Diagnosing JES3 Problems

The information in the following publications can assist you in diagnosing JES3 problems:

- *z/OS JES3 Commands*
- *z/OS JES3 Messages*

- *z/OS JES3 Initialization and Tuning Guide*
- *z/OS JES3 Customization*
- *z/OS JES3 Diagnosis Reference*
- *z/OS MVS System Codes*
- *z/OS MVS Diagnosis: Reference*

Recommendations for Use of JES3 Dumps and DUMPCORE

You need to consider the following recommendation in securing dump information for your diagnosis efforts:

- JES3 WANTDUMP Recommendations
- Taking JES3 Dumps
- DUMPCORE

JES3 WANTDUMP Recommendation

IBM suggests that you allow the WANTDUMP option on the STANDARDS initialization parameter to default to "YES" instead of setting it to "ASK". Using the default of "YES" allows the system to determine what action to take when a JES3 failure condition occurs. In today's sysplex environment setting this parameter to "ASK" can cause delays in operations because the JES3 address space essentially stops functioning until you respond to the IAT3714 message. Also, certain portions of the dump, such as the system trace, are invalid because the system continues processing until you response to message IAT3714.

Taking JES3 dumps

To take a dump of JES3 in an environment where JES3 commands are accepted, issue the JES3 *DUMP command. Running this command ensures that JES3, JESXCF and JES3AUX are dumped, along with the associated dataspaces.

To take a dump of JES3 in an environment where the *DUMP command is not accepted, or to take a dump of an FSS address space, always include the SDATA parameters RGN, LSQA, LPA, SUM, CSA, NUC, PSA, and SWA, and the parameter DSPNAME=('JES3'.*). JES3 stores most of its control blocks and modules in the private region, using several dataspaces.

To take a dump of a JES3 netserv address space, include the SDATA parameters RGN, LSQA, LPA, SUM, CSA, NUC, PSA, and SWA.

To take a dump of JESXCF, always include its data spaces. See Information APAR II09383 for instructions on including this information.

DUMPCORE

DUMPCORE is an alternative to a dump for many problems associated with JES3. DUMPCORE is a tool that allows you to:

- Examine control blocks
- Set traps
- Find modules
- Zap storage

You can get additional information using DUMPCORE that is not included in a dump. See *z/OS JES3 Commands* and the *START,DC command for DUMPCORE options that you can use. DUMPCORE options are similar to options you can use with IPCS.

Viewing the Contents of Dumps

You can use the `IPCS VERBX JES3` command to view online a portion or the entire JES3 formatted dump. You specify `IP VERBX JES3 'OPTION=xxx'`, where "xxx" is the keyword for a specific segment. For example. you may want to view the Client Output Work (COW) Area segment of the dump. In this case you would enter:

```
IP VERBX JES3 'OPTION=COW'
```

For a description of each segment see Chapter 4, “JES3 Formatted dump,” on page 167.

Viewing JES3 Control Blocks

You can format JES3 control blocks using IPCS. Use the CBFORMAT subcommand to format "online" single control blocks with the field name followed by the values in the fields. See “Viewing specific JES3 control blocks mappings using IPCS” on page 153.

Types of problems in JES3 and associated address spaces

Any problems in JES3 and associated address spaces occur in the following general categories:

- JES3 address space performance problems
- Hangs or loops in the JES3 address space
- Abends in the JES3 address space
- Miscellaneous JES3 problem areas
- JES3 problems in the user address space
- Problems in the FSS address space
- Problems in the JES3DLOG address space
- Problems in the JESXCF address space
- Problems in the BDT address space
- JES3 SSI processing problems
- JES3 Netserv (TCP/IP/NJE) address space problems

JES3 address space performance problems

The symptoms of JES3 address space performance problems include:

- High CPU usage by the address space
- Inquiry commands are not being responded to in a timely manner
- TSO logons are backing up
- Output processing slowdowns
- Poor job throughput
- System not connecting.

Documentation required for diagnosing performance problems

The following documentation is required for diagnosing JES3 address space performance problems:

- JES3 Job Monitor Facility (JMF) output during problem and non-problem periods

  It is recommended that JMF be run periodically to establish a baseline of normal performance. This is especially important following system modifications. This baseline can then be used as comparison reference point in respect to current performance.
- Dump/s created during the problem period

- JES3 initialization stream
- RMF (Remote Measurement Facility) reports if problem isn't centralized to JES3
- DEV (Device Activity Report) to diagnose slow spool I/O response time.

Debugging Performance Problems

- Obtain Job Monitor Facility (JMF) Output

  Depending on the parameters specified and where it is run (global or local), the following reports or SMF type 84 records can be generated:

  - System report
  - FCT and AWAIT report
  - Spool data management report
  - JES3 control block utilization report
  - Job analysis report
  - Hot spot analysis report
  - JES3 function report
- Interpret the Reports

  A description of how to interpret each report is provided in Chapter 6, “Reading a JMF hardcopy report,” on page 323.
- Running JMF and suggested parameters

  Example, on the global processor issue the following command:

  ```
  *X JMF,TIME=10,SPOT=Y,WIDTH=100,DEBUG=Y,OUT=nnn,WTR=Y
  ```

  Run JMF for 10 minutes (TIME=10), creating a HOT SPOT report (SPOT=Y) for 100 bytes of data within a CSECT (WIDTH=100), take a dump when it's finished (DEBUG=Y), and send the report output to printer nnn (OUT=nnn, WTR=Y).

  If you run JMF on a local processor, SMF records are created, but a dump is not taken. There are a number of parameters that can be used depending on the nature of the problem. See *z/OS JES3 Commands* for a description of these parameters.
- Examining the dump.
  - Look for repetitious code paths in JES3 trace*
  - Look for large gaps between JES3 trace entries*
  - Look for FCTs not giving up control for long periods of time*

    Note: * These conditions could indicate inefficient algorithms in the code. See “Format of trace tables and JES3 diagnostic facilities” on page 44 for an explanation of JES3 trace entries.
  - Compare JES3 dispatching priority to other address spaces in system.

    If JES3 is defined lower than other non-system address spaces, there may not be getting enough CPU time defined for JES3. This is a tuning situation, not a code defect.

Hangs or loops in the JES3 address space

The following symptoms indicate system hangs or loops in the JES3 address space:

- High CPU usage by the JES3 address space
- No response to JES3 commands
- No JES3 messages being issued
- No job throughput

Hangs or loops in the JES3 address space require you to take JES3 down by using the FORCE command or by a re-IPL.

Documentation required for diagnosing hangs or loops

The following documentation is required for diagnosing JES3 address space hangs or loops:

- Dump of JES3, JESXCF and associated data spaces created during the problem period by the JES3 *DUMP command, if possible. Otherwise, take an SVC dump specifying SDATA parameters RGN, LSQA, LPA, SUM, CSA, NUC, PSA, and SWA and the parameter DSPNAME=(‘JES3’.*,'JESXCF'.*)
- SYSLOG

Debugging hangs or loops in JES3 address space

- Examine SYSLOG for communication that was lost between JES3 and JESXCF (IXZ messages) if running JES3 Release SP5.1.1 or higher.

  Look at all IXZ messages. There are many types of communication failures and the IXZ message is the most common failure message. For example:

```
IXZ0108E COMMUNICATION FROM xcfmember TO xcfmember2 HAS BEEN LOST, GROUP xcffgroup
```

- Examine SYSLOG for the most current processing up to the time when no response occurs. This tells you what was the most recent functions executing.
- Examining the dump:
  - Examine the JES3 nucleus task TCB (IATNUC).

    Is the JES3 nucleus task in an MVS™ WAIT (ACTIVE PRB WLIC=00020001)? If yes, where is it waiting and on whom? (use OPSW value to find out what code is executing). The nucleus task cannot be made to wait because of an MVS WAIT, because this will cause the address space to stop functioning. The only valid MVS WAIT that can be issued against JES3 is for the WAIT FCT, which indicates that JES3 has no work to do.
  - Examine the FCTs using `IP VERBX JES3 'OPTION=FCT'`.

    Are there any FCTs that are not posted, but waiting for a specific JES3 response (such as for file directory entries or JSAM buffers)? These FCTs can indicate a shortage or lockout condition if an FCT is not posted where it is waiting. If this wait condition is not specified in the explanation of the await reason code, find what code is in control from storage using the await return address.
  - Examine the JES3 trace for loops in the FCTs running under the nucleus task TCB. A loop is indicated by the same call and return sequence executing repetitively . See “Format of trace tables and JES3 diagnostic facilities” on page 44 for an explanation of JES3 trace entries.
  - Examine the system trace for interruptions in the JES3 nucleus TCB and look for the same address range being executing repetitively.
  - Look for system resource contention by issuing, `IP ANALYZE RESOURCE` (find JES3). If the response to this command is "YES", find out who holds the resource that is needed.
  - Examining the master trace looking for JES3 messages; if there are IAT messages on the branch entry, delayed issue queue JES3 is running and messages are not getting displayed on the console. A dump of the consoles and master address spaces is required for diagnosis.

Abends in the JES3 Address Space

For JES3 address space abends, you should examine the following:

- User completion codes
- JES3DM abend codes
- System completion codes

Documentation Required to Diagnose ABENDS in the JES3 Address Space

The following documentation is required to diagnose abends in the JES3 address space:

- A dump produced by JES3
- SYSLOG

Depending on the nature of the abend the following additional items may be required:

- The JCL/joblog
- Your Initialization statements
- JES3OUT

Debugging abends in JES3 address space

- You should obtain abend information from the failsoft logout area located in SYSLOG (IAT3713 messages) or by issuing the `IP ST, or IP VERBX JES3 'OPTION=FSL'` command for the dump. For example, the `IP ST` command results in:

  ```
  Dump Title: JES3 OS290 FLNO=001 WTR  FCT=052AF150 S878-00000014
  IN NOT JES3 PSW=070C1000815A6FB6 209/1717
  ```

- For user abend codes (JES3 errors encountered during initialization) and DM abend codes (JES3 errors encountered under a DSP) see *z/OS JES3 Diagnosis Reference* for a description of the abend. The system action and programmer response given in the abend code description may be sufficient for determining the cause of the problem.
- For system abend codes see *z/OS MVS System Codes* for a description of the abend.
- JES3 does not always produce a dump when an abend occurs. The common situations in which a dump is not taken are as follows:
  - DM133 - JES3 abend code issued as a result of a FAIL command issued for a DSP. A dump will not be taken unless the keyword "DUMP" is added to the FAIL command.
  - DM146 - A subtask request has abended. When JES3 is notified of the abend, DM146 is issued and the DSP is terminated. No dump is taken because the failing subtask should have called for a dump. Examine the messages in the SYSLOG to identify the failure. If SYSLOG is not available and the problem persists, set a SLIP on the JES3 completion code to get a dump. JES3 completion codes are considered user completion codes to the MVS (for example, completion code, DM133 to JES3 is U085 to MVS).
- ABENDDM137 is an abend taken as a result of the operator issuing the *DUMP command, or as a result of an SVC dump taken for a task running on a JES3 local, and the JES3 dump exit code determines that the task was waiting for a response to a JES3 SSI request. This is a diagnostic dump; it is not necessarily indicative of a JES3 problem.
- Abends in the JES3 address space and other address spaces can be suppressed through Dump Analysis Elimination (DAE). If a dump is not produced, check to see if DAE has suppressed it. If yes, find out when the dump took place and how often it occurred.
- Examining a dump regardless of abend type:

  For a high level path taken through code leading up to abend issue the following IPCS command and examine the output from the command as illustrated below:

  ```
  IP VERBX JES3 'OPTION=FSL'
  ```

```
DATE = 1998126    TIME =       184552  JES3   OS130
JES3 FAILURE NUMBER = 0015  FAILED  DM722
FAILURE REASON CODE = 00000000
FAILURE EXPLANATION:  MESSAGE NUMBER = IAT3751
THE VALIDATION FIELD (VALID) IN THE DATA BUFFER JUST......
INPUT FOR A MULTI RECORD FILE DOES NOT MATCH THE .........
VALID IN THE JES3SDM FILE DIRECTORY (FD)...........................
ACTIVE FCT = NJESND      DEVICE = A00003S1  FCT  FAILURE NO = 0001
JOB NAME = TCPNET             JOB NUMBER = JOB10536
MODULE = IATDMDT -NUC              MOD  BASE = 1EA1A398  DISP = 000EBE
APAR NUMBER =                   PTF NUMBER = SP130
CALLING SEQUENCE (HIGHEST LEVEL MODULE LISTED LAST)
MODULE = IATNTSD . . . . . .    MOD  BASE = 1F90B776   DISP = 0006E6
APAR NUMBER =            PTF NUMBER = SP521
PSW AT TIME OF FAILURE   071C0000 800141B4   ILC  02
THE FAILING INSTRUCTION ID     0A0D
REGISTERS AT TIME OF FAILURE
 REGS      0 - 3     00000000   000002D2   1EA1B174   0000034B
 REGS      4 - 7    1F036370   7F41500C   00000000   9EA1AEA6
 REGS     8 - 11    1FE091B0   9EA1AF9A  1EA1AE28  1F3E8DDE8
 REGS    12 - 15   1EA01000  1FE09198    800141B0  1EA25B82
```

Figure 1. IP VERBX JES3 'OPTION=FSL' - Example

For a lower level path taken through code that leads to an abend, examine the JES3 trace. Obtain fctaddr from IP ST results:

```
Dump title: JES3 OS130 FLNO=015 NJESND FCTA=1F3E8DE8 DM722
```

Issue the command:

```
IP VERBX JES3 'OPTION=TRC,FCT=address from FCTA'
```

The results are illustrated below:

```
NJESND   TYP=CALL  MOD=IATGRSV   FCT=1F3E8DE8  TOD=184154-327315  ID=0028  TCB=006E0E88  FAILDSP
             1FE09198  9EA1B256  00014070  1F3E8DE6  000002D2  1EA1B174  0000034E  1F036370
             7F41500C  00000000  9EA1AEA6 1FE091B0  9EA1AF9A  1EA1AE28 1F3E8DE6   1EA01000

NJESND   TYP=RETURN  MOD=IATGRSV   FCT=1F3E8DE8  TOD=184154-327312  ID=0029  TCB=006E0E88  IATDMDT+00CE4
             1FE09196  1EA1B07C  00000010  000002D2 000000000 00000001  1EA95E9C  1FE091B0
             000002D2  00000001  9EA1AEA6  7F416000  9EA1AF9A  1EA1E56A  1F3E8DE8 1EA01000

NJESND   TYP=RETURN  MOD=IATGRSV   FCT=1F3E8DE8  TOD=184154-327311  ID=0029  TCB=006E0E88  IATDMNC+0162E
             1FE09198  1EA1E7A6  00000000  00000000 00000000  7F82CA10  00000600 7F82C9A0
             00000000  00000000  9EA1AEA6  7F416000 9EA1AF9A 1EA1F174  1F3E8DE8 1EA01000

NJESND   TYP=CALL  MOD=IATGRSV   FCT=1F3E8DE8  TOD=184154-327392  ID=0028  TCB=006E0E88  APUTBUF
             1FE09198  9EA1E7A6  1EA1F174  7F41600C  00000000  7E14600C 1EA95E92  1F9091B0
             000002D2  00000010  9EA1AEA6 7F416000  9EA1AF9A  1EA1E56A 1F3E8DE6  1EA01000
```

- When examining the JES3 trace table the most recent entry appears first in the list of entries. You can map out the calling sequence to determine the path through the code that was taken. From the example above:
  1. A CALL was issued from IATDMNC+0162E to the APUTBUF macro and RETURNed.
  2. IATDMNC then RETURNed to whoever called it. In this case IATDMDT+CE2.
  3. IATDMDT recognized that an error occurred of some nature (R0 return contains 000002D2, hex value for 722).
  4. IATDMDT will issue a CALL to the FAILSOFT macro to take a dump.
- Format of a JES3 Event Trace Table.

  See "Format of trace tables and JES3 diagnostic facilities" on page 44 for a description of trace table events. A trace event can include the following information:
  - FCT active when trace was taken
  - A Descriptor identifying the function being traced (call, return, etc.)
  - Name of module issuing the trace

- Address of active FCT
- Time stamp
- Identification number
- TCB
- In addition, an event can include registers at the time the trace was taken, error information, and pertinent function information.

```
EXAMPLE:

NJSEND    TYP=CALL       MOD=IATGRSV  FCT=1F3E8DE8  TOD=184154-327292   ID=0028  TCB=006E0E88  APUTBUF
              1FE09198 9EA1E7A6 1EA1F174  7F41600C       00000000  7F41600C  1EA95E9C  1FE091B0
              000002D2 00000010  9EA1AEA6 7F416000       9EA1AF9A 1EA1E56A  1F3E8DE8   1EA01000

              where:

              FCT active time of trace:              NJESND
              Descriptor identifying function:      CALL
              Name of mod issuing trace:            IATGRSV
              Address of active FCT:                 1F3E8DES
              Time stamp:                                184154-327292 (6:41:54 pm)
              Identification number:                   28
              TCB:                                          006E0E88
              What was being executed:            APUTBUF
              The remainder:
                           1FE09198                      R13 from calling routine (usually data CSECT)
                           9EA1E7A6                      Return address ( routine issuing APUTBUF)
                           1EA1F174                      Entry point to called routine (APUTBUF)
                           7F41600C - > 7F416000    R0 - R12 of calling routine
```

- The JES3 trace provides the footprints the function took through the code. The registers provide the storage addresses of the control blocks used by the function. Use CBF (control block format) to format the pertinent control blocks used by the function. For many DM abends *z/OS JES3 Diagnosis Reference* provides tips and hints of what control blocks to examine to determine the cause of the abend.

Miscellaneous JES3 Problem Areas

The miscellaneous JES3 problems areas are:

- Initialization problems
- C/I Problems
- MDS Problems
- GMS problems
- DJC problems
- Output service problems
- Communications problems with remotes

Initialization Problems

You can approach initialization problems as follows:

- Obtain contents of JES3OUT data set and look for error messages issued during initialization. Determine if changes were made to the initialization deck since the last restart was flagged.
- If initialization completes you can use DUMPCORE to display the intermediate text and initialization checkpoint records.
- If an abend is issued follow the same procedures as defined under "Abends in the JES3 Address Space".
- If the cause of the error cannot be determined from an analysis of JES3OUT, use the INTDEBUG facility by placing a INTDEBUG card in the initialization deck statement preceding the point where the error message occurs in the JES3OUT contents. See *JES3 Initialization and Tuning Reference* for specific syntax. This is only valid on restarts that read the initialization stream (cold, warm, hot/refresh).

Note: When modifying the JES3 initialization stream you should always run the JES3 initialization stream checker.

Converter/Interpreter (C/I) problems

- If a job is failing converter/interpreter and the reason cannot be determined from an examination of the joblog, rerun the job inserting the following JECL (JES3 control statements):

  Note: JECL is invalid for started tasks.

  ```
  //MYJOB  JOB   etc.
  //*PROCESS CI
    DEBUG=ALL
  //*PROCESS CBPRNT
  //*PROCESS MAIN
  //*PROCESS CBPRNT
  //*PROCESS OUTSERV
  //OUTI OUTPUT  etc.
  ```

  An examination of the control blocks will be required
- If a job is hung in CI (*I,J,=xx,W or *I,A,D=CI, or messages from the JES3 monitor), take a dump of JES3 by running the *DUMP command. Find the FCT that is processing the job by running IP VERBX JES3 'OPTION=FCT' to determine what the job is waiting for. If the job is waiting for a locate subtask to complete an examination, the MVS TCB structure is required to determine the cause; find the associated subtask. If a catalog locate SVC has been issued, a dump of the catalog address space is required.
- If the JES3 monitor indicates that a job is under the control of a CI FSS address space, an SVC dump of that address space must be taken and examined to determine where the job is in process, using the same procedures as defined for within the JES3 address space. The issue could be related to JES3 and SMS resource availability. If SMS is involved, a dump of that address space is required.

MDS (Main Device Scheduling) problems

Approach MDS problems as follows:

- If an inquiry on a job indicates that it is stuck on an MDS queue (*I,S,A,J - allocate, unavailable, error, restart):
  - issue *I,S,V=VOLSER,E
  - issue *I,S,DE=DSN
  - issue *CALL,DISPLAY,J=xx
  - issue *S DC,OPTION=SNP (to get the JSTs and the resqueue)
  - issue *S DC.OPTION=SYS or STU or STN or MDS or VLM
- If an inquiry on a job indicates that it is stuck on the system select queue:
  - issue *I,S,SS,J=xx
  - issue D SMS,SG(xx),LISTVOL - then talk to SMS
- If necessary, rerun the job adding C/I debug statements (see C/I above for instructions).

Note: Jobs getting stuck in MDS, failing, or failing execution are often a result of C/I processing, SMS resource availability or changes made to JES3 initialization deck device definitions, the associated MVS HCD definitions, or SMS ACS routines.

GMS (Generalized Main Scheduling) problems

Problem - Job stuck in GMS select.

- Issue*I,J=xx,W - what is job waiting for?
- Enter the following commands on each main:

- *I,G,main-name,G (inquiry on GROUP status)
- *I,G,main-name,S (inquiry on SELECT mode options)
- *I,G,main-name,C (inquiry on CLASS status)

- Get a display listing for job in question:
  - Issue *CALL,DISPLAY,J=xx
- If more details regarding GMS is required use DUMPCORE with OPTION=GMS or MPC

Note: GMS problems are typically caused by an insufficient number of initiators being available for the job class group. For JES3-managed initiators, this can be a result of a decrement of the total counts when an MVS start command for an initiator fails. In this case, JES3 will decrement the total number allowed and issue message IAT2008 indicating a change in the maximum initiator count. Determine or modify the maximum initiator value with the *INQUIRY,G,main,S,MAXI or *MODIFY,G,main,S,MAXI,nnn command. These commands are not valid until the maximum initiator value has been set. Reconnect the main by issuing the *S,main,connect command to validate GMS counters. See *z/OS JES3 Commands* for more information.

DJC (Dependent Job Control) Problems

Problem - DJC net job not executing as expected:

- Execute command to obtain DISPLAY DJC output.

  *CALL,DISPDJC,OUT=nnn.NET=xxx

  Where: nnn is the printer to be used
  xxx is the name of the network to be displayed
- Typical cause - A job may have abnormally terminated and did not have an ABCMP statement in the JCL

Output service problems

Problem – Job stuck in output service.

- Use DUMPCORE to obtain the job's output service related control blocks:
  - *S,DC,OPTION=(SNP),J=jobnum - OSEs, JDSs, resqueue
  - If running R3 and up, also run DUMPCORE including the DIAG keyword on the command to obtain formatted OSEs. See “Displaying output scheduling elements (OSEs) for a job” on page 38 for a description of the contents.

Problem – Output not printing as expected.

- Turn on diagnostic mode when starting the writer (*START,wtr,D). This will provide additional message IAT7060 during output service processing. See “Output Service Diagnostic Mode” on page 125 for a description of the contents.

Problem – Unable to cancel a job with scheduled output.

- Once a job has been scheduled to an external writer, it is no longer under JES3 control; a standard JES3 cancel will not cancel the job. To remove the job, a hot start with analysis is required; specify the job when prompted.

Communication Problems with Remote Connections

Approach communication problems with remote connections as follows:

- BSC RJP problems:
  - Run the RJPSNPS service aid during a failure transmission sequence. Issue *CALL,RJPSNPS or *START,RJPSNPS
- SNA RJP problems:

- Turn on SNA RJP trace facility for the failing line. Issue *START,SNARJP,T=wsname,TRACEON
- Turn on VTAM® GTF trace for the failing LU. Use the CID specified in the logon message and trace LU and NCP buffers. See "Communication traces" on page 66 for a description of the traces.

JES3 problems in user address space

The following describes debugging system abends issued from JES3 modules running under control of user address space (ABEND1FB, ABEND6FB, etc.).

Documentation Required for JES3 System Abends in User Address Space

The documentation required for diagnosis of JES3 system abends in user address spaces is:

- System created dump
- Syslog

Debugging system abends

- Obtain abend code from dump or syslog and examine *z/OS MVS System Codes* for explanation.
- Examine TCB, RB, SVRB, linkage stack structure, and save area chains associated with failing task. Use OPSWs and WLICs to see what path was taken leading up to abend.
- Examine system trace for trace entries leading up to abend. Search for *RCVY to find where abend occurred in most cases.
- Examine code up to point of failure.

Data management issues in user address spaces

If the problem is related to data management, the JES3 I/O trace information which is formatted as part of the DSS/DSB structure (dataset status and dataset block, normally pointed to by R9 in the failure registers, or obtained through the address space MEM) can be used to assist with analysis. Refer to "Format of trace tables and JES3 diagnostic facilities" on page 44.

JES3 SSI processing problems

Address spaces issue SVCs and SSI requests that JES3 is responsible for processing: for example, OPEN, SAPI, etc. Symptoms depend on the specific request issued, such as a dynamic allocation failures or a SAPI request not receiving the expected response.

JES3 has available traces that can be activated depending on the particular issue: refer to "Events Eligible for Tracing" on page 132.

Problems in the FSS address space

The FSS (Functional SubSystem) is a separate address space which can be used in a JES3 environment to offload converter/interpreter or writer functions from the global. The use of FSS allows installations to use products such as PSF to drive printers in a JES3 environment.

FSS Problems - C/I or WTR

There is a variety of problems that can occur in either kind of FSS. Most should be treated like any other JES3 problem with the exception that we are dealing with a separate address space. The types of problems are:

- DM or system abends
- Hangs
- Lost connection messages from JESXCF
- Printers not picking up work

Documentation Required for FSS Problems

The documentation required for diagnosis of FSS problems is:

- Dump of JES3 and FSS address space (include JESXCF if running JES3 5.1.1 or higher)
- Syslog

Debugging FSS Problems

- For abends - follow the same procedure as with a JES3 dump. There is one difference - to obtain the FSS trace table issue:

  IP VERBX JES3 'ASID=xxx,OPTION=yyy' or
  'FSSNAME=xxx,OPTION=yyy'

  Look at the last FSS entry in the table and compare it to what the JES3 trace table activity for the FSS FCT shows. See "Format of a Functional Subsystem (FSS) Address Space Trace Table" on page 60 for a description of a FSS event ID table and explanation of FSS events.
- For hangs or if a printer is not printing:
  - Examine the FSS/FSA table status flags , issue:

    IP VERBX JES3 'OPTION=FSS'
  - Examine the JES3 FCT activity associated with the FSS. Is it waiting for a post from the address space?
- With WTR FSSs there is the FSS application to consider as well (such as PSF, Printway, etc.). For WTRs additional diagnostic information can be obtained by turning on diagnostics when calling, starting, or restarting the writer by adding D to the command. This will cause an additional messages with diagnostic information to be issued. See "Output Service Diagnostic Mode" on page 125 for an explanation of the message contents.
- If a C/I FSS hangs because of a minimal spool condition, and it is defined (or was modified with) TERM=YES, it will not be possible to automatically bring it down by ending the global address space. Therefore exercise care when restarting JES3 during a minimal spool condition.

Problems in the JES3DLOG Address Space

The JES3DLOG address space was introduced in Release 5.2.1 as a means of tracking all message activity in a sysplex in the JES3 format. It is a separate address space that uses an MCS extended console. Installations can choose JES3DLOG or Operlog. JES3DLOG problems are indicated by:

- External symptoms similar to JES3 such as:
  - Performance - high CPU usage
  - Hangs
- DLOG suspend/alert conditions
- Missing DLOG messages

Documentation Required for JES3DLOG Problems

The following documentation is required for diagnosing JES3DLOG problems:

- Dump of JES3DLOG address space and the data space associated with the Consoles asid that is created for DLOG.

  JOBNAME=(CONSOLE,JES3DLOG),DSPNAME=('console'.ieam*).

  Explanation: DLOG will obtain MDBs (message data blocks) from the consoles data space to create the messages it will put in the log.

Debugging JES3DLOG Problems

- DLOG has an alert mechanism that will signal when it reaches its maximum message or dataspace limitation (messages will be issued). In many cases the alerts will be relieved internally. If not, it indicates a problem. DLOG will save trace events for startup/termination, suspend/alert conditions, abnormal termination , and resmgr within its address space.
- Issue an inquiry (*I,O,DLOG) to obtain what JES3 believes to be the status of the asid. JES3 message IAT7000 provides a lengthy explanation.
- An examination of the TCB structure and the data being accessed in the console dataspace may be necessary if the trace table does not indicate a specific problem.
- If messages missing from JES3DLOG are not displayed on the console, then console support needs to to contacted.

Problems in the JESXCF Address Space

JES3 support for JESXCF was introduced in Release 5.1.1. It acts as a communication vehicle between all the address spaces in a complex. JESXCF uses XCF and a coupling facility or CTCs for communication. If an installation is running JES3 5.1.1 or higher, then JESXCF exists. Often JESXCF problems will manifest themselves as a problem with another address space. For this reason it is important to dump JESXCF and its dataspaces even when it is not apparent that JESXCF is involved. There is a JESXCF address space on each processor. JESXCF problems are indicated by JESXCF abends and communication failures.

Documentation Required for JESCXF Problems

The following documentation is required for diagnosing JESXCF problems:

- Dump of JESXCF address space including its dataspaces for each processor (unless the system has created a dump).
- Depending on the nature of the problem XCF may be required.
- Syslog.

Debugging JESXCF Problems

- JESXCF code is delivered with the Userexit and Flow component traces active: these traces need to be left active for debugging purposes.
- IP VERBX JESXCF provides control block information about the mailboxes defined for members in the sysplex. For communication failures, examine the formatted transport buffers.
  - Examine head/tail pointers. If the tail value is high it may indicate an accumulation of messages which is an indication of lost transport buffers.
- JESXCF is shipped Object Code Only (OCO). Level 2 Support will need to examine the documentation to determine the cause of the problem.

Problems in the BDT Address Space

BDT is a mechanism for transferring data (sysout or jobs) between nodes using SNANJE or File-to-File Transfer. Installations can choose whether to use BDT. BDT problems are indicated by BDxxx abends, system abends, and hangs.

Note: Often a problem externally looks like a BDT problem, but internally it is a result of a VTAM problem. A thorough understanding of the received messages is required for an accurate diagnosis.

Documentation Required for BDT Problems

The following documentation is required for diagnosing BDT problems:

- For BDxxx and system abends
  - Dump provided

- Syslog
- For Hangs
  - Dump of sending system and JES (if using SNANJE)
  - Dump of receiving system and JES (if using SNANJE)
  - Syslog
  - VTAM traces

Debugging BDT Problems

- For BDxxx abends, examine *BDT Messages and Codes* for an explanation of the abend. The information provided may be sufficient for determining the cause of the problem.
- To format the BDT address space issue one of the following:

  IP SUMMARY FORMAT JOBNAME(jobname)
  where: jobname is the name of the BDT job
  (OR)
  IP SUMMARY FORMAT ASIDLIST(xxx)
  (OR)
  IP TCBX BDTABPR TCBxxxB
  where: xxx is the decimal value of the BDT ASID

  - If the TCBX fails, you are missing the formatter. In SYS1.PARMLIB member BLSCECT you need to INCLUDE the following TCB exit:

    'EXIT EP(BDTABPR) FORMAT(TCB) AMASK(x'00FFFFFF')/*BDT'
  - Examine the FCT chain for the failing function (format similar to JES3 FCT chain)
- Hangs
  - Examine BDT and VTAM messages in each syslog
    - For nodes in question - is one unavailable?
    - If message BDT9311 exists BDT may not be hung. JES3 may have not told it that there is work available. Examine the JES3 dump.
  - Determine if there is work available for BDT from JES3. Issue JES3 inquiry:

    *I.U,J=?,Q=BDT,BS=?,H=?,BG=?

    Note: BS status can indicate what is happening.

JES3 Netserv (TCP/IP/NJE) address space problems

For transmission problems, use the command *MODIFY,SOCKET=sockname,JTRACE=YES,ITRACE=YES. (Optionally you can also specify VTRACE=YES.) Then start up a GTF procedure to collect trace records.

For socket connection problem, use the command *MODIFY,NETSERV=nsvname,JTRACE=YES,ITRACE=YES. (Optionally you can also specify VTRACE=YES.) If you are having trouble with a signon of a TCP/IP node it might be useful to turn on Netserv and socket traces. Then start a GTF procedure to collect trace records.

To determine if a host name specified on a socket definition is properly defined through TCP/IP, you can try a 'ping' command from TSO. For example, if a socket is defined with HOSTNAME=MYCORP.COM and you suspect that MYCORP.COM is not defined to TCP/IP, you can go to a TSO session and enter the command PING MYCORP.COM. If the command times out without sending any packets, the host is likely undefined to TCP/IP. You can also try to ping the IP address, for example, 'ping 11.22.33.44'. If the ping for the IP address works but the ping for the host name does not, suspect that the IP address is not defined correctly to the TCP/IP resolver.

If you take a dump to aid diagnosis, the JES3 Global and Netserv address spaces will likely be needed. They might not be on the same processor.

Typical JES3 Problems and Their Resolutions

The following section discusses how to identify a problem with JES3 and gives a suggested solution to the problem.

Shortage of JES3 Job Numbers

Problem Description:

An indication of a shortage of job numbers in your installation is a backlog of jobs which will eventually affect the performance of your installation. If your installation has experienced a shortage of job numbers, messages such as IAT6192, IAT4075, and IAT9126 may be issued. These messages are retained by the action message retention facility. Scan the messages on the action message retention queue to determine if any of these messages were retained on the message queue.

Suggested Resolution:

The situation may be eased by one of the following:

- Canceling some jobs.
- Locating the bottleneck of jobs in your installation.

Suggested Changes for Temporary Fix:

In an installation, jobs typically become backlogged while waiting to be processed by CI, MAIN, OUTSERV, and NJESND. Issue an *INQUIRY,B or *INQUIRY,Q,D=dspname command to determine the jobs that are waiting to be processed by the CI, MAIN, OUTSERV, and NJESND DSPs. See *z/OS JES3 Commands* for more information on this command. The maximum number of jobs active under any particular DSP is dependent on the installation. Each installation must determine the maximum number of jobs that can run under a particular DSP.

If a bottleneck of jobs exists in output service, either:

- Cancel some jobs by issuing a *MODIFY,J=jobno,C or *MODIFY,J=jobname,C,N=ALL command.
- Cancel output data sets from the HOLD queue by issuing a *MODIFY,U,Q=queue,{JAGE|DAGE} command.
- Change the printer requirements for the job. Issue a *MODIFY,U,Q=WTR command to change the printing requirements for the job.

See *z/OS JES3 Commands* for more information.

If there is a bottleneck of jobs waiting to be processed by the NJESND DSP, ensure:

- The BSC lines are active. Issue an *INQUIRY,NJE command to display the status of the lines defined to your node.
- The lines are not hung. Issue an *INQUIRY,NJE,NODE=nodename,LINE command to determine the status of the lines defined to your node.
- That a large job is not tying up the line. Issue an *INQUIRY,A,D=NJESND command to display the amount of time that the job has used to transmit a job. If too much time has been taken to transmit the job, issue either:
  - *R,dspname to terminate the job and requeue it to the DSP or
  - *C,dspname to terminate the job and place it in operator hold.

Suggested Changes for Next Restart:

To prevent a shortage of job numbers in the future, check the JOBNO parameter on the OPTIONS initialization statement. Allocate enough direct-access space to accommodate your installation's working data set for JCT records. (See *z/OS JES3 Initialization and Tuning Guide* for more information on determining the size of the JCT.)

Misrouted Messages

Problem Description:

Because JES3 has a complex method of routing messages, some messages issued in your installation may not appear where you expect. JES3 messages are issued by using information specified on a JES3 MESSAGE macro. JES3 converts the message macro into a WTO and the destination class into MVS routing codes. The message processing facility (MPF) can change, add, or delete the routing codes specified on the message macro.

Suggested Resolution:

You can use the Generalized Trace Facility (GTF) to gather information to help diagnose where your system is routing messages for display. GTF intercepts requests to route messages from JES3 and MVS and records information for the request. See *z/OS JES3 Customization* for additional information on using GTF in JES3.

Job related diagnosis

This topic discusses the statements used to invoke the diagnostic facilities and commands that you can use to obtain information when JES3 is active.

The system can supply you with information that is gathered while the installation is experiencing a problem. However, sometimes it can be necessary to recreate the problem and collect additional information. This information can help diagnose problems the installation is experiencing.

Whenever JES3 is active, commands can be entered from a console to obtain diagnostic information. Use the commands in Table 1 on page 17 to obtain information that will help you:

- Identify the functional area where JES3 might be experiencing a problem.
- Obtain additional information while recreating a JES3 problem. You can use the information obtained using the commands in this section and the information in the formatted dump to diagnose the problem.

After you have identified the functional area that might be experiencing a problem, use the commands in Table 2 on page 19 to obtain information specific to that functional area.

For more information about the commands used in Table 1 on page 17 and Table 2 on page 19, see *z/OS JES3 Commands*.

Table 1. Commands used to obtain general JES3 diagnostic information

If you want to:	Use the command specified:
stop the processing of a JES3 FCT	Dump

Table 1. Commands used to obtain general JES3 diagnostic information (continued)

If you want to:		**Use the command specified:**
obtain information contained in a **control block** or **storage**	CLASS (Job Class Table)	Dump
	CSA (Common Service Area)	Dump
	DJST (Dynamic Job Summary Table)	Control Block Print
	DYNAL (DYNAL FCT Data Areas)	Dump
	EXRESC (Execution Resource Table)	Dump
	FCT (Function Control Table)	Dump
	FSS (Function Subsystem Tables)	Dump
	GRPTBL (Job Class Group Table)	Dump
	ICP (Initialization Checkpoint Record)	Dump
	IDD (C/I DSP Data Area)	C/I Debug Facility
	IJS (Intermediate Job Summary Table)	C/I Debug Facility
	ITX (Intermediate Text)	Dump
	JBT/TAT/JOBTAT(Job Track Allocation Table)	Control Block Print, Dump
	JCT (Job Control Table)	Control Block Print, Dump
	JDAB (Job Data Accounting Block)	Control Block Print, Dump
	JDS (Job Data Control Block)	Control Block Print, Dump
	JNCB (DJC JOBNET Control Blocks)	Dump
	JQE (Job Queue Element)	Dump
	JSQ (Job Select Queue Element)	Dump
	JST (Job Summary Table)	Control Block Print, Dump
	JVT (Job Volume Table)	Control Block Print, Dump
	LRS (Locate Response Table)	C/I Debug Facility
	LVS (Locate Table Entries)	Dump
	MEM (JES3 Memory Usage Table)	Dump
	MPC (Main Processor Control Table)	Dump
	NUC (JES3 Nucleus)	Dump
	OSE/MOSE (Output Scheduling Element)	Dump, Control Block Print
	PCAT (Pass/Catalog Table)	C/I Debug Facility
	RQ/RESQ (Resident Job Queue Table)	Dump, Control Block Print
	SDA (Statistics Data Area)	Dump
	STN (SETNAMES Table)	Dump
	STT (Single Track Table)	Dump
	STU (SETUNITS Table)	Dump
	SUP (SUPUNITS Table)	Dump
	SWA Control Blocks	Dump
	SYS (SYSUNITS Table)	Dump
	TRC (JES3 Trace Tables)	C/I Debug Facility
	VLM (SETVOL and SETDSN Tables)	Dump
obtain **job-related** information	display information for a specific job	*CALL,DISPLAY or *INQUIRY,J
	display the status of jobs being processed by a particular or all JES3 DSPs	*INQUIRY,A
	display the status of jobs on a specific or on all processors	*INQUIRY,A
	display a summary of jobs in the queue, by JES3 function	*INQUIRY,B
	obtain the status of a particular job including why the job is waiting to be scheduled and how long the job has been active or waiting to be scheduled	*INQUIRY,J
	obtain information on a single or all jobs on the JES3 job queue	*CALL,DISPLAY or INQUIRY,Q
	display information for jobs which have allocated spool space	*CALL,DISPLAY or *INQUIRY,Q
	display information for DJC network and jobs within DJC networks	*INQUIRY,N Display DJC Network
select events that JES3 traces		JES3 Trace
display portions of storage		Dump
display a particular spool record		Dump

Table 1. Commands used to obtain general JES3 diagnostic information (continued)	
If you want to:	**Use the command specified:**
determine the devices JES3 allocated to a job	DISPLAY, C/I Debug Facility, or JSTTEST Facility
obtain information for a specific module	*INQUIRY,X or Dump
obtain DSP related information	*INQUIRY,X

Use the commands in the following table to obtain diagnostic information for a particular JES3 functional area. For more information about using these commands, see z/OS JES3 Commands.

Table 2. Commands used to obtain additional information for a functional area		
If you want to obtain more information for:		**See the following topic or use the commands specified:**
Initialization and you want to:	force a storage dump when JES3 encounters an error while initializing the global	INTDEBUG (See *z/OS JES3 Initialization and Tuning Guide* for more information.)
	gather statistics that were recorded during JES3 initialization.	Dump (*START,DC,OPTION=SDA)
	display the configuration information that JES3 created from the initialization statements that were processed	Dump (*START,DC,OPTION=ITX,ICP)
Input Service and you want to:	obtain a list of interpreted JCL for a job processed by the MVS converter interpreter	JCLTEST Facility
	display control blocks or storage related to input service: FRP (format parameter buffer) IRA (internal reader anchor block) IRE (internal reader element)	 Control Block Print, Dump Dump Dump
C/I and you want to:	display control blocks or storage related to C/I: FSS-Functional Subsystem Table Entries IDD IJS JST JVT LRS LVS PCAT SWA control blocks	 C/I Debug Facility C/I Debug Facility C/I Debug Facility C/I Debug Facility, CBPRNT, DC C/I Debug Facility, CBPRNT, DC C/I Debug Facility C/I Debug Facility C/I Debug Facility C/I Debug Facility, CBPRNT
	display the status of a procedure library	*INQUIRY,PROCLIB=
	display information for a CI FSS	*INQUIRY,F
	display why a job is not being scheduled for C/I	*INQUIRY,J
Main Device Scheduling and you want to:	display a list of the devices JES3 has allocated to a job	JSTTEST Facility
	display control blocks related to main device scheduling JST MDS (Main Device Scheduler Area) STN (SETNAMES Table) STU (SETUNITS Table) SYS (SYSUNITs Table) VLM (SETVOL/SETDSN Tables)	 Control Block Print Dump Dump Dump Dump Dump
	display why a job is waiting in MDS processing	*INQUIRY,J and *INQUIRY,S,A,J=

Table 2. Commands used to obtain additional information for a functional area (continued)		
If you want to obtain more information for:		**See the following topic or use the commands specified:**
	display a summary of the jobs in MDS allocation processing and why they are waiting	*INQUIRY,S,A,SUMM
Output Service and you want to:	display jobs that originate from a designated device group	*INQUIRY,B
	display information for a WTR FSS	*INQUIRY,F
	display control blocks or storage related to output service: FSS-Functional Subsystem Table Entries MOSE (Master OSE and OSS) OSE (Disk Resident OSE) PPQ/PDQ-Pipeline Writer Control Blocks WTR (Writer Data Area)	 Dump Dump, Control Block Print Dump, Control Block Print Dump Output Service Diagnostic Mode
Consoles and you want to:	trace information for misrouted messages	Generalized Trace Facility
	display console status information	*INQUIRY,O and *INQUIRY,D
	display outstanding action messages	MVS Commands: D R and D CONSOLES
	display message routing information	*INQUIRY,M , *INQUIRY,O and D CONSOLES
	display status of console buffers	*INQUIRY,C,C
Networking and you want to:	obtain information for a node that uses BSC protocols	Network Log Facility
	display control blocks or storage related to networking: NJE (networking node table) TCP (TCP/IP/NJE structures)	Dump
	display the status of all networking nodes and lines	*INQUIRY,NJE
	inquire about output destined for other NJE nodes	*INQUIRY,U,Q=BDT
Spool and you want to:	display control blocks or storage related to spool: JBT (job track allocation table) JDS (job data sets) JIO (spool related control blocks)	 Dump, Control Block Print Dump, Control Block Print Dump
	display information for spool partitions	*INQUIRY,C and *INQUIRY,Q
	display information for JSAM spool buffers	*INQUIRY,C
	display information for spool data sets	*INQUIRY,Q
	display information for allocated spool space	*INQUIRY,Q and DISPLAY
	display a summary of records that are in the Single Track Table (STT) or dump the contents of all records or specific records	*START,DC,OPTION=STT
	display the contents of a spool record	*START,DC,SPADDR=
	Display JES3 spool track maps	*START DC,OPTION=TGM

Table 2. Commands used to obtain additional information for a functional area (continued)

If you want to obtain more information for:		See the following topic or use the commands specified:
Remote Job Work-stations and you want to:	display control blocks or storage related to RJP workstations: RJP-resident RJP line, terminal tables WSB-resident workstation block	 Dump Dump
	display the status of a BSC or SNA RJP workstation	*INQUIRY,D,T=
	display BSC line information	*INQUIRY,T

Control Block Print DSP (CBPRNT)

CBPRNT prints JES3 and MVS control blocks to the CBPRNT data set. CBPRNT prints the data set when the job ends.

To use the facility, take the following steps:

1. Determine the control blocks you require to diagnose the problem.
2. Use the following list to identify the control blocks you can request:
   - The TAT, JDAB, PARM, JDS, FRP, ASR, or the RESQ, after any scheduler element.
   - The JVT, JST, or the SWA control blocks, after the CI or a subsequent scheduler element.
   - The MOSE, after the OUTSERV scheduler element.
3. Place a //*PROCESS CBPRNT statement after the scheduler element that creates the required control block.

   If a //*PROCESS CBPRNT statement is placed at the beginning of the job, CBPRNT prints all the control blocks associated with the job's scheduler elements.

Converter/Interpreter debug facility

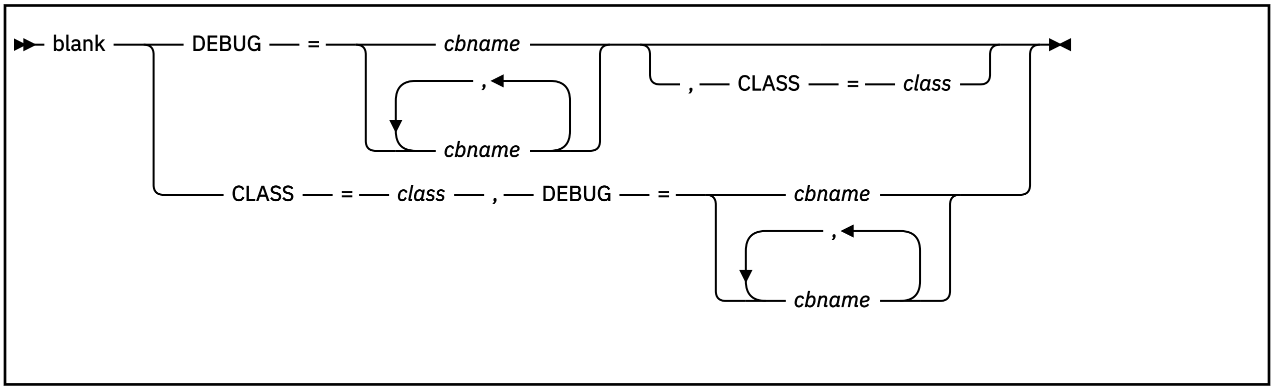
The converter/interpreter debug facility provides additional parameters that you can specify on the //
*PROCESS CI statement used to create a non-standard job.

Consider the following when using this diagnostic facility:

- Errors in the DEBUG statement inhibit the converter/interpreter debug facility for the job. JES3 will not flush the job from the system.
- You should include a //*PROCESS OUTSERV statement with this job to insure that the debug output will be printed.

The syntax for using DEBUG and CLASS statements for the C/I Debug Facility follows:

```
//*PROCESS CI
  followed by (on a separate statement) and preceded by a blank
```



Note: The DEBUG or CLASS parameter must start on a new line following the //*PROCESS CI statement and a blank must precede the first parameter you specify.

DEBUG=cbname
: Identifies the one or more control blocks to be printed. You must separate the control blocks by a comma if you specify more than one control block.

cbname
: **converter/interpreter debug facility will print the:**

LOC
: Locate table (LVS) entries as they are built and the Locate Response Area (LRS).

JST
: Job summary table (JST) entries as they are built.

JVT
: Job volume table (JVT) entries as they are built.

COMP
: MVS control blocks as they are read and the compatibility interface records as they are referenced. Control blocks are the JCT, ACT, SCT, SIOT, and JFCB. Compatibility interface records are the JES3 job level, step level, and DD level records (JBL, STP, DDL).

SWB
: Scheduler work blocks after processing is complete.

PCAT
: Pass/catalog entries as they are built.

IJS
: Intermediate job summary table (IJS) entries as they are built.

CKPT
: Checkpointed buffers for any of the specified options. This provides the final contents of the control blocks.

ALL
: All the previously listed control blocks.

CLASS
: Allows the user to assign a JES3 message class to the DEBUG data set for a job. The class must be a single alphabetic (A through Z) or a numeric (0 through 9) character. It can either precede or follow the DEBUG=keyword and must be separated by a comma.

: If you do not specify the message class for the converter/interpreter debug facility, JES3 uses the message class specified by the DBGCLASS parameter on the STANDARDS initialization statement.

The following examples show correct and incorrect ways to specify the DEBUG control statement:

Correct and Incorrect DEBUG statements

VALID

```
DEBUG=ALL
DEBUG=ALL,CLASS=M
DEBUG=IJS,JST,JVT,CLASS=C
CLASS=4,DEBUG=ALL
```

NOT VALID

```
DEBUG=ANY
CLASS=*,DEBUG=ALL
DEBUG=(IJS,JST),CLASS=E
```

JCLTEST Facility

The JCLTEST facility generates a listing of interpreted JCL that has been processed by the MVS converter interpreter. You can use this listing to verify JCL results before allowing further processing of the job.

If you specify the PGM=JCLTEST parameter on an EXEC statement, JES3 stops processing the job when it completes converter/interpreter processing; the job is not scheduled for execution. The JCL and any applicable diagnostic messages are then printed.

If you want to use JCLTEST for a deferred-restart job, you must specify PGM=JCLTEST on the EXEC statement located after the one for the step names on the RESTART parameter of the JOB statement.

The output from the JCLTEST facility is a listing of interpreted JCL. The JCL below runs the JCLTEST facility.

```
//        EXEC        PGM=JCLTEST
```

JSTTEST facility (Print JCL allocation decisions)

The JSTTEST facility allows you to obtain summary information that describes the resources required by a job in order to execute.

If you specify the PGM=JSTTEST parameter on an EXEC statement, JES3 uses the job's Job Summary Table (JST) to produce a summary of the devices that should be allocated to your job. JES3 then stops processing the job when it completes converter/interpreter processing; the job is not scheduled for execution. The JCL and JSTTEST output are then printed.

An example of output from the JSTTEST facility is included in the following. The JCL to run the facility is illustrated below:

```
//stepname  EXEC  PGM=JSTTEST
```

The JSTTEST facility uses the information in the job summary table (JST) to obtain information for the messages that describe the allocation decisions made during CI. Sets of messages are written to the JESMSG data set. The first set of messages describes the job step of the job. The information that describes a job step is the:

- step name
- procedure name
- step number

The second set of messages describes the job's data sets defined by the DD statements. The information generated by JSTTEST for a data set is the:

- ddname of each DD statement
- names of the devices
- setup status of the devices
- disposition and share status of the devices
- scratch status of each device
- device type (disk, tape, unit, or graphic)
- ring requirement (tape only)
- first 20 characters of the data set name
- serial of the first volume
- ddname of any explicit backwards reference that appears on the DD statement

To invoke the JSTTEST facility, enter the JCL statements in the job stream in place of one of the job's actual EXEC statements:

To use JSTTEST for a deferred-restart job, place the EXEC statement for JSTTEST so that it replaces one of the EXEC statements after the one for the step named on the RESTART parameter of the JOB statement.

Below is sample JCL used to invoke the JSTTEST facility for JES3-managed devices:

```
//TESTCS   JOB   MSGCLASS=A,MSGLEVEL=(1,1)
//*PROCESS CI
 DEBUG=IJS,JST
//*PROCESS MAIN
//*PROCESS OUTSERV
//STEP1   EXEC   PGM=JSTTEST
//DD1  DD   DSN=DATA.ONE,DISP=OLD,UNIT=3380
//DD2  DD   DSN=DUMMY.DS,DISP=OLD
```

Output generated from the JSTTEST facility using the sample JCL:

```
IAT6140  JOB ORIGIN FROM GROUP=LOCAL    , DSP=CR   , DEVICE RDR012,  012
14:51:41  IAT4802  ATTEMPTED DEBUG OPTIONS ARE AS FOLLOWS
14:51:41   DEBUG=IJS,JST
14.51.41  IAT4401  LOCATE FOR STEP=STEP1   DD=DD1   DSN=DATA.ONE
14:51:41  IAT4402  UNIT=3380     , VOL (S)=V3380A
14:51:41  IAT4401  LOCATE FOR STEP=STEP1   DD=DD2   DSN=DUMMY.DS
14:51:41  IAT4402  UNIT=3480     , VOL (S)=V3380A
14:51:41  IAT4811   *STP/DD   PSTP/DEV MT/DV DISP/STP#  TYPE   1ST VOL   BK-REF SCR   RING DSN 20(BYT)
14:51:41  IAT4812   *STEP 1001
14:51:41  IAT4812     DD1      3380   Y/Y  OLD/NONX   DISK  V3380A   (NONE)   NO  NO   DATA.ONE
14:51:41  IAT4812     DD2      3480   N/N  OLD/NONX   DISK  V3480A   (NONE)   NO  NO   DUMMY.DS
14:51:41  IAT4810     JOB TERMINATED BY JES JESTEST FACILITY
```

Sample JCL used to invoke the JSTTEST facility for MVS-managed devices:

```
//TESTCS  JOB  'ACCT01','P.WEIGEL',MSGCLASS=A,MSGLEVEL=(1,1)
//STEP1   EXEC  PGM=JSTTEST
//DD1     DD    DSN=SMSX.NEW.DATA.SET01,DISP=(NEW,DATLG),
//              STORCLAS=STANDARD,DATACLAS=PDS,MGMTCLAS=NEVER
//DD2     DD    DSN=SMSX.NEW.DATA.SET01,DISP=SHR
//STEP3   EXEC  PGM=IEFBR14
//DD3     DD    DSN=SMSX.NEW.DATA.SET01,DISP=(SHR,DELETE)
//*
```

Output generated from the JSTTEST facility for MVS-managed devices using the sample JCL:

```
IAT6140  JOB ORIGIN FROM GROUP=LOCAL    , DSP=CR   , DEVICE RDR012,  012
11:04:00  IAT4811   *STP/DD   PSTP/DEV MT/DV DISP/STP# TYPE   1ST VOL   BK-REF  SCR   RING   DSN(20BYT)
11:04:00  IAT4812   *STEP                       1001
11:04:00  IAT4812     DD1         N/A    N/N     NEW/NONX    SMS  N/A   (NONE)  NO  YES
SMSX.NEW.DATA.SET01
11:04:00  IAT4812     DD2         N/A    N/N     SHR         SMS  N/A   DD1     NO   NO
SMSX.NEW.DATA.SET01
11:04:00  IAT4812     DD3         N/A    N/N     SHR         SMS  N/A   DD1     NO   NO
SMSX.NEW.DATA.SET01
11:04:00  IAT4810     JOB TERMINATED BY JES JESTEST FACILITY
```

Chapter 2. General Diagnosis

This chapter describes two general areas of diagnosis in the following order:

- General System Diagnosis
- Formats of Trace Tables and JES3 Diagnostic Facilities

General System Diagnosis

This chapter discusses diagnostic facilities that you can use to obtain information about JES3.

Display DJC Network (DISPDJC)

Use the DISPDJC facility to display the status of a dependent job control network on a printer.

For **each network** the DISPDJC facility displays:

- The name of the network.
- The FLAG1 parameters as defined in the job network control block (JNCB).
- The FLAG2 parameters as defined in the JNCB.
- The number of jobs in the designated network.
- The number of jobs in the designated network that have completed.

For **each job in the network** the DISPDJC facility displays:

- The job name.
- The current status of the job (completed, active, inactive, or in network hold).
- The names of the jobs that are successors to the designated job and cannot be processed until its completion.
- The name and net-id of a successor in another network.
- The number of predecessor jobs that must complete before the designated job can be processed.
- The action to be taken when a predecessor job ends normally or abnormally.
- The FLAG1 attributes as defined in the network control block (NCB). The following are possible values for FLAG1:

  X'01'
  the successors to the job were updated

  X'02'
  the JCT is no longer in HOLD

  X'04'
  the job was updated by a predecessor

  X'08'
  the job completed but had to be resubmitted

  X'10'
  the job did not include a MAIN scheduler element (SE)

  X'20'
  an error occurred during CI that caused the job to fail

  X'40'
  the job has completed

  X'80'
  no changes have been made to the job's control blocks and the control blocks do not have to be written back to spool.

- The FLAG2 attributes as defined in the NCB. The following are possible values for FLAG2:

  X'01'
  : the job abnormally ended

  X'02'
  : the job has been placed in NET HOLD

  X'04'
  : the NCB is missing a successor

  X'08'
  : the job is missing a successor in a sub-net

  X'10'
  : the job must be resubmitted

  X'20'
  : the NCB does not contain any information

  X'40'
  : the job segment scheduler (JSS) processed a NCB that did not contain any information

  X'80'
  : the job has been placed in operator hold.

- The FLAG3 attributes as defined in the NCB.
- The FLAG4 attributes as defined in the NCB.
- The FLAG5 attributes as defined in the NCB. The following are possible values for FLAG5:

  X'80'
  : when the job is completed processing, it will release a dedicated device

  X'40'
  : input service is currently processing the job

  X'20'
  : the completed count has been updated

  nn
  : is the number of successors for the job.

- The FLAG6 attributes as defined in the NCB.

Example

```
                        ***  NET-ID=DJC2       ***     98.089   15:08:36
** JNCB PARAMETERS **  FLAG1=00    FLAG2=00    TOTAL COUNT=0000027  COMPLETED=0000000  PENDING=0000000
                                         H/R      ACTION       ATTRIBUTES    ATTRIBUTES
    JOB NAME    STATUS    SUCCESSORS    COUNT    PARAMETERS    FLAG1  FLAG2  FLAG3  FLAG4  FLAG5  FLAG6
    J24       IN NET HOLD  J28          00001   NRML=D ABNML=D   00     00     24     00     00     88
                           J29
    J214      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J224      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J25       IN NET HOLD  J210         00001   NRML=D ABNML=D   00     00     24     00     00     88
                           J211
    J215      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J26       IN NET HOLD  J212         00001   NRML=D ABNML=D   00     00     24     00     00     88
                           J213
    J225      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J27       IN NET HOLD  J214         00001   NRML=D ABNML=D   00     00     24     00     00     88
                           J215
    J226      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J216      IN NET HOLD               00001   NRML=D ABNML=D   00     00     24     00     00     88
    J28       IN NET HOLD  J216         00001   NRML=D ABNML=D   00     00     24     00     00     88
                           J217
```

The Monitor DSP

You can use the monitor DSP to monitor a resource or queue based on information you specify. JES3 starts the MONITOR DSP and monitors various queues and resources automatically.

The information that the monitor DSP displays includes both of the following:

- The queue or resource the job or Function Control Table (FCT) is waiting for.
- The amount of time the job or FCT has been waiting.

The monitor DSP provides you with the ability to monitor how long a job or FCT has been waiting for a specific JES3 function or resource. For example, if you want to know when a job has been waiting for a CI DSP for more than five minutes, you can set the monitor DSP to issue a message when five minutes have elapsed.

The following is a chronological example of the monitor DSP in use:

10:01 AM

You issue the *START,MONITOR,DISPLAY command to examine the current monitoring parameters.

The system issues the following messages:

```
IAT6399 ID       INTERVAL THRESHOLD COUNT SUMMARY STATUS
IAT6400 RESOURCE   005       001     ALL   YES    INACTIVE
IAT6400 LOCATE     005       001     ALL   YES    INACTIVE
IAT6400 CIFSS      005       001     ALL   YES    INACTIVE
IAT6400 SYSSELQ    005       005     ALL   YES    INACTIVE
IAT6400 ALLOCQ     000       000     ALL   YES    INACTIVE
IAT6400 VERIFYQ    000       000     ALL   YES    INACTIVE
IAT6400 SYSVERQ    005       001     ALL   YES    INACTIVE
IAT6400 DSPWAIT    005       005     ALL   YES    INACTIVE
IAT6400 JSSWAIT    005       005     ALL   YES    INACTIVE
IAT6400 IOWAIT     030       001     ALL   YES    INACTIVE
```

You see that CIFSS is being monitored among others.

10:02 AM

You want to increase the frequency at which the C/I FSS queue is monitored from once every 5 minutes to once every minute.

You modify the monitoring parameters as follows:

```
*START,MONITOR,ID=CIFSS,INTERV=1
```

The system issues:

```
IAT6402  MONITOR MODIFY PROCESSING COMPLETE
```

10:03 AM

The PAYROLL job is scheduled to the C/I FSS.

The monitor DSP examines the C/I FSS queue because the one minute interval has expired and finds that no jobs have been waiting for more than one minute. The monitor DSP displays no information.

10:04 AM

The AMORT job is scheduled to the C/I FSS.

The monitor DSP examines the C/I FSS queue and finds that the PAYROLL job has been scheduled for one minute. Since you issued SUMMARY=YES, the system issues the following messages:

```
IAT6395  00001 REQUEST(S) ACTIVE IN A C/I FSS
IAT6396  JOB PAYROLL (JOB123400) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 01 MINUTES 00 SECONDS
```

10:05 AM

The monitor DSP examines the C/I FSS queue and finds that the PAYROLL job has been scheduled for two minutes and the AMORT job has been scheduled for one minute.

The system issues the following messages:

```
IAT6395  00001 REQUEST(S) ACTIVE IN A C/I FSS
IAT6396  JOB PAYROLL (JOB01234) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 02 MINUTES 00 SECONDS
IAT6396  JOB AMORT  (JOB1235) ACTIVE IN A C/I FSS
IAT6398  0000 HOURS 01 MINUTES 00 SECONDS
```

Dump core

Use the dump core (DC) facility to do the following:

- Display and then modify data in main storage
- Intercept program flow during processing
- Format control blocks for debugging purposes
- Find the location of a module in storage
- Display a requested portion of JES3's storage
- Display the contents of a spool record.

To use the dump core facility, perform the following:

1. Determine where the output from the dump core DSP should be routed. You specify the destination of the output by using the OUT= parameter on the *CALL DC command when you invoke the dump core facility or any *START DC command.
2. Invoke the DC DSP using the *CALL DC command.
3. Use Table 3 on page 30 to locate the task you would like to perform and then the appropriate parameters you should use on the DC command to perform the task.

Table 3. Dump core commands

If you want to:		Use this parameter:	On this command:
invoke dump core			*CALL,DC
specify the device DC output should be routed to		OUT=	*CALL,DC *START,DC
display:	registers at a specific address	TREGS	*START,DC
	registers with snapshots at a specific address	REGSON	*START,DC
	all active traps	ACTIVE	*START,DC
	dynamic parch area within IATUTDC	PATCH	*START,DC
	storage at a specific address	PTRAP	*START,DC
locate a module		FIND	*START,DC
locate a module in a load list		FIND=mod, SEQ=nn	*START,DC
display storage at a specific address		C=adr	*START,DC
alter data in storage		C=adr	*START,DC
set a trap at a specific address		C=adr	*START,DC
display a job's control blocks or display JES3 control blocks		OPTION=	*START,DC

Table 3. Dump core commands (continued)		
If you want to:	**Use this parameter:**	**On this command:**
display the contents of a spool record	SPADDR=mmmm.rrrrrrr	*START,DC
intercept JES3's processing	TRAP=adr	*START,DC
restart JES3 after DC waits at an address	TRAPGO	*START,DC
activate a trap	TRAPON	*START,DC
deactivate a trap	TRAPOFF	*START,DC
clear all waiting traps	TRAPGO	*START,DC

4. Determine if you will be setting traps to examine data at critical points during the processing of the program.
5. To clear any traps that are waiting, enter a *START,DC,TRAPGO command.
6. After you have identified where JES3 can be experiencing a problem, end the dump core DSP using the *CANCEL,DC command.

The following options can be used with the *START,DC, OPTION= parameter. See *z/OS JES3 Commands* for more information.

OPTION=(name ,name1 ,...)
The name of dump contents of storage option(s) to be displayed.

DMP
Causes all the standard formatting to be performed just as though a completely formatted JES3 dump was requested without system intervention.

INS
Displays information about internal reader control blocks.

SNP
Causes a dump of job-related control blocks to be recorded on the output device.

(SNP=name)
Causes a dump of a specific job-related control block to be recorded on the output device. You can request any one of the following control blocks:

Name
Dumps the

ARL
Allocation resource list

ASR
Available spool records

JDAB
Job description accounting block

JDS
Job data set control block

RQ
Resqueue

FRP
Format parameter buffer

JST
Job summary table

JVT
Job volume table

TAT
Job or data set track allocation table

MOSE
Master output service element

OSE
Output service element

DIAG
Displays a formatted OSE, which includes such information as:

- class
- forms
- queue
- destination

Use **caution** when specifying this parameter. Control block displays are potentially very long, and output directed to the operator's console can disrupt normal operator/system interaction.

Depending on the command that you issue, the dump core facility responds with at least one of the following:

- Formatted storage
- Unformatted storage
- Messages

JESJCLIN utility

The JESJCLIN utility runs as a dynamic service program (DSP) in the JES3 global address space, and helps manage JESJCLIN data sets for jobs whose JCL includes in-stream SYSIN data sets.

In-stream SYSIN data are stored in spool data sets and are referenced from the JESJCLIN data set by special JES3-generated records called SYSIN pointer records. Although technically not part of the JESJCLIN data set, they were included in the JESJCLIN data set's record count. Beginning with APAR OA33040, the records were no longer included in the count, which interfered with some programs' ability to navigate through JESJCLIN files. APAR OA34642 corrected this issue by defining the DATCTLRD (IATYDAT) flag to identify records, including SYSIN pointer records, that are not included in a data set's records count.

The JESJCLIN utility addresses JESJCLIN data sets that were created after OA33040 was applied, but before OA34642 was applied. It examines a job's JESJCLIN data set and turns on the DATCTLRD flag for SYSIN pointer records that are not included in the data set's record count. JESJCLIN data sets converted by the utility have the same internal format as those created after OA34642 was applied. Data sets not converted by the utility have an internal format that is the same as JESJCLIN data sets that were created before OA33040 was applied.

The JESJCLIN utility is invoked using the `*CALL,JU,J=`*xx* command. See z/OS JES3 Commands for additional information.

Displaying JES3 Statistics (Statistics Data Area)

Statistics are collected by JES3 in a control block called the statistics data area (SDA). The statistics data area consists of a header (mapped by IATYSDA) and function dependent extensions.

The following types of statistics are collected:

- Initialization related statistics (mapped by macro IATYSDA1)

  The following is an example of the type of information collected about JES3 initialization:

  – Total initialization time

  - Times for different phases of initialization (job validation, read initialization statements, RJP initialization, device initialization)
  - Number of jobs in the queue (total, DJC, in main, in output service)
  - I/O counts during job validation for different control blocks
- Restart/Connect related statistics (mapped by macro IATYSDA2)

  The following is an example of the type of information collected about JES3 restart/connect processing:

  - MDS restart time and number of jobs processed
  - Total connect time for each system
  - Times for the different phases of connect for each system (for example, initial verify time)
- Output service related statistics (mapped by macro IATYSDA3)

  The following is an example of the type of information collected about output service:

  - Output service restart time

You can use dump core to dump the information in the Statistics Data Area by issuing the following command:

```
*S,DC,OPTION=SDA
```

The following is an example of the output that is produced when the *S,DC,OPTION=SDA command is issued.

```
    *** STATISTICS DATA AREA ENTRIES ***
SDA ENTRY - 04F00460 - INITIALIZATION
00000000-E2C4C1C5 00010000 00000170 C9D5C9E3  C9C1D3C9 E9C1E3C9 D6D54040 40404040
*SDAE........INITIALIZATION......*
00000020-40404040 40404040 40404040 00000000  00000000 00000000 00000000 00000000
*................................*
00000040-84010000 00000000 AE8E2D18 6C553001  AE8E2D79 21550809 AE8E2D3C 1F300F09
*d.......__......__......__......*
00000060-AE8E2D3C 22F92804 AE8E2D3C 25551607  AE8E2D3C 66687109 00000000 00000000
*__...9..__......__..............*
00000080-00000000 00000000 AE8E2D3C DA7A5804  AE8E2D50 5B19BC06 AE8E2D50 5CEE9504
*................................*
000000A0-AE8E2D78 72CBA501 AE8E2D50 5D1E7604  AE8E2D53 16DA2807 AE8E2D53 7031D604
*__..............................*
000000C0-AE8E2D56 5CB89504 AE8E2D56 673ECA09  AE8E2D5C 4261B809 AE8E2D5C 44735B03
*_...............................*
000000E0-AE8E2D61 737AF005 AE8E2D61 737AF805  AE8E2D62 D4F27307 AE8E2D64 29CCF908
*_...............................*
00000100-AE8E2D75 E1910A08 00000000 00000000  00000000 00000000 00000000 00000000
*__..............................*
00000120-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000140-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000160-00000000 00000000 00000000 00000000
*................................*

SDA ENTRY - 04F005D0 - RESTART (CONNECT)
00000000-E2C4C1C5 00010000 000008E0 D9C5E2E3  C1D9E340 4DC3D6D5 D5C5C3E3 5D404040 *SDAE.......\RESTART
(CONNECT)   *
00000020-40404040 40404040 40404040 00000000  00000000 00000000 00000000 00000000
*................................*
00000040-AE8E2DB8 F938B205 AE8E2DB8 FB763107  AE8E2DB8 FB8C0C07 00000000 00000000
*__.½....__.½_....__.½_-..........*
00000060-AE8E2DB9 46382505 00000000 00000000  00000000 00000000 00000000 00000000
*__._............................*
00000080-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
000000A0-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
000000C0-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
000000E0-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000100-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000120-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000140-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000160-AE8E2DD0 F0293401 00000000 00000000  00000000 00000000 00000000 00000000
*__..............................*
00000180-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
    .
    .
    .
000008C0-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*

SDA ENTRY - 04F00EB0 - OUTPUT SERVICE
00000000-E2C4C1C5 00010000 00000050 D6E4E3D7  E4E340E2 C5D9E5C9 C3C54040 40404040 *SDAE.......&OUTPUT
SERVICE......*
00000020-40404040 40404040 40404040 00000000  00000000 00000000 00000000 00000000
*................................*
00000040-AE8E2D91 398BCC05 00000000 00000000
*__.j.»"........................*
```

In order to determine what information is present in the SDA, you need to assemble macro IATYSDA and match the offsets in the assembly to the offsets in the Dump Core Output.

Displaying Initialization Related Information

When the initialization stream is read, the initialization statements are converted into an internal format and written to the spool or the checkpoint data set.

There are two types of information is created from the initialization statements:

1. Intermediate text (ITX) - Intermediate text is a spool file that contains information from an initialization statement. Not all initialization statements cause an intermediate text file to be created.
2. Initialization Checkpoint Record (ICP) - The Initialization Checkpoint Record contains the checkpointed portions of the following control blocks:
   - IATYTVT - Transfer Vector Table (TVT)
   - IATYTVTC - Checkpointed TVT Extension (TVTC)
   - IATYSVT - Subsystem Vector Table (SSVT)
   - IATYOSD - Output Service Data Area (OSD)
   - IATYINT - Initialization Data CSECT (INT)

   Information that does not go into the intermediate text files are typically put into one the above control blocks. The checkpointed portions of those control blocks are used to create the ICP which is written to the JES3 checkpoint data set.

You can use Dump Core to dump the intermediate text files by issuing one of the following commands:

```
*S,DC,OPTION=ITX            - Dump all of the intermediate
                                text files.
*S,DC,OPTION=(ITX=fileid)   - Dump a specific intermediate
                                text file.
```

To dump a specific intermediate text file, an intermediate text file id must be specified. The following table shows the file ids that can be specified and the mapping macros or DSECT names that are used to map the intermediate text records:

File id on *S,DC,OPTION= Command	Initialization Statement(s)	Mapping Macro or DSECT location	Description
CIPARM	CIPARM	IATYCTX	CIPARM intermediate text

CLASS	`CLASS (MDEPTH parameter)`
	`CLASS (MLIMIT parameter)`
	`CLASS (TLIMIT parameter)`
	`CLASS (SYSTEM parameter)`
	`GROUP (EXRESC)`
	`SELECT`
		`DSECT MDTABLE in IATINCL`
		`DSECT MLTABLE in IATINCL`
		`DSECT MLTABLE in IATINCL`
		`DSECT MCSTABLE in IATINCL`
		`DSECT MGXSTART in IATYMGP`
		`IATYMPS`
		`DSECT SELCGST in IATINSL`
			`See initialization statement description`
			`Each record is proceeded by a two byte id that identifies the type of record`
			`CLASS(MDEPTH) - 5`
			`CLASS(MLIMIT) - 7`
			`CLASS(TDEPTH) - 6`
			`CLASS(SYSTEM) - 10`
			`GROUP(EXRESC) - 8`
			`SELECT(class/group list) - 9`
			`SELECT(other) - 2`

COMPACT	COMPACT	IATYCTE	COMPACT intermediate text
CONSTD	CONSTD	Label CSTDREC in IATINPK	CONSTD intermediate text
DEADLINE	DEADLINE	IATYDLT (DSECT DLTENTRY)	DEADLINE intermediate text
DYNALDSN	DYNALDSN	IATYDYD	DYNALDSN intermediate text
FENCE	GROUP (EXRESC and DEVPOOL parameters)	IATYDFC	Device fence intermediate text from EXRESC and DEVPOOL parameters
FSSDEF	FSSDEF	DSECT FDEFAREA in IATINFS	FSSDEF intermediate text

File id on *S,DC,OPTION= Command	Initialization Statement(s)	Mapping Macro or DSECT location	Description
HWSNAME	HWSNAME	IATYHTX	HWSNAME intermediate text
MAINPROC	MAINPROC CLASS (except MDEPTH MLIMIT, TLIMIT, SYSTEM parameters) GROUP (except EXRESC parameter)	IATYMPE IATYMCL IATYMGP	See initialization statement description Each record is proceeded by a two byte id which identifies the type of record MAINPROC - 1 CLASS - 3 GROUP - 4
MSGROUTE	MSGROUTE	IATYINM	MSGROUTE intermediate text
NETSERV	NETSERV	DSECT NTSVSTRT in IATYNTSV	NETSERV intermediate text
NJERMT	NJERMT	DSECT NJEENTRY in IATYNJY	NJERMT intermediate text
RESDSN	RESDSN	None - first byte = length, remaining bytes = data set name	RESDSN intermediate text
RJPLINE	RJPLINE	DSECT RLNSTART in IATYRLT	RJPLINE intermediate text
RJPTERM	RJPTERM	DSECT RTMSTART in IATYRLT	RJPTERM intermediate text
RJPWS	RJPWS	DSECT RTMSTART in IATYRLT	Resident Line/Terminal table for RJPWS
RMTCONS	CONSOLE	IATYINC	CONSOLES intermediate text for remote consoles
SETNAME	SETNAME	DSECT STNAMES in IATINMD	SETNAME intermediate text
SETPARAM	SETPARAM	DSECT SPARM in IATINMD	SETPARAM intermediate text
SETACC	SETACC	Label ACCVOL in IATINMD	SETACC intermediate text
SETRES	SETRES	Label SETRESVL in IATINMD	SETRES intermediate text
SETUNITS	DEVICE (XTYPE and XUNIT parameters)	DSECT SETINIT in macro IATYINT	SETUNITS intermediate text
SOCKET	SOCKET	DSECT SOCKSTRT in IATYSOCK	SOCKET intermediate text
SUPUNITS	DEVICE (parms other than XTYPE, XUNIT)	IATYSUP	SUPUNITs intermediate text
SYSOUT	SYSOUT	IATYSCT	SYSOUT intermediate text
WSB	RJPWS	IATYWSB	Workstation Blocks for SNA RJP workstations

File id on *S,DC,OPTION= Command	Initialization Statement(s)	Mapping Macro or DSECT location	Description
USER1	User defined	User defined	User defined
USER2	User defined	User defined	User defined
USER3	User defined	User defined	User defined
USER4	User defined	User defined	User defined
USER5	User defined	User defined	User defined
USER6	User defined	User defined	User defined
USER7	User defined	User defined	User defined
USER8	User defined	User defined	User defined
USER9	User defined	User defined	User defined
USER10	User defined	User defined	User defined

In the following example, the *S,DC command is used to dump the CIPARM intermediate text:

```
*S,DC,OPTION=(ITX=CIPARM)
```

```
*** INTERMEDIATE TEXT - CIPARM
RECORD NUMBER = 0000001 - CIPARM
00000000-F0F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F2F1  C5F0F0F0 F1F1C1F0 F5F1F2D2 00000000
*0140000350051221E00011A0512K*
00000020-000000
*                              *

RECORD NUMBER = 0000002 - CIPARM
00000000-C9F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F3F1  C5F0F0F0 F1F1E3F0 F5F1F2D2 00000000
*I140000350051231E00011T0512K*
00000020-000000
*                              *

RECORD NUMBER = 0000003 - CIPARM
00000000-E2F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F3F1  C5F0F0F0 F1F1C4F0 F5F1F2D2 00000000
*S140000350051231E00011D0512K*
00000020-000000
*                              *

RECORD NUMBER = 0000004 - CIPARM
00000000-E3F1F4F0 F0F0F0F3 F5F0F0F5 F1F2F3F1  C5F0F0F0 F1F1C9F0 F5F1F2D2 00000000
*T140000350051231E00011I0512K*
00000020-000000
*                              *
```

In the following example, the *S,DC command is used to dump the Initialization Checkpoint Record.

```
    *S,DC,OPTION=ICP
```

```
*** INITIALIZATION CHECKPOINT RECORD (ICP) ***
INITIALIZATION CHECKPOINT RECORD HEADER
00000000-C9C3D740 00000000 000018C2 AE8E2D78  923CE201 00000000 00000000 00000000
*ICP ............................*
00000020-0097113F 14063053 0000003C 000004D0  00000DE6 00001122 000011C2
*................................*

INITIALIZATION CHECKPOINT RECORD DATA - IATYTVT
00000000-0000048C E3E5E340 0097113F 14063053  00000000 00000000 00000000 00000000
*....TVT.........................*
00000020-00000000 00000000 00000000 00000000  00000000 00000000 000C0305 00006000
*................................*
00000040-00000000 000000C8 00000064 000003E8  000005DC 00000FF4 FF000000 00000000
*.......H.......Y.......4........*
    .
    .
    .
00000480-00000000 00000000 00000000 000000E0  00000000
*................................*

INITIALIZATION CHECKPOINT RECORD DATA - IATYTVTC
00000000-0000090E E3E5E3C3 C9C1E3C7 D9E5E3C3  C8D1E2F6 F6F0F440 F0F361F1 F461F9F7
*....TVTCIATGRVTCHJS6604 03/14/97*
00000020-F1F54BF3 F3400000 04F03D26 E3E5E340  C3C8C5C3 D2D7D6C9 D5E3C5C4 40C5E7E3 *15.33.......TVT
CHECKPOINTED EXT*
00000040-C5D5E2C9 D6D54040 00000000 00000000  00000000 0000090E 00000000 C3D5C4C2
*ENSION......................CNDB*
    .
    .
    .
00000900-00000000 00000000 00000000 00000000  00000000 0000
*................................*

NITIALIZATION CHECKPOINT RECORD DATA - IATYOSD
00000000-00000334 D6E2C440 0000D6E2 C440F5F0  F8F14040 4040F640 40404040 4040F1D7
*....OSD...OSD.5081....6.......1P*
00000020-D9E34040 4040D7D5 40404040 4040D3C9  D5C54040 40400420 301C0800 00000000
*RT....PN......LINE..............*
00000040-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
    .
    .
    .
00000320-00000000 00000000 00000000 00000000  00000000 00000000 00000000
*................................*

INITIALIZATION CHECKPOINT RECORD DATA - IATYSVT
00000000-00000098 E2E5E340 00000FF4 00000FC8  00007FFF 0000FFFF 00001000 00FFFFFF
*....SVT....4...H................*
00000020-55553200 00002710 00000000 FFFFFFFF  00000000 000002D6 00000000 00000000
*................................*
00000040-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
00000060-00000000 00000012 01F40FCC 0001003C  00C80BB8 001F0004 00000000 00000000
*.........4.......H..............*
00000080-00000000 00000000 00000000 04000000  00000000 00485880 80000000 00000000
*................................*

INITIALIZATION CHECKPOINT RECORD DATA - IATYINT
00000000-000006F8 C9D5E340 00020000 13140490  80000000 0001001D 00002119 0003BFB8
*...8INT.........................*
00000020-000204C0 000000EA 00052BD6 00030074  00000017 000009F8 00040000 00000000
*................................*
00000040-00000000 00050014 00000009 000000A0  00060000 00000000 00000000 00070027
*................................*
    .
    .
    .
000006E0-00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*................................*
```

Displaying output scheduling elements (OSEs) for a job

You can use the dump core command to provide diagnostic information for a job's output scheduling element (OSE) control block. When you use the dump dore command and the keyword DIAG with the OPTION=(SNP=OSE) keyword, you will get a formatted display of the OSE. The formatted version of the OSE shows characteristics associated with the scheduling of SYSOUT to print devices. Using the dump core command in this way greatly reduces the manual formatting of a 'raw' OSE dumped from spool. Below is the JCL for a job that creates SYSOUT on the WTR queue, the HOLD queue, and the BDT queue. The JCL includes the //OUTPUT and //*FORMAT statements.

```
//MARIOA       JOB    MSGLEVEL=(1,1),MSGCLASS=A
//OUT1         OUTPUT MODIFY=(MODA),FORMDEF=SPRNT
//MARIOA       JOB    MSGLEVEL=(1,1),MSGCLASS=A
//OUT1         OUTPUT MODIFY=(MODA),FORMDEF=SPRNT
//*FORMAT      PR,DDNAME=SYSUT2,MODIFY=(MODB)
//STEP1        EXEC    PGM=IEBGENER
//SYSIN        DD      DUMMY
//SYSPRINT     DD      SYSOUT=A,DEST=SAPIAPPL
//SYSUT2       DD      SYSOUT=A,DEST=SAPIAPPL
//SYSUT1       DD      *
   --------------------
   |                  |
   |   STEP1.SYSUT2   |
   |                  |
   --------------------
//STEP2        EXEC    PGM=IEBGENER
//SYSIN        DD      DUMMY
//SYSPRINT     DD      SYSOUT=(Z,SAPIUSER)
//SYSUT2       DD      SYSOUT=(Z,SAPIUSER),OUTPUT=*.OUT1
//SYSUT1       DD      *
   --------------------
   |                  |
   |   STEP2.SYSUT2   |
   |                  |
   --------------------
//STEP3        EXEC    PGM=IEBGENER
//SYSIN        DD      DUMMY
//SYSPRINT     DD      SYSOUT=0
//SYSUT2       DD      SYSOUT=A,DEST=NODE5
//SYSUT1       DD      *
   --------------------
   |                  |
   |   STEP3.SYSUT2   |
   |                  |
   --------------------
/*
```

The following dump core display is for the above job's OSE. Note that:

1
The first OSE variable section is marked complete (CMPLT=Y). Data sets JESMSGLG, JESJCL, and JESYSMSG were processed by device PRT002. Therefore, the data set name is not displayed.

2
The //*FORMAT statement exists for all OSEs created from a SYSUT2 DD statement. The //*FORMAT statement was not applied to the SYSUT2 on the HOLD queue. //*FORMAT statements are not applied to SYSOUT on the HOLD queue. Use the *MODIFY,U,NQ=WTR command to move the SYSOUT to the WTR queue to allow the system to apply the //*FORMAT statements to the SYSOUT on the HOLD queue.

3
The SYSUT2 data set for STEP2 has an OSE for the //OUTPUT statement and the //*FORMAT statement. When a data set is directly referenced by a //OUTPUT statement and a //*FORMAT statement, JES3 creates an OSE for both references.

4
FMDF=Y is set to reflect the FORMDEF specification on the //OUTPUT statement for STEP2.SYSUT. This indication suggests that at least one data set entry represented by this variable section contains a FORMDEF specification. This is also true of PAGEDEF and IPADDR.

5
The characteristics for SYSOUT destined for a SNA node are in the NJE data set header. The OSE does not contain this information. Consequently, SYSOUT on the BDT queue does not display SYSOUT characteristics.

```
*S DC OPTION=(SNP=OSE),J=17,DIAG
   ********  TIME=97288.09005085
   ********  JOB=JOB00017 MARIOA
    OSE BUFFER NO. 1     INFORMATION.
   -----------------------------------
   VAR SEC HAS 3   DATA SETS; 3   MARKED DONE
     Q=WTR  CMPLT=Y  SCHD=N  PRTY=2    CLASS=A  OUTST=N          1
     DEST=PRT002    FORM=1PRT      CARR=6         FRMT=N
     TPID=none      PRMD=LINE      USID=++++++++
     OTBN=none      UCS=PN    FLASH=NONE  MODID=NONE
     L=77        PG=0         SR=77        BY=12252
   VAR SEC HAS 1   DATA SETS; 0   MARKED DONE
     Q=WTR  CMPLT=N  SCHD=N  PRTY=2    CLASS=A  OUTST=N
     DEST=SAPIAPPL  FORM=1PRT      CARR=6         FRMT=N
     TPID=none      PRMD=LINE      USID=++++++++
     OTBN=none      UCS=PN    FLASH=NONE  MODID=NONE
     STCK=C  MODRC=0  IPAD=N  XTKW=N  FMDF=N  PGDF=N
     L=4         PG=0         SR=4         BY=4084
       DD=.STEP1.SYSPRINT
       DSN=++++++++.MARIOA.JOB00017.D0000012.?
   VAR SEC HAS 1   DATA SETS; 0   MARKED DONE
     Q=WTR  CMPLT=N  SCHD=N  PRTY=2    CLASS=A  OUTST=N
     DEST=SAPIAPPL  FORM=1PRT      CARR=6         FRMT=Y
     TPID=none      PRMD=LINE      USID=++++++++
     OTBN=none      UCS=PN    FLASH=NONE  MODID=MODB
     STCK=C  MODRC=0  IPAD=N  XTKW=N  FMDF=N  PGDF=N
     L=9         PG=0         SR=9         BY=4084
       DD=.STEP1.SYSUT2
       DSN=++++++++.MARIOA.JOB00017.D0000013.?
   VAR SEC HAS 1   DATA SETS; 0   MARKED DONE
     Q=HLD  CMPLT=N  SCHD=N  PRTY=2    CLASS=Z  OUTST=N
     DEST=ANYLOCAL  FORM=1PRT      CARR=6         FRMT=N
     TPID=none      PRMD=LINE      USID=++++++++
     OTBN=none      UCS=PN    FLASH=NONE  MODID=NONE
     STCK=C  MODRC=0  IPAD=N  XTKW=N  FMDF=N  PGDF=N
     WTRN=SAPIUSER  TSO=N
     L=4         PG=0         SR=4         BY=4084
       DD=.STEP2.SYSPRINT
       DSN=++++++++.MARIOA.JOB00017.D0000014.?
   VAR SEC HAS 1   DATA SETS; 0   MARKED DONE                     2  OSE #1
     Q=HLD  CMPLT=N  SCHD=N  PRTY=2    CLASS=Z  OUTST=Y
     DEST=ANYLOCAL  FORM=1PRT      CARR=6         FRMT=N
     TPID=none      PRMD=LINE      USID=++++++++
     OTBN=none      UCS=PN    FLASH=NONE  MODID=MODA
     STCK=C  MODRC=0  IPAD=N  XTKW=N  FMDF=Y  PGDF=N             4
     WTRN=SAPIUSER  TSO=N
     L=9         PG=0         SR=9         BY=4084
       DD=.STEP2.SYSUT2
       DSN=++++++++.MARIOA.JOB00017.D0000015.?
```

Figure 2. Dump core display for job OSE 1 of 2

```
VAR SEC HAS 1   DATA SETS; 0   MARKED DONE                    3  OSE #2
  Q=HLD  CMPLT=N  SCHD=N  PRTY=2    CLASS=Z  OUTST=N
  DEST=ANYLOCAL  FORM=1PRT      CARR=6         FRMT=Y
  TPID=none      PRMD=LINE      USID=++++++++
  OTBN=none      UCS=PN    FLASH=NONE  MODID=NONE
  STCK=C  MODRC=0  IPAD=N  XTKW=N  FMDF=N  PGDF=N
  WTRN=SAPIUSER  TSO=N
  L=9        PG=0         SR=9         BY=4084
    DD=.STEP2.SYSUT2
    DSN=++++++++.MARIOA.JOB00017.D0000015.?
VAR SEC HAS 1   DATA SETS; 0   MARKED DONE
  Q=BDT  CMPLT=N  SCHD=N  PRTY=2                           5
  BG=BDT00000  BT=SYS  BS=INACTV  SEG=JH
    DD=..*SNAJBHD
    DSN=++++++++.MARIOA.JOB00017.B0810002.?
*********************************************
 OSE BUFFER NO. 2     INFORMATION.
 -----------------------------------
VAR SEC HAS 1   DATA SETS; 0   MARKED DONE
  Q=BDT  CMPLT=N  SCHD=N  PRTY=2                           5
  BG=BDT00000  BT=SYS  BS=INACTV  SEG=DSH
    DD=..*NJEDSHD
    DSN=++++++++.MARIOA.JOB00017.B0B60002.?
VAR SEC HAS 1   DATA SETS; 0   MARKED DONE                  5
  Q=BDT  CMPLT=N  SCHD=N  PRTY=2    CLASS=   OUTST=N
  DEST=NODE5     FORM=          CARR=          FRMT=Y
  TPID=none      PRMD=          USID=++++++++
  BG=BDT00000  BT=SYS  BS=INACTV  SEG=DS
  L=9        PG=0         SR=9         BY=4084
    DD=.STEP3.SYSUT2
    DSN=++++++++.MARIOA.JOB00017.D0000017.?
 VAR SEC HAS 1   DATA SETS; 0   MARKED DONE                 5
   Q=BDT  CMPLT=N  SCHD=N  PRTY=2
   BG=BDT00000  BT=SYS  BS=INACTV  SEG=JT
     DD=..*SNAJBTR
     DSN=++++++++.MARIOA.JOB00017.B09B0002.?
 *********************************************
*IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

Figure 3. Dump core display for job OSE

If you omit the DIAG keyword from the dump core command when displaying the OSE, JES3 displays the 'raw' OSE. Additional information is displayed during this processing. If an OUTPUT statement exists for a data set, the 'raw' scheduler work block (SWB) information is displayed following the OSE data set section it represents. If the 'raw' OSE was displayed for the above job, the OUTPUT statement information would be displayed following the display of the OSE data set section for STEP1.SYSUT2. This SWB information is shown below:

```
OUTPUT    00000000  E2D1D7C6 021C001C D6E4E3D7 E4E34040
 D6E4E3F1 40404040 00000000 00160001  *SJPF....OUTPUT  OUT1    ........*
SWBTU     00000020  0004D4D6 C4C10017 00010000 001D0001
 0006E2D7 D9D5E340                    *..MODA............SPRNT         *
```

Displaying Single Track Table (STT) Information

The single track table (STT) is used to allocate spool space to system related control blocks. Its purpose is to be economical with spool space by allocating only one record at a time instead of an entire track group.

The STT contains the following information:

- DJC net control blocks
- Checkpoint records for:
  - Main Device Scheduler (MDS)
  - Generalized Main Scheduling (GMS)
  - Locate
  - Dynamic allocation
  - Volume unavailable table

- Online devices
- FSS status
- Deadline control blocks
- JESNEWS
- Control blocks for DSP's invoked through the *CALL command
- JOB0 control blocks (for example, JDS and OSE)

The STT is defined using the STT or STTL parameters on the FORMAT and TRACK statements. These parameters allow you to control which spool data sets contain the STT. The STT that is allocated using the FORMAT and TRACK statements is called the preallocated or primary STT. If the preallocated STT fills up, JES3 gets a track group from the default partition and creates an expansion STT. When an expansion STT is created, it is never deleted. Therefore, if you want to control which spool data sets contain STT information, you should define the preallocated STT large enough so that it never expands. See *z/OS JES3 Initialization and Tuning Reference* for more information on allocating the STT.

You can use dump core to display STT information. This is useful for determining which spool records reside on a spool data set that will be replaced or deleted, and for displaying information for diagnostic purposes. The information in the STT can be displayed in one of the following ways:

- *S,DC,OPTION=STT - Formats the spool address and control block identifier associated with each allocated spool record. If the spool record does not have a valid IATYSRF format, the first X'80' bytes of the record will be formatted.
- *S,DC,OPTION=(STT=ALL) - Formats the spool address and control block identifier and also dumps the entire spool record.
- *S,DC,OPTION=(STT=nnnn) - Formats the spool address and control block identifier and also dumps *nnnn* hex bytes of the spool record.
- *S,DC,OPTION=(STT='id') - Formats those spool records in the STT that contain the specified control block identifier. The entire spool record is formatted. The control block identifier must be four characters or less.

Note: When a spool record in the STT is displayed, only the non-zero portion of the spool record is displayed. For example, if a spool record contains zeros starting at offset X'100' into the record, and you request that X'200' be dumped, only X'100' bytes will be dumped.

The following is an example of the output that is produced when the *S,DC,OPTION=STT command is issued:

```
STT SEGMENT: SPOOL1    TOTAL = 00024  AVAIL = 00007
SPOOL RECORD: 0002.0000129D - UNKNOWN
00000000-00020000 129D0000 D1C2E340 00000000 *........JBT ....*
00000010-00000000 00000000 00000000 00020000 *................*
00000020-129D0044 00000299 005C0004 00000000 *.......r.*......*
00000030-5CA2A3A3 0518AAE8 00000000 00000000 **stt...Y........*
00000040-00000000 00020000 01070002 00000108 *................*
00000050-00020000 01000002 000000F5          *...........5    *

SPOOL RECORD: 0002.0000129E - SMR
SPOOL RECORD: 0002.0000129F - SMR
SPOOL RECORD: 0002.000012A0 - JMR
SPOOL RECORD: 0002.000012A1 - JMR
SPOOL RECORD: 0002.000012A2 - JDAB
SPOOL RECORD: 0002.000012A3 - CSB
SPOOL RECORD: 0002.000012A4 - JMR
SPOOL RECORD: 0002.000012A5 - JDAB
SPOOL RECORD: 0002.000012A9 - DYN
SPOOL RECORD: 0002.000012AA - DDC
SPOOL RECORD: 0002.000012AB - VUT
SPOOL RECORD: 0002.000012AC - OCK
SPOOL RECORD: 0002.000012AD - OCK
SPOOL RECORD: 0002.000012AE - OCK
SPOOL RECORD: 0002.000012AF - OCK
SPOOL RECORD: 0002.000012B0 - LCP

STT SEGMENT: SPOOL1    TOTAL = 00012  AVAIL = 00000  DYNAMIC

SPOOL RECORD: 0002.00001249 - GMS
SPOOL RECORD: 0002.0000124A - JDS
SPOOL RECORD: 0002.0000124B - OSE
SPOOL RECORD: 0002.0000124C - JDAB
SPOOL RECORD: 0002.0000124D - OSC
SPOOL RECORD: 0002.0000124E - CSB
SPOOL RECORD: 0002.0000124F - JMR
SPOOL RECORD: 0002.00001250 - JDAB
.
.
.
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

The following is an example of the output that is produced when the *S,DC,OPTION=(STT=10) command is issued:

```
STT SEGMENT: SPOOL1    TOTAL = 00024  AVAIL = 00000
SPOOL RECORD: 0002.0000129D - UNKNOWN
00000000-00020000 129D0000 D1C2E340 00000000 *........JBT ....*

SPOOL RECORD: 0002.0000129E - SMR
00000000-00020000 129E0000 E2D4D940 00000000 *........SMR ....*

SPOOL RECORD: 0002.0000129F - SMR
00000000-00020000 129F0000 E2D4D940 00020000 *........SMR ....*

SPOOL RECORD: 0002.000012A0 - GMS
00000000-00020000 12A00006 C7D4E240 00000000 *........GMS ....*
.
.
.
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

The following is an example of the output that is produced when the *S,DC,OPTION=(STT='OSE') command is issued:

```
STT SEGMENT: SPOOL1    TOTAL = 00024  AVAIL = 00000
STT SEGMENT: SPOOL1    TOTAL = 00012  AVAIL = 00004  DYNAMIC

SPOOL RECORD: 0002.0000124B - OSE
00000000-00020000 124B0001 D6E2C540 00000000 *........OSE ....*
00000010-00000000 00000000 5CA2A3A3 00600060 *........*stt.-.-*
00000020-00000000 00000000 00000000 00000000 *................*
00000030-00000000 00000000 00000000 00000000 *................*
00000040-00000000 00000000 00000000 00000000 *................*
00000050-00000000 00000000 00000000 00000000 *................*
00000060-FFFFFFFF                            *....            *
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

Displaying contents of a spool record

When diagnosing problems, it may be useful to view the contents of a spool record. You can use dump core to dump the spool record having a spool address of *mmmm.rrrrrrrr* by issuing the following command: `*S,DC,SPADDR=mmmm.rrrrrrrr`

- The *mmmm* portion of the spool address is the spool extent address number (module) where the record resides.
- The *rrrrrrrr* portion of the spool address is the spool record number within the spool extent.

To display the contents of storage, the KEY=password must first be specified when issuing the *CALL command for the function. The following is an example of the output that is produced when you issue *S,DC,SPADDR=0002.0000124B:

```
SPOOL RECORD: 0002.0000124B
00000000-00020000 124B0001 D6E2C540 00000000 *........OSE ....*
00000010-00000000 00000000 5CA2A3A3 00600060 *........*stt.-.-*
00000020-00000000 00000000 00000000 00000000 *................*
00000030-00000000 00000000 00000000 00000000 *................*
00000040-00000000 00000000 00000000 00000000 *................*
00000050-00000000 00000000 00000000 00000000 *................*
00000060-FFFFFFFF                            *....            *
IAT7921 ISSUE START/CANCEL/RESTART DC REQUEST
```

Note: When a spool record is displayed, only the non-zero portion of the spool record is displayed. For example, if a spool record contains zeros starting at offset X'100' into the record, and you request that X'200' be dumped, only X'100' bytes will be dumped.

JES3 control statement tracking

JES3 is instrumented to report the use of JES3 control statements (JECL) in jobs that have been submitted to the system. Occurrences of JES3 JECL statements in a job stream will be reported during input service using the Generic Tracker macro GTZTRACK. When GTZ tracking is enabled, JES3 will record GTZ data identifying the JES3 JECL statements found within a job stream. See JES3 control statement tracking in *z/OS MVS Diagnosis: Tools and Service Aids* for a description and the layout of the JES3 generated GTZ tracking records.

Format of trace tables and JES3 diagnostic facilities

The following sections describe the format of trace tables and JES3 diagnostic facilities.

Format of a JES3 event trace table

The JES3 event tracing facility allows the system programmer to obtain diagnostic information pertinent to a JES3 system failure. The information appears in the JES3 abend dump each time an abend dump is displayed. In addition, the operator can also request that the information be displayed on the console.

JES3 uses up to four separate trace tables that are merged during abend formatting:

- EVENT
- NUCPATH
- AUXPATH
- DSPACE

The DSPACE is activated by the *MODIFY,E,START= *tracename* command. An IBM Service Representative may ask you to activate the trace when additional tracing information is required.

The DSPACE trace requires:

- Sufficient paging space allocated to hold all the data space pages. The default size of the data space is 10 megabytes.
- Sufficient amount of space in your dump data sets (if those data sets are pre-allocated).

The trace is deactivated when the *MODIFY,E,STOP= *tracename* command is entered or when JES3 is stopped.

You can request that a subset of tables be used for formatting by specifying the TABLE keyword on the IPCS VERBX JES3 command. For example:

```
VERBX JES3 'OPTION=TRC,TABLE=(EVENT,NUCPATH)'.
```

You can also limit the trace format to specific identifiers. For example:

```
VERBX JES3 'OPTION=TRC,ID=(37,38,39)'.
```

The trace table can contain one or more entries. Each entry represents an event that occurred in the address space. There is a unique identifier assigned to each JES3 event. JES3 traces all events, however, the installation can control the events that are traced through the use of modify commands. For additional information on the commands used to trace events see z/OS JES3 Commands.

Each entry contains a header that may be followed by additional information, such as the contents of the registers at the time of the trace or data in a work area. The header for an entry contains at least the following information:

- The FCT that was active when the trace was taken
- A descriptor that identifies the function being traced
- The name of the module that issued the trace request
- The address of the active FCT
- A time stamp
- A identification number
- The address of the task control block (TCB)

The C/I FSS address space has its own trace table in private area subpool 230 managed by a copy of module IATGRTX loaded into the FSS address space. When formatting a C/I FSS address space, the events that occurred in the C/I FSS address space are traced.

Additionally, all FSS address spaces (both C/I and WTR) have a private FSS trace table, which is contained in load module IATFCTR. These traces cannot be affected by the *F,E command.

For each trace id, Table 4 on page 45 provides:

- The module that issues the IATXTRC macro to record the event
- A description of the event
- Information in the entry other than the header for the entry

Table 4. JES3 trace events

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
1	IATGRTX	*F E,TRAP=nnnnnn and location nnnnnn has been reached	None
24	IATDMNC	ZEROCORE	**1:** Return address **2:** Address of entry point **3:** Address area **4:** Count
25	IATDMGB	I/O completion	**1:** Address of data queue element

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
26	IATDMGB	USAM track allocation	**1:** Address of staging area
27	IATDMDT	MOVEDATA	**1:** Return address **2:** TO address **3:** FROM address **4:** Count
28	IATGRSV	Entry to ASAVE (CALL)	**1:** Register 13 from calling routine **2:** Return address **3:** Entry point to called routine **4:** Register 0 **5:** Register 1 **6-16:** Registers 2-12 from calling routine (register 10 is caller's base)
29	IATGRSV	Exit from ASAVE (RETURN)	**1:** Address of save area from pool **2:** Return address to calling routine (based on return code) **3:** Register 15 from called routine **4:** Register 0 from called routine **5:** Register 1 from called routine **6-16:** Registers 2-12 of the calling routine
30	IATGRCT	Ready DSP dispatched by MFM	**1:** Posted ECF address **2:** Posted ECF content
32	IATSIEM	End-of-memory call	**1-7:** Registers 2-8 **8:** Address of SSVT **9-35:** SEL data, starting at label SELSEC1

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
37	IATGRCT	IATXELA macro	**1:** Register 14 - return address **2:** Register 15 - entry point of the routine **3:** Register 0 - address of ECF **4:** Register 1 - ECF mask **5:** Register 2 - address of ECF list control block (IATYELB)
38	IATGRCT	IATXELD macro	**1:** Register 14 - return address **2:** Register 15 - entry point of the routine **3:** Register 0 - relative position number of ECF entry **4:** Register 1 - address of ECF list control block (IATYELB)
39	IATGRCT	IATXELS macro	**1:** Register 14 - return address **2:** Register 15 - entry point of the routine **3:** Register 0 - relative position number of ECF entry **4:** Register 1 - address of ECF list control block (IATYELB)
40	IATDMNC	IATXIOX macro	**1:** Register 14 - Return address **2:** Register 15 - Entry point address **3:** Dump code **4:** Reason code **5:** Control block identifier **6:** FDB address

Table 4. JES3 trace events (continued)

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
41	IATMSMS	Determine which initiators to stop	(No additional data defined for IDs 41 through 58)
42	IATMSMS	Staging area purge (SSISERV)	
43	IATMSMS	JOB select for a task which has been started	
44	IATMSMS	End of job step task (EOT)	
45	IATMSJT	End of job (EOJ)	
46	IATMSMS	End of initiator (EOM)	
47	IATMSMS	VS initiator request that job be reenqueued	
49	IATMSMS	Determine number of initiators to start or the number to start for a group	
50	IATMSMS	Checkpoint GMS data in MPCPROC	
51	IATMSMS	RESQUEUE add	
52	IATMSMS	Logical storage update	
53	IATMSMS	ECF posted for error recovery	
54	IATMSMS	Inspect job select queue element	
55	IATMSMC	Job flush (*S,main,FLUSH command or job IPLed off main)	
56	IATMSMS	Cannot start initiator	
57	IATMSMS	Out-of-tracks conditions for GMS	
58	IATMSMS	End of job (EOJ) or end of initiator (EOM) during job select	

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
60	IATABMN	JES3 ESTAE routine entered	**1,2:** Registers 0 and 1 **3,4:** PSW at time of failure **5:** ABEND code **6:** Additional processing request (1 byte) instruction length code (1 byte) interrupt code (2 bytes) **7:** Error type (1 byte) additional error information (3 bytes) The error type and additional error information description is in the field SWDAFLGS of the the SDWA (IHASDWA). **8:** Machine check error information (1 byte) FSINDEX1 (1 byte) TVTFSFG1 (1 byte) ESTAE exit level (1 byte) **9:** FCTACTIV at time of failure **10-25:** Registers 0 through 15
61	IATABRT	Entry to JESTAE exit routine	**1:** Address of JESTAE exit routine **2:** Address of FSWA
62	IATABRT	Exit from JESTAE exit routine	**1:** Return code from JESTAE exit routine **2:** Address of JESTAE retry routine if return code is 4
63	IATDMGB	I/O error	None
65	IATRJM6	Event on RJP line	**1:** Identifier of event type (see "RJP Debugging Aids") **2:** Action taken **3-4:** Line name **5:** Register 0 **6:** Register 1 **7:** Register 2 **8:** Register 3 **9:** Register 4
66	IATDMNC	JES3 file directory FIND routine	**1:** Return address **2:** Entry address **3:** TAT FDB address **4:** FDB address

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
67	IATDMNC	JES3 file directory ADD routine	**1:** Return address **2:** FD entry address **3:** TAT FDB address **4:** FDB address
68	IATDMNC	JES3 file directory DELETE routine	**1:** Return address **2:** Address of entry point of function **3:** Address of FDB **4:** Address of file directory entry
69	IATGRCT	Multifunction Monitor (AWAIT)	**1:** Address of ECF **2:** ECF mask (If this is the list form of AWAIT, the above two words are repeated for each entry in the list)
71	IATDMJA	JDS access routine for user data set allocation	**1:** Return address **2:** Address of staging area
72	Many MDS modules	MDS trace record from the module indicated within the record	Variable number of words, in EBCDIC
75	IATFCxx IATFPxx IATSICD	FSS trace record from the module indicated within the trace record.	See "Functional Subsystem (FSS) Address Space Trace Output" in *z/OS JES3 Diagnosis* for a description of the FSS trace records. **Note:** This ID will appear in the JES3 FSS formatted trace.
76	IATOSENF	Indicates an ENF signal was issued	**1:** Register 2 - ENF exit routine address **2:** Register 3 - Work register **3:** Register 4 - Address of the caller's parameter list **4:** Register 5 - Work area address **5:** Register 6 - Work register **6:** Register 7 - Work register **7:** Register 8 - Return code from the ENFREQ macro **8:** Register 9 - Work register
77	IATCNNF	Indicates an ENF signal was received by JES3 from MCS.	**1:** Qualifier code

Table 4. JES3 trace events (continued)			
Trace ID	**Module of origin**	**Description of Trace Origin (function)**	**Additional data (by word number)**
78	IATMDxx	Indicates the status of an SMS-managed volume has changed	Variable, see macro IATYDTR
79	IATCNDxx	DLOG event	
80	IATGRCT	IATXSTMD (Setmode)	**1:** Contains following, Byte 0 - the option byte from R0 at entry to setmode. The high order bit of this byte indicates the task mode requested. 1 indicates IATAUX task mode. 0 indicates IATNUC task mode. Byte 1 - FCTMODE field at entry to setmode Byte 2 - TVTATFLG field at entry to setmode Byte 3 - unused **2:** Return address
81	IATMOTR	The traced parameters of the *F,E command are: ON OFF EXEL=RESET EXCL=id	**1-3:** Contains parameters (in hexadecimal) from the *F,E command
82	IATOSPD	Indicates that a PSO staging area has been received by the PSO DSP	**1:** RESQUEUE address **2:** SSOB header address **3:** WSP address **4:** Staging area address
83	IATOSSD	Indicates that a SYSOUT application program interface staging area has been received by the SYSOUT application program interface DSP	**1:** Checkpoint job's RESQUEUE address or zero **2:** SSOB header address **3:** COW address **4:** Staging area address

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
84	IATDJSV	DJ server address space events	**1–8** Registers 2–9 **9–10:** "IATDJSV" **11–12:** Event Type: • DYNALLOC - Dynamic allocation request has completed. • WAKEUP - DJ address space has been posted to process a request. • OPEN - Open request has completed. • CLOSE - Close request has completed. • EOV - End of volume (EOV) request has completed. • EXCP - Execute channel program (EXCP) has completed. • RETURN - Server address space has been told to terminate by JES3. • EXIT - Server address space is terminating; this will occur as a result of a RETURN request or when the server address space determines that JES3 is down. • JES3DOWN - The timer exit has determined that JES3 is down. **13:** DJ server job id **14:** ASCB address **15:** DJ FCT address **WAKEUP Requests** **16:** Function code from the ECB **DYNALLOC Requests** **16:** SVC 99 request block address **17:** DYNALLOC return code **18:** Bytes 1–2: DYNALLOC error reason code. Bytes 3–4: DYNALLOC information reason code **OPEN Requests** **16:** DCB address **17:** OPEN return code **18:** First four bytes of current volser **19:** Bytes 1–2: last two bytes of current volser. Bytes 3–4: zero **CLOSE Requests** **16:** DCB address **17:** CLOSE return code

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
84 cont.	IATDJSV	DJ server address space events.	**EOV Requests** **16:** DCB address **17:** EOV return code **18:** First four bytes of current volser **19:** Bytes 1–2: last two bytes of current volser. Bytes 3–4: zero **EXCP Requests** **16:** IOB address **17:** I/O completion ECB contents **18:** Byte 1: IOBFLAG1. Byte 2: IOBSENS0. Byte 3: IOBSENS1. Byte 4: zero **19:** First four bytes of CSW **20:** Bytes 1–3: last three bytes of CSW. Byte 4: zero. **JES3DOWN Requests** **16–17:** Set to POST if the server address space was posted for termination. Set to CANCEL if the server address space was cancelled. **For RETURN and EXIT requests,** there is no additional information
85	IATGRENF	Indicates an ENF signal was issued	**1:** Register 2 - work register **2:** Register 3 - work register **3:** Register 4 - address of the caller's parameter list (GREXPRML) **4:** Register 5 - address of GRENFSIG Routine Work Area (GRENWKAR) **5:** Register 6 - SVT address **6:** Register 7 - work register **7:** Register 8 - return code from the ENFREQ macro call **8:** Register 9 - IATGRENF Subtask Work Area (SWRKTASK)

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
86	IATGRJNF	Indicates an ENF 78 signal was issued	**1:** Register 2 - work register **2:** Register 3 - work register **3:** Register 4 - work register **4:** Register 5 - ENF78_QUALIFIER code **5:** Register 6 - work register **6:** Register 7 - work register **7:** Register 8 - return code from the ENFREQ macro call **8:** Register 9 - IATGRJNF Subtask Work Area (SWRKTASK)
105	IATDMNC	Traced JSAM buffer contents on SRF mismatch for a JESREAD ABEND DM704, RC X'14'.	**1:** Register 2 - work register **2:** Register 3 - return code **3:** Register 4 - FDB address **4:** Register 5 - JQX address **5:** Register 6 - return address **6:** Register 7 - SRF identifier **7:** Register 8 - buffer address **8:** Register 9 - work register **9-488 or 1023:** Failing buffer contents
107	IATGRQC	Error exit from IATXGCL	**1-8:** Registers 2-9 for IATGRQC **9-13:** Caller's registers 2-7 **14:** Caller's register 10 **15:** Primary CPB address from the caller **16:** Return code from IATXGCL **17:** Return address

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
108	IATDMNC	A MRF was read from spool using the ADEBLOCK, APOINT, AOPEND or ABACKR macros. The VALID in the spool buffer did not match the VALID in the file directory entry. JES3 issued an abend code of DM722.	**1:** Register 2-buffer address **2:** Register 3-FD entry address **3:** Register 4-FDB address **4:** Register 5 **5:** Register 6 **6:** Register 7 **7:** Register 8- **8:** Register 9 **9-488:** Failing buffer contents
109	IATGRQC	Error exit from IATXRCL	**1-8:** Registers 2-9 for IATGRQC **9-13:** Caller's registers 2-7 **14:** Caller's register 10 **15:** Primary CPB address from the caller **16:** Return code from IATXRCL **17:** Return address **18:** Cell address to be released
120	IATDMTK	Track allocation	**1:** X from X.G **2:** G from X.G **3:** VALID from the TAT **4:** Slot address from VALID array **5:** The RQ address from FCTRQAD **6:** Job number from RQ **7:** DSP dict. address **8-12:** ASAVE return for the last 5 ACALLS **Identifier 120 is present only** when the SAT trace has been activated via the *F,E,START=SAT command.

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
121	IATDMTK	Track allocation	**1:** X from X.G **2:** G from X.G **3:** VALID from the TAT **4:** Slot address from VALID array **5:** The RQ address from FCTRQAD **6:** Job number from RQ **7:** DSP dictionary address **8-12:** ASAVE return for the last 5 ACALLS **Identifier 121 is present only** when the SAT trace has been activated via the *F,E,START=SAT command.
128	IATGRSV	Entry to ASAVE (CALL in 64-bit mode)	**1:** Register 13 from calling routine **3:** Return address **5:** Entry point to called routine **7:** Register 0 **9:** Register 1 **11-32:** Registers 2-12 from calling routine (register 10 is caller's base)
129	IATGRSV	Entry to ASAVE (RETURN in 64-bit mode)	**1:** Address of save area from pool **3:** Return address to calling routine (based on return code) **5:** Register 15 from called routine **7:** Register 0 from called routine **9:** Register 1 from called routine **11-32:** Registers 2-12 of the calling routine

Table 4. JES3 trace events (continued)

Trace ID	Module of origin	Description of Trace Origin (function)	Additional data (by word number)
130	IATGRSV	Entry to ASAVE (CALL in AR mode)	**1:** Register 13 from calling routine **2:** Return address **3:** Entry point to called routine **4:** Register 0 **5:** Register 1 **6-16:** Registers 2-12 from calling routine (register 10 is caller's base) **17-32:** Corresponding Access registers AR13-AR12
131	IATGRSV	Exit from ASAVE (RETURN in AR mode)	**1:** Address of save area from pool **2:** Return address to calling routine (based on return code) **3:** Register 15 from called routine **4:** Register 0 from called routine **5:** Register 1 from called routine **6-16:** Registers 2-12 of the calling routine **17-32:** Corresponding Access registers AR13-AR12
132	IATGRSV	Exit from ASAVE (CALL in 64-bit and AR mode)	**1:** Register 13 from calling routine **3:** Return address **5:** Entry point to called routine **7:** Register 0 **9:** Register 1 **11-32:** Registers 2-12 from calling routine (register 10 is caller's base) **33-48:** Corresponding Access registers AR13-AR12

Table 4. JES3 trace events (continued)			
Trace ID	**Module of origin**	**Description of Trace Origin (function)**	**Additional data (by word number)**
133	IATGRSV	Exit from ASAVE (RETURN in 64-bit and AR mode)	**1:** Address of save area from pool **3:** Return address to calling routine (based on return code) **5:** Register 15 from called routine **7:** Register 0 from called routine **9:** Register 1 from called routine **33-48:** Corresponding Access registers AR13-AR12
3000-4005		Available to installations	

Format of a JES3 trace entry

Figure 4 on page 58 illustrates the format of a JES3 event trace table found in a formatted dump.

```
*** JES3 TRACE (MOST RECENT ENTRY FIRST) ***

ALL TRACE IDS ARE ENABLED

BRAVO    TYP=RETURN   MOD=IATGRSV  FCT=02ADD6B0 TOD=222552-277582 ID=0029 TCB=007FF190 IATABM+008A4  TODX=C2C9539D1084E896
         0274A738 000118A4 027197C0 0000258F    80011888 027197C0

BRAVO    TYP=CALL     MOD=IATGRSV  FCT=02ADD6B0 TOD=222552-277492 ID=0028 TCB=007FF190 ATIME         TODX=C2C9539D107F4796
         007E6910 800118A4 027197C0 00000010    80011888 82749E00 00012290 007E6290
         007E6528 00000000 00000000 00013810    0001208E 8001108E 02ADD6B0 02701000

BRAVO    TYP=ESTAE    MOD=IATABMN  FCT=02ADD6B0 TOD=222544-227713 ID=0060 TCB=007FF190               TODX=C2C9539563381A16
-----------------------------------------------------------------------
         00000010 007E6290 071C0000 82ADD7B6    840C1000 80060001 40040001 00000502
         02ADD6B0 00000000 00000258 7F56200C    0000000B 02ADC0C8 02689506 02B928D8
         02AC8200 02AD5DA8 0268A000 02ADA0C8    02ADD6B0 02701000 02ADB0C8 02ADD7B0
         027191BE

BRAVO    TYP=RETURN   MOD=IATGRSV  FCT=02ADD6B0 TOD=222544-227672 ID=0029 TCB=007FF190 EP-NFND        TODX=C2C9539563358896
         0274A738 82ADD7B0 027191BE 00000000    00000258 00012800

BRAVO    TYP=CALL     MOD=IATGRSV  FCT=02ADD6B0 TOD=222544-227644 ID=0028 TCB=007FF190 FAILDSP        TODX=C2C953956333CE96
         02ADB0C8 82ADCE1E 00012800 02ADD6B0    00000258 7F56200C 0000000B 02ADC0C8
         02689506 02B928D8 02AC8200 02AD5DA8    0268A000 02ADA0C8 02ADD6B0 02701000

BRAVO    TYP=RETURN   MOD=IATGRSV  FCT=02ADD6B0 TOD=222536-535395 ID=0029 TCB=007FF190 IATMSMS+00B58  TODX=C2C9538E0D363A96
         0274A738 02ADAC20 0000000C 000002D1    02701000 02716508

BRAVO    TYP=RETURN   MOD=IATGRSV  FCT=02ADD6B0 TOD=222536-535370 ID=0029 TCB=007FF190 IATDMTK+009AE  TODX=C2C9538E0D34A896
         02C4EC08 0271654E 00000004 000002D1    02701000 02716A90

BRAVO    TYP=RETURN   MOD=IATGRSV  FCT=02ADD6B0 TOD=222536-535365 ID=0029 TCB=007FF190 IATDMTK+00EFE  TODX=C2C9538E0D345D16
         02CE0210 02716A9E 00000000 7F6C300C    02B92948 02713DC8

BRAVO    TYP=DISPATCH MOD=IATGRCT  FCT=02ADD6B0 TOD=222536-533062 ID=0030 TCB=007FF190                TODX=C2C9538E0CA46216
         02701B4E 000000FF

CONSDM   TYP=AWAIT    MOD=IATGRCT  FCT=02727268 TOD=222536-533018 ID=0069 TCB=007FF190                TODX=C2C9538E0CA1A996
         7F5460F5 00000040

CONSDM    TYP=RETURN   MOD=IATGRSV  FCT=02727268 TOD=222536-532991 ID=0029 TCB=007FF190 IATDMNC+00D46 TODX=C2C9538E0C9FF796
          02C177E8 02713CA6 02714354 02B92948    7F5460E8 027138D6

CONSDM    TYP=RETURN   MOD=IATGRSV  FCT=02727268 TOD=222526-901439 ID=0029 TCB=007FF190 IATDMNC+009D4 TODX=C2C95384DD2BF816
          02C4E4D0 02713934 02714354 02B92948    7F5460E8 02714354

CONSDM    TYP=CALL     MOD=IATGRSV  FCT=02727268 TOD=222526-901400 ID=0028 TCB=007FF190 DISKIO        TODX=C2C95384DD298F16
          027027A0 82713934 02714354 7F53900C    7F5460E8 7F51F00C 0275CDE8 7F5460E8
          00000000 00000000 7F5460E8 0003A300    00000042 027138D6 02727268 02701000

CONSDM    TYP=FD-FIND  MOD=IATDMNC  FCT=02727268 TOD=222526-901354 ID=0066 TCB=007FF190               TODX=C2C95384DD26AB96
          827138E0 02715006 7F53900C 7F5460E8

CONSDM    TYP=CALL     MOD=IATGRSV  FCT=02727268 TOD=222526-901353 ID=0028 TCB=007FF190 OUTPUT        TODX=C2C95384DD269216
          027027A0 82713CA2 027138D6 7F53900C    7F5460E8 7F53900C 0275CDE8 7F5460E8
          00000000 00000000 7F5460E8 0003A300    00000042 82713B00 02727268 02701000
```

Figure 4. Format of a JES3 Event Trace Table

***JES3 TRACE is the information in the JES3 trace table. The first line following this heading may be one of the following:

- ALL TRACE IDS ARE ENABLED

  This is the default JES3 takes when the installation has not selected specific trace ids. JES3 creates an entry for all events that occur in the address space.
- ALL TRACE IDS ARE DISABLED

  This indicates the installation turned off the tracing facility. JES3 will not create any entries for the trace table.
- THE FOLLOWING TRACE IDS ARE ENABLED: 0044 0045 0047

  The installation selected the specified trace ids using the modify commands. See *z/OS JES3 Commands* for more information on the commands.

name - is a DSP name (for example, CONSOLES) for the FCT that is active at the time of trace.

TYP=cccccccc - is a one- to eight-character descriptor of the JES3 function being traced.

MOD=cccccccc - is the name of the module in which the trace originated.

FCT=hhhhhhhh - is a 6-digit hexadecimal address. This can be an MPC address, but is typically the FCT address.

TOD=dddddd-dddddd - is the time of day, expressed as “hours, minutes, seconds-fraction”. The fraction is a decimal fraction of a second down to one millionth of a second.

ID=dddd - is the trace identification number extracted from the IATXTRC macro.

TCB=hhhhhhhh - is the address of the TCB under which the trace entry is made for either the primary task or the auxiliary task. In the case of trace entries created under SRBs, the TCB address will be formatted as TCB=N/A.

cccccccc - is the symbolic name of a called routine or (for RETURN) the symbolic location of the caller. The CALL/RETURN sequence occurs each time ASAVE (register save) is used, since it is in most JES3 macro calls. The symbolic name is either the name of the actual routine being entered or the name of a module plus offset.

TODX=xxxxxxxxxxxxxxxx - is the time of day, expressed as an 8-byte hexadecimal quantity in STCK (Store Clock) format.

Up to 128 words of data as specified in IATXTRC may follow. See Table 4 on page 45 for descriptions of individual trace events.

(Not shown) - EBCDIC translation of user data for some types of entries.

Note: Serialization logic is implemented for the trace function in order to prevent concurrent entry to the routine. As a result of this serialization, some trace entries may be lost.

TRACE FORMAT COMPLETE dd contains a code (dd) that shows what happened when tracing was attempted:

Code
  Explanation

00
  The TVT could not be found.

01
  There was a problem entering one of the trace pointers.

02
  The last trace entry was invalid, or there were no entries.

03
  Unassigned.

04
A trace entry address is for a location before the start of the trace table, or the entry is otherwise inaccessible.

05
A trace entry address is for a location beyond the end of the trace table, or the entry is otherwise inaccessible.

06
The address of the previous trace entry is invalid.

07
A trace entry was found in the table, but the entry had an invalid ID.

08
A specific trace entry could not be found.

09
The last entry in the trace table was processed. (Normal completion.)

Format of a Functional Subsystem (FSS) Address Space Trace Table

Information about the events that occurred in a C/I or writer FSS address space provides FSS trace output. The events are recorded in an FSS trace table in the private area. Each FSS and FSA maintains its own trace table to record events that occur within that particular FSS or FSA.

The trace table from an FSS address space is obtained when a dump of the address space is taken. The trace output is located in the MVS portion of a dump.

JES3 defines the size of the FSS trace table that contains the trace output. The FSS trace table contains a limited number of entries. When the number of entries in the table exceeds the size of the table, JES3 starts placing entries at the beginning of the table and continues to replace the entries with new trace entries. The FSS trace table provides the installation with the addresses of several trace entries in the FSS trace output. These addresses define the size and bounds of the FSS trace table and identify the last entry that was recorded.

Entries are added to the FSS trace table when a IATXTRC macro with an identifier of 75 is issued. A trace identifier of 75 invokes the FSS trace routine IATFCTR. The events that an FSS address space records in the FSS trace table are:

- Connect and disconnect FSI functions, if the trace routine is available.
- FSS-to-JES3 FSI functions after the function has completed. The FSS to JES3 FSI functions are:
  - GETDS
  - GETREC
  - FREEREC
  - RELDS
  - CHKPT
  - SEND
- JES3-to-FSS FSI functions after the interface routine has finished processing the request. The JES3-to-FSS FSI functions are:
  - ORDER
  - POST
- Errors detected by a service routine that does not generate a DFB abend.
- Initialization, non-abend error conditions, termination, and entry to an ESTAE routine for each of the JES3-created asynchronous tasks in the FSS address space. See Table 5 on page 62 which identifies the asynchronous tasks in an FSS address space that are traced.

Format of an FSS trace entry

Figure 5 on page 61 illustrates the format of an FSS trace table that is found in a formatted dump.

```
TRACE TABLE FOR DEVICE:  ATD13000

         TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=131207-250717 ID=0075 TCB=006D0E88

         006EEF10 006F01A0 006EFF60 8933D61A    09309420 00000000 00BE8B10 03FA1000 --------------
O-----------------
         C9C1E3C6 C3D3E340 C4C5D840 E2D9D340                                        IATFCLT-DEQ-
SRL-----------------

         TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=094254-810564 ID=0075 TCB=006D0E88
         006EEF10 006F01A0 006EFFD0 8933D61A    09309420 00000000 00BE8B10 03FA1000 --------------
O-----------------
         C9C1E3C6 C3D7E340 D7D6E2E3 40404040    00000024 00000002 00050001 00000000 IATFCPT-
POST--------------------
         00000000 00000000 80000000 0000AAD8    00000000                            ---------------
Q----------------

         TYP=FSSTRACE MOD=SEE TEXT R11=000B58F8 TOD=094254-810279 ID=0075 TCB=006D0E88
         006EEF10 006F01A0 006EFFD0 8933D61A    09309420 00000000 00BE8B10 03FA1000 --------------
O-----------------
         C9C1E3C6 C3D3E340 C4C5D840 E2D9D340                                        IATFCLT-DEQ-
SRL-----------------

         TYP=FSSTRACE MOD=SEE TEXT R11=006F0178 TOD=093957-460796 ID=0075 TCB=006D7100
         006F03E0 006F01A0 7F759918 00BE8B10    006F0458 000AB9E0 00000444 09374EE8
-------------------------------Y
         C9C1E3C6 D7C7C440 C7C5E3C4 E2404040    000000AC 00000003 00050001 00000000 IATFPGD-
GETDS-------------------
         00000000 000A3F0C 00000800 00000784    000B5978 00000000 00000000 00000000
--------------------------------
         00000000 00000000 00000000 00000000    00000000 00000000 00000000 00000000
--------------------------------
         00000000 00000000 00000000 40404040    40404040 40404040 40404040 40404040
--------------------------------
         40404040
--------------------------------

         TYP=FSSTRACE MOD=SEE TEXT R11=090AFD28 TOD=093957-452516 ID=0075 TCB=006FA5E0
         006CFBB8 006F01A0 7F759918 00BE8B10    006CFC30 093A4D30 00000000 006F9D28
--------------------------------
         C9C1E3C6 D7D9C440 D9C5D3C4 E2404040    00000038 00000006 00050001 00000000 IATFPRD-
RELDS-------------------
         00000000 00000000 80000000 A9078E9D    65C50581 00000000 00000000 00000000 -----------------
E--------------
         00000000 00000000 D7404040 40404040    D7404040 40404040 D9D47BF1 F5C8D940 --------P-------
P-------RM-15HR-

         TYP=FSSTRACE MOD=SEE TEXT R11=090AFD28 TOD=093957-452227 ID=0075 TCB=006FA5E0
         006CFBB8 006F01A0 7F759918 00BE8B10    006CFC30 00000258 00000000 006F9D28
--------------------------------
         C9C1E3C6 D7E2C240 E2E6C240 C4C5D340                                        IATFPSB-SWB-
DEL-----------------

         TYP=FSSTRACE MOD=SEE TEXT R11=090AD728 TOD=093921-958261 ID=0075 TCB=006D7100
         006CFBB8 006F01A0 7F759918 00000000    00000001 89373340 00000000 00000000
--------------------------------
         C9C1E3C6 D7C7C640 C7C5E3D9 C5C34040    00000044 00000004 00050001 00000000 IATFPGF-
GETREC------------------
         00000000 00000000 40008400 00000000    00000000 00000000 A9078E9D 65C50581
----------------------------E--
         00000000 00000000 00000000 00000000    00000000 D7404040 40404040 D7404040 --------------------
P-------P---
         40404040 D9D47BF1 F5C8D940 C9C4E740    00080003 00037B27 06436000          ----RM-15HR-
IDX-----------------
```

Figure 5. Format of an FSS Event Trace Table

TRACE TABLE FOR describes the information in the FSS trace table. The first line following this heading may be one of the following:

- TRACE TABLE FOR DEVICE: *dev*

  Indicates that this is an FSS trace table for the specified device.

- TRACE TABLE FOR FSS: *fssname*

  Indicates that this is an FSS trace table for the specified FSS.

TYP=FSSTRACE - is an eight-character descriptor of the FSS trace.

MOD=SEE TEXT - see the EBCDIC version of the entry (located to the right of the trace entry) for the name of the module in which the trace originated.

R11=nnnnnnnn - is the contents of the caller's register 11.

TOD=dddddd-dddddd - is the time of day, expressed as “hours, minutes, seconds-fraction”. The fraction is a decimal fraction of a second down to one millionth of a second.

ID=dddd - is the event ID (0075).

TCB=hhhhhhhh - is the address of the TCB under which the trace entry is made.

The first line of the trace entry is the contents of the caller's registers 2-9.

The second line of the trace entry is 114 bytes of the user's data. The user's data contains the:

MODULE
: Specifies the module that is recording the trace entry.

EVENT ID
: Is the EBCDIC mnemonic of the function being traced.

OTHER INFORMATION
: Is additional information available in the trace record.

The following chart identifies the contents of the user's data area by each FSS module:

Table 5. User's Data Supplied in an FSS Trace Entry

MODULE	EVENT ID	OTHER INFORMATION
IATFCLT	INIT DEQ SRL TERM ESTAE ESTAETRM	none none none none none
IATFCOR	ORDER	FSIP(ORDBSIZ1+24)
IATFCPT	POST	FSIP(POSTSIZ1)
IATFCSN	SEND	FSIP(SNDSIZ1)
IATFPCC	FSA CONN	none
IATFPCP	CHKPT	FSIP(CHKSIZ1) ddname
IATFPCW	INIT PERM ERR TERM ESTAE ESTAETRM	none none none none none
IATFPDD	FSA DCON	none

Table 5. User's Data Supplied in an FSS Trace Entry (continued)

MODULE	EVENT ID	OTHER INFORMATION
IATFPGD	GETDS CKPT ERR NO NEWS ESTAE	FSIP(GDSSJMSG-FSIPARM) ddname none none none
IATFPGF	GETREC NO BUFF PERM ERR LOG ERR FREEREC ESTAETRM	FSIP(GLRSIZ1) ddname IDX IDXNUM IDXRECID IDXFLAG1 none none none FSIP(FLRSIZ1) ddname FSDBRACH FSDBGRCH FSDBRAFL FSDBRAST FSBXANDX FSBXABUF
IATFPRA	INIT NO BUFF NO INDEX BUF AVL POST GR PERM ERR RCID ERR UNEX EOF TERM ESTAE ESTAETRM	none none none none FSDBRACH FSDBGRCH FSDBRAFL FSDBRAST RAWFLAG1 FSBXANDX FSBXABUF none none none none none none
IATFPRD	RELDS BAD DSID	FSIP(RDSSIZ1) ddname none

Table 5. User's Data Supplied in an FSS Trace Entry (continued)		
MODULE	**EVENT ID**	**OTHER INFORMATION**
IATFPSB	SWB BLD SWB DEL NO SWB PERM ERR PARM ERR	none none none none none
IATSICD	FSS CONN FSA CONN FSA DCON	FSIP(CDFSIZ1) FSIP(CDFSIZ1) FSIP(CDFSIZ1)

Data set status block (DSS) spool trace tables

The following data set status block (DSS) spool trace tables can be accessed by formatting the DSS. A pointer to the trace data for a data set is maintained in the data set control block (DSB), so the DSB and its associated DSS must both be available in the dump for the spool trace to format properly. The trace output is located in the MVS portion of a dump and displayed using the IPCS CBF *xxxxxxxx*STRUCTURE(IATYDSS) command.

Spool buffer summary table

Figure 6 on page 64 illustrates the format of buffers that are associated with a dataset in a spool browse session. The ALC column indicates whether the buffer has been allocated. For additional table heading definitions, see the IATYDMC include macro.

```
DMC ADDR.  DMCNXDMC  ALC.    DMCDAT    DMCBPTR    DATTHIS       DATFIRST      DATPREV      DATNEXT       DATLOREC
7F4D9EC0  7F4D9F78  YES   7F4DB000   7F4DBFCA   00020000133A   00020000133A   000000000000    00020000133B    00000001
7F4D9F78  7F4DA030  YES   7F4DC000   7F4DC034   00020000133B   00020000133A   00020000133A    00020000133C    00000027
7F4DA030  7F4DA0E8  YES   7F4DD000   7F4DD034   00020000133C   00020000133A   00020000133B    00020000133D    00000049
7F4DA0E8  7F4DA1A0  YES   7F4DE000   7F4DE034   00020000133D   00020000133A   00020000133C    00020000133E    0000006B
7F4DA1A0  7F4DA258  YES   7F4DF000   7F4DF034   00020000133E   00020000133A   00020000133D    00020000133F    0000008C
7F4DA258  7F4DA310  YES   7F4E0000   7F4E0034   00020000133F   00020000133A   00020000133E    000200001340    000000AC
7F4DA310  7F4DA3C8  YES   7F4E1000   7F4E1034   000200001340   00020000133A   00020000133F    000200001341    000000CC
7F4DA3C8  7F4DA480  YES   7F4E2000   7F4E2034   000200001341   00020000133A   000200001340    000200001342    000000EB
7F4DA480  7F4DA538  YES   7F4E3000   7F4E3034   000200001342   00020000133A   000200001341    000200001343    0000010E
7F4DA538  7F4DA5F0  YES   7F4E4000   7F4E4034   000200001343   00020000133A   000200001342    000200001344    00000133
7F4DA5F0  7F4DA6A8  YES   7F4E5000   7F4E5034   000200001344   00020000133A   000200001343    000200001345    00000158
7F4DA6A8  7F4DA760  YES   7F4E6000   7F4E6034   000200001345   00020000133A   000200001344    000200001346    0000017D
7F4DA760  7F4DA818  YES   7F4E7000   7F4E7034   000200001346   00020000133A   000200001345    000200001347    000001A3
7F4DA818  7F4DA8D0  YES   7F4E8000   7F4E8034   000200001347   00020000133A   000200001346    000200001348    000001C9
7F4DA8D0  7F4DA988  YES   7F4E9000   7F4E9034   000200001348   00020000133A   000200001347    000200001349    000001F8
7F4DA988  7F4DAA40  YES   7F4EA000   7F4EA034   000200001349   00020000133A   000200001348    00020000134A    0000021D
7F4DAA40  7F4DAAF8  YES   7F4EB000   7F4EB034   00020000134A   00020000133A   000200001349    00020000134B    00000240
7F4DAAF8  7F4DABB0  YES   7F4EC000   7F4EC034   00020000134B   00020000133A   00020000134A    00020000134C    00000265
7F4DABB0  7F4DAC68  YES   7F4ED000   7F4ED034   00020000134C   00020000133A   00020000134B    00020000134D    00000289
7F4DAC68  7F4DAD20  YES   7F4EE000   7F4EE034   00020000134D   00020000133A   00020000134C    00020000134E    000002AA
7F4DAD20  7F4DADD8  YES   7F4EF000   7F4EF034   00020000134E   00020000133A   00020000134D    00020000134F    000002CE
7F4DADD8  7F4DAE90  YES   7F4F0000   7F4F0034   00020000134F   00020000133A   00020000134E    000200001350    000002EF
7F4DAE90  7F4DAF48  YES   7F4F1000   7F4F1034   000200001350   00020000133A   00020000134F    000200001351    00000315
7F4DAF48  00000000  YES   7F4F2000   7F4F2034   000200001351   00020000133A   000200001350    000200001352    0000033C
```

Figure 6. Spool buffer summary table

Spool trace event table

JES3 defines the size of the Spool I/O trace table that contains the trace output. The trace table contains a limited number of entries. When the number of entries in the table exceeds the size of the table, JES3 starts placing entries at the beginning of the table and continues to replace the entries with new trace entries. The trace table provides the installation with the addresses of several trace entries in the Spool trace output. These addresses define the size and bounds of the Spool trace table and identify the last entry that was recorded.

Table 6 on page 65 describes the trace entries produced by the IATXSTR macro, executed on entry to each function. The number in parentheses after each heading indicates the length of the field. For table heading and term descriptions, see the IATYDSS, IATYDSB, IATYFDB, IATYBWA, IATYDMC, IATYCLST and IFGRPL macro include files.

Table 6. Spool trace event table

Entry Type (1)	Time Stamp (8)	Flags (3)	UNIQUE-1 (4)	UNIQUE-2 (4)	UNIQUE-3 (4)	UNIQUE-4 (4)	UNIQUE-5 (4)
GET EOB	TS (8)	*	RPL addr	DSBDDNAM	DSBDDNAM+4	OLD SIZE	NEW SIZE
GET LOG	TS (8)	*	DSBCDMC	DSBBDMC	DSBLSTBF	*	*
INSTREAM	TS (8)	*	DSBISDSN	*	*	*	*
LOG	TS (8)	*	*	DSBDDNAM	DSBDDNAM+4	DSBLOGNM	DSBLOGNM+4
PUT EOB	TS (8)	*	DSBCDMC [1]	*	*	*	*
OUTLIM	TS (8)	*	DSBCDMC	*	*	*	*
DM POINT	TS (8)	*	DSBCDMC	RPLARG (M.R (4))	RPLARG+4 (M.R (2))	DSBBDMC	*
ENDREQ	TS (8)	*	*	*	*	*	*
BF CKPT	TS (8)	*	*	TCB Address	*	*	*
SSI PNT	TS (8)	*	*	DSBRBADK (4)	DSBRBADK+4 (4)	*	*
GET UPDT	TS (8)	*	*	DSSFIRST (4)	DSSFIRST+4 (2)	*	*
PUT UPDT	TS (8)	*	*	DSSTHIS (4)	DSSTHIS+4 (2)	*	*
SPINOFF	TS (8)	*	*	*	*	*	*
SPBSYSIN	TS (8)	*	RPL addr	*	*	*	*
SPB CLUP	TS (8)	*	RPL addr	*	*	*	*
SYSL PNT	TS (8)	*	*	*	*	*	*
SYSL SWI	TS (8)	*	*	*	*	*	*
COREBUF	TS (8)	DSBFLAG4 BWAFLAG1	R8	DSBCBSPA (4)	DSBCBSPA+4 (2)	BWABUFDL (4)	*
IATXSIO	TS (8)	DSSFLAG2-4	R8	M.R (4)	M.R+4 (2)	Return address	TCB Address
IATDMEBS	TS (8)	DSSFLAG2-4	DMCDMCPT	DSSPBUFF	DSSIOQ	DSBFLAG3-6 (2)	*
STCKDATA	TS (8)	*	DSBCDMC	CLSTJNUM	CLSTDSNO	STCKDATA address	STCKDATA length
ALC SYMB	TS (8)	*	IFGRPL	DSBDDNAME	DSBDDNAME+4	SYMTOTSZ (OLD)	SYMTOTSZ (NEW)
SDS INCR	TS (8)	*	DSBISDSN	*	*	*	*
SYMB LOG	TS (8)	*	IFGRPL	SYMOWNNM	SYMOWNNM+4	SYMLOGNM	SYMLOGNM+4

* Not applicable
[1] DSBCDMC is not traced for INTRDR reopen

Request parameter list (RPL) trace table

The spool trace is followed by a request parameter list (RPL) trace that is taken on exit from a function in IATDMDM using the IATXRBA macro. Its primary purpose is to document the last number of RPLRBAR values passed to the caller, followed by the DMCBPTR value, which has already been updated for the next record, except when the RPLINBUF (x'2c') return code is used. The classic RPLRBAR value is defined as a length 8 variable consisting of a 6-byte spool address, followed by a 2-byte relative record number.

An extended format is defined for SYSLOG Browse. The extended RPLRBAR value is defined as a length 8 variable consisting of a 1-byte extended indicator, followed by a 1-byte function code, and depending on the function code, a 6-byte timestamp or a relative or absolute record number.

This trace typically has many entries that span a much shorter period of time than the entries in the spool trace.

JES3 defines the size of the RPL trace table that contains the trace output. Table 7 on page 66 contains a limited number of entries. When the number of entries in the table exceeds the size of the table, JES3 starts placing entries at the beginning of the table and continues to replace the entries with new trace entries. The trace table provides the installation with the addresses of several trace entries in the RPL trace output. These addresses define the size and bounds of the RPL trace table and identify the last entry that was recorded. For table heading and term descriptions, see the IATYDMC and IFGRPL macro include files.

Table 7. RPL trace table

REQUEST (1)	**RPLFDBK (3)**	**RPLRBAR (8)**	**DMCBPTR (4)**
GET	XXXXXX	CCCCCCCC CCCCCCCC	AAAAAAAA
POINT	XXXXXX	CCCCCCCC CCCCCCCC	AAAAAAAA
PUT	XXXXXX	CCCCCCCC CCCCCCCC	AAAAAAAA
ERASE	XXXXXX	CCCCCCCC CCCCCCCC	AAAAAAAA

Communication traces

This section is divided into the following topics:

BSC remote job processing snaps output
Examines the output from the RJP line snap facility described in "BSC Remote Job Processing (RJP) Snaps Output" on page 66. The output is a storage dump that describes:

- The line device characteristics table (DCT)
- The remote device DCTs for a signed-on terminal
- Current SRB/IOSB
- Transmission data areas for each channel end processed

RJP Hardcopy Log trace output
Entries are added to the JES3 trace table when this facility is invoked. An entry is added to the JES3 trace table when a I/O operation is performed on a specified line.

SNA RJP trace output
Suggests solutions when the problems seems to be with SSNA RJP. Included are discussions of:

- Exception responses
- Error recovery after communications stops between a remote workstation and the host
- The SNA RJP recording environment

BSC network logging facility
Describes the format of the trace output produced for a BSC node.

TCP/IP/NJE trace
Describes the format of the trace output produced by a Netserv, a socket for a TCP/IP node, or both.

BSC Remote Job Processing (RJP) Snaps Output

Figure 7 on page 67 shows an example of the RJP snaps output. See mapping macros in the program listings to find where specific information appears in the snap output. Mapping macros for RJP snaps output are:

LINE DCT
- IATYSUP

LINE RAT
- IATYRAT

SRB
- IHASRB

IOSB
- IECDIOSB

RMDCT
- IATYSUP

```
                    ***********************************************************************************************
  1                 *                                   RJPSNAPS OUTPUT      87.203
                    ***********************************************************************************************
13295457 00000000 01C5E6C4 01CBD488 01CDAE48 01CD2B20  00000000 01C45340 000012C0 40404040  *.EWD..M.............D. ....    *
LINE DCT 00000020 40404040 00000000 00000000 00000000  00000000 00000000 40000000 00000000  *    .................... .......*
LINE1    00000040 00000000 04000045 C0100000 0049A08D  00000028 00000004 00040000 00000000  *................................*
         00000060 00000000 03000000 80000000 01C99A00  00000000 00000000 00000000 00000000  *.............I..................*
         00000080 F0F0C2F8 00000000 01CD4F10 EE000000  01C99A00                             *00B8.............I..           *
RMDCT    01CBD488 01CBD42C 01CDAE48 01C5E720 00000000  00000000 0002BCE0 00000000 01C45470  *..M......EX..................D..*
LINE1    01CBD4A8 01CBD524 00000000 00450084 800201B8  00001302 80CC0000 00000000 00000000  *..N.............................*
RMDCT    01CBD524 01CBD4C8 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..MH.....EX..................D..*
LINE1    01CBD544 01CBD64C 00000000 00000050 800201B8  00001302 10CC0000 00000000 00000000  *..O........&....................*
RMDCT    01CBD64C 01CBD564 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..N......EX..................D..*
LINE1    01CBD66C 01CBD774 00000000 00000050 800201B8  00001302 40CC0000 00000000 00000000  *..P........&....... ............*
RMDCT    01CBD774 01CBD68C 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..O......EX..................D..*
LINE1    01CBD794 00000000 00000000 00000084 800201B8  00001302 20CC0000 00000000 00000000  *................................*
LINE RAT 01CDAE48 D9C1E340 00000000 10610000 00000000  00000000 41000000 00000000 01CDAEC0  *RAT.............................*
LINE1    01CDAE68 01958388 00000000 01CDAEC0 01CDAED8  0E000008 01000000 FF000000 00000000  *...............Q................*
         01CDAE88 01CDAEF8 01CDAEF8 00000000 01C5E720  6E0001B8 00701070 00000000 00000000  *...8...8.....EX.................*
         01CDAEA8 2F600001 00000000 23600001 004C8E9C  27600001 00000000 03600004 008C8B20  *................................*
         01CDAEC8 01600001 008C8B52 02200008 004C8EF8  00000000 00000000 00000000 00000000  *................8...............*
         01CDAEE8 C0C1C2CA CAC6C0C0 00000003 00000000                                       *.AB..F..........               *
SRB IOSB 01958388 40800000 08000008 81CD2110 08419C80  00FCE850 004C8ED8 0E000008 019583F4  * ................Y&..Q........4*
LINE1    019583A8 00000000 00000000 40170100 00000000  00000000 00000000 00000000 81CD21E0  *........ .......................*
         019583C8 81CD21E0 81CD2166 004C8EC0 01CDAEC0  00D1E2F3 01000000 00100000 00000000  *.................JS3............*
  2      019583E8 00000000 00000000 00000000 E2D9C240  00000000 00FA1E00 00000000 00000000  *..........SRB..............*
         01958408 0000     00000000 01958388 00000000  00000000 00000000                    *........................       *
WRITE    01CD2B52 37   3                                                                    *.   5                 *
READ
 4  13300245 00000000 01C5E6C4 01CBD488 01CDAE48 01CD2B20  00000000 01C45340 000012C0 40404040  *.EWD..M.............D. ....    *
LINE DCT 00000020 40404040 00000000 00000000 00000000  00000000 00000000 40000000 00000000  *    .................... .......*
LINE1    00000040 00000000 04000045 C0100000 0049A08D  00000029 00000004 00040000 00000000  *................................*
         00000060 00000000 03000000 80000000 01C99A00  00000000 00000000 00000000 00000000  *.............I..................*
         00000080 F0F0C2F8 00000000 01CD4F10 EE000000  01C99A00                             *00B8.............I..           *
RMDCT    01CBD488 01CBD42C 01CDAE48 01C5E720 00000000  00000000 0002BCE0 00000000 01C45470  *..M......EX..................D..*
LINE1    01CBD4A8 01CBD524 00000000 00450084 800201B8  00001302 80CC0000 00000000 00000000  *..N.............................*
RMDCT    01CBD524 01CBD4C8 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..MH.....EX..................D..*
LINE1    01CBD544 01CBD64C 00000000 00000050 800201B8  00001302 10CC0000 00000000 00000000  *..O........&....................*
RMDCT    01CBD64C 01CBD564 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..N......EX..................D..*
LINE1    01CBD66C 01CBD774 00000000 00000050 800201B8  00001302 40CC0000 00000000 00000000  *..P........&....... ............*
RMDCT    01CBD774 01CBD68C 00000000 01C5E720 00000000  00000000 00000000 00000000 01C45470  *..O......EX..................D..*
LINE1    01CBD794 00000000 00000000 00000084 800201B8  00001302 20CC0000 00000000 00000000  *................................*
LINE RAT 01CDAE48 D9C1E340 00000000 10610000 00000000  00000000 7F000000 00000000 01CDAEC0  *RAT ............................*
LINE1    01CDAE68 01958388 00000000 01CDAEC0 01CDAED8  0C000006 00000000 FF000000 00000000  *...............Q................*
         01CDAE88 01CDAEF8 01CDAEF8 00000000 01C5E720  6E0001B8 00700000 00000000 00000000  *...8...8.....EX.................*
         01CDAEA8 2F600001 00000000 23600001 004C8E9C  27600001 00000000 03600004 008C8B20  *................................*
         01CDAEC8 01600001 008C8B50 02200008 004C8EF8  00000000 00000000 00000000 00000000  *.......&......8.................*
         01CDAEE8 C0C1C2CA CAC6C0C0 00000003 00000000                                       *.AB..F..........               *
```

Figure 7. RJP Snaps Output

1 Shows the time of day the snap was taken, the control block printed, and the RJP line number. Time of day is in the form hhmmssth where hh is the hour, mm is the minute, ss is the second, and th is tenths and hundredths of a second. Time of day appears at the beginning of each snap.

2 WRITE shows the location from which data was written. READ shows the location from which data was read.

3 Shows the data that was written or read.

4 Begins a snap taken after channel-end. Each remote DCT (RMDCT) represents a device.

5 Shows the data being sent or received displayed in EBCDIC.

RJP Hardcopy Log Trace Facility

The RJP hardcopy log trace facility generates a continuous indication of the internal program flow within RJP. Data is printed on the hardcopy log each time an important event occurs. An entry is also added to the JES3 event trace table with an id of 65. For the format of a JES3 event trace entry see "Format of a JES3 event trace table" on page 44. Table 8 on page 68 lists the hardcopy log events and contains a brief description of each. The facility should never trace more lines than necessary, since console buffers may be filled faster than they can be printed, resulting in a lockout condition. The same problem may occur when tracing a very fast line.

Table 8. RJP Hardcopy Log Trace Events

Event Name	Module (IATRJxx)	Description
CEND	M1	Channel-end processing started.
CENDSNAP	M1	Channel-end processing started; IOSB/SRB, LDCT, RDCT, and data buffers snapped.
CLOSSIO	M2/M3	RJPCLOSE issued. Write last buffer to non-programmable terminal.
CONQ	M1	Remote console is in ALERT condition.
DISASIO	M3	At line termination time, issue the disable line command.
IDLE	M3	Timer is set to cause line idle cycle for multi-leaving terminal.
INIOSIO	M3	After receiving control sequence from multi-leaving terminal, start appropriate I/O.
INIT	M1	Initialize RJP I/O control blocks.
MGET	M1	Received date on a line with no terminal currently signed on.
OPENSIO	M2/M3	Read for first block of data from a remote non-programmable terminal.
OPS	M3	Received permission to send from a suspended device on a multileaving terminal.
OPSTxxx	M3	Received permission to send or request to send from remote device or multi-leaving terminal. xxx is the device address.
POSTPRNT POSTPNCH POSTCONS	M1	Positive response to ENQ received. Post output processor for nonprogrammable terminal.
POSTxxx	M1	I/O to terminal ended normally. xxx is the logical device name.
QBUF	M3	Buffer queued for output to programmable terminal. Buffers not written because I/O is active or line already has buffers queued.
RCON	M1	Remote console message received.
READSIO	M2/M3	Read for next block of data from a remote non-programmable terminal.
RESTSIO RPSTxxx	M1/M3 M3	Restart I/O after error condition. Post FCT of current RCB in current input buffer. xxx is the logical device name.
SRDR	M1	ENQ received from non-programmable terminal; RJP issues *X,CR.
STRTSIO	M1/M3	Initial EXCP at start line time.
TEXPSIO	M1/M3	Timer expired for this line; start some I/O.
WABTSIO	M3	Write buffer to programmable terminal. Wait bit sequence.
WAIT	M1	No pending activity for this line.
WEOTSIO	M2/M3	Write EOT sequence to nonprogrammable terminal.
WPSTxxx	M1	Post output devices based on received FCS. xxx is the logical device name.

Table 8. RJP Hardcopy Log Trace Events (continued)		
Event Name	**Module (IATRJxx)**	**Description**
WRITSIO	M2/M3	RJPPUT issued; current buffer full. Issue EXCP to non-programmable terminal.
WTXTSIO	M3	Write previously queued output buffer and read data from programmable terminal.

SNA RJP Trace Output and Problem Analysis

This section describes what to do if you encounter some of the situations unique to SNA RJP. Included are:

- The format of the output from the SNA RJP recording environment.
- An analysis of the problems unique to SNA RJP. The topics included are:
  - Exception responses
  - Error recovery after communication stops between a workstation and the host

SNA RJP Recording Environment

The SNA RJP recording environment produces traces for problem determination of SNA RJP modules. For a discussion of the commands used to invoke the SNA RJP recording environment, see *z/OS JES3 Commands*.

Traces can include:

- Protocols, including chaining, bracket, and function management header information.
- Negative response sense data.
- Task control block and service request block interactions.
- Results of compare and swap operations.
- Error returns from VTAM.
- Up to four bytes of pertinent data.

The traced information is printed automatically:

- A session is ended.
- The operator entered a *STARTRJP command with the TRACEOFF parameter.
- Inbound data errors are detected by JES3.

The SNA RJP recording environment also produces snapshot dumps when decompress or deblock errors occur for inbound data. Like traces, snapshot dumps are produced only if the SNA RJP recording environment has been activated for a workstation; they are then printed automatically when the errors are detected.

The trace output consists of a trace table header, a number of 8-byte entries, and the following control blocks: logical unit control block (LCB); buffer entries (BFEs); request/response units (RUs); workstation block (WSB); and device entries (DVEs).

```
                 ***************************************************************************************************************
                 *                                   SESSION TRACE TABLE SNAP  85.004
                 ***************************************************************************************************************

********  TRACE TABLE - REASON FOR SNAP IS OPER. CANCEL  1

09510270  02101940  2  E3D9C3C5 00000000 E2F8F1F0 F0D3F8F1  F0F24040 40500040 00000000 00000000  *TRCE....
          02101960     00000000 00000000 00000000 00000000  00000000 00000000 02101B50 02101CA0  *..........................&....*
          02101980  3  E8030000 00000000 E301E805 00000000  E3040000 00000000 E313000E 00000000  *Y.......T.Y.....T.......T.......*
          021019A0     E3090000 00000000 D6030000 00000000  D401D90C 00000000 E30D800E 00000000  *T.......O.......M.R.....T.......*
          021019C0     E401C000 5D000000 D401D90C 00000000  E30D8000 00000000 E30D800E 00000000  *U...)...M.R.....T.......T.......*
          021019E0     C30C0000 00000000 D401D90C 00000000  E3130000 00000000 E501000E 00000000  *C.......M.R.....T.......V.......*
          02101A00     E506CC00 03000000 D401E50B 00000000  D401C309 00000000 E301D40E 00000000  *V.......M.V.....M.C.....T.M.....*
          02101A20     E3130000 00000000 D6030000 00000000  D401D90C 00000000 E30D800E 00000000  *T.......O.......M.R.....T.......*
          02101A40     E4014000 61000000 D401D90C 00000000  E30D8000 00000000 E30D800E 00000000  *U. .....M.R.....T.......T.......*
          02101A60     C30C0000 00000000 D401D90C 00000000  E3130000 00000000 E501000E 00000000  *C.......M.R.....T.......V.......*

********  DVE'S   7

09510273  020F61FC     00000000 00000000 020F615C 020F6154  00000000 00000000 00000000 11204000  *..............*.............. .*
          020F621C     00000000 00000000 00000000 00000000  FFFFFFFF 00000000 00000000 00000000  *...............................*
          020F623C     00000000 00000000 00000000 00000000  00000000 00000000 00000000 020F6154  *...............................*
          020F625C     020F64F8 00000000 00000000 00000000  00000000 00000000 00000000 00000000  *...8............. ............*
          020F627C     00000000 FFFFFFFF 00000000 00000000  00000000 00000000 00000000 00000000  *...............................*

          4    5

********  LCB - BFE'S START AT 021156DC RU'S START AT 021157FC

09510271  02115008     D3C3C240 D3F8F1F0 F2404040 02116008  020F6154 01000001 02042810 00000100  *LCB L8102   ....................*
          02115028     00000000 00000000 00000000 00000000  00000000 00000000 00000000 010303A1  *...............................*
          02115048     A1708000 03858504 00011000 00B10080  00000100 00000800 40404044 40404000  *......................       .*
          02115068     00000000 00000000 00000000 00000003  00000002 00000000 00020000 02115700  *...............................*
          02115088     02115700 021156D8 021156DC 00080100  021157FC 00000000 C000000C 00000000  *.......Q.......................*
          021150A8     00000000 00000000 00000000 00000000  00000000 00000000 10000001 00000000  *...............................*
          021150C8     0000000D 00300000 00000000 00400040  00012000 00000000 00000000 20080000  *............. . ...............*

********  WSB  6

09510272  020F6154     E6E2C240 E2F8F1F0 F0404040 40404040  40404040 40404040 40404044 00000000  *WSB S8100                  ....*
          020F6174     00000000 02100008 020F63C0 020944A8  020F61FC 020F6202 00000000 020F62F8  *......................&.......8*
          020F6194     020F61FC 00000500 00000002 00000000  00000000 50000050 00000000 00000000  *...................&...........*
          020F61B4     00000000 00000000 00000000 00000000  01000002 00000000 00000000 00000000  *...............................*
          020F61D4     C2C1E3C3 C8404040 00000000 00000000  00000000 00000000 00000000 00000000  *BATCH   ........................*
          020F61F4     00000000 00000000                                                        *........                      *
```

1 TRACE TABLE - REASON FOR SNAP IS . . . can indicate one of the following:

Reason
: **Explanation**

OPER. REQUEST
: The command *S,SNARJP,T=WSnnn,TRACEOFF was entered by the operator.

OPER. CANCEL
: The command *C(or *R),SNARJP,T=WSnnn was entered by the operator.

OPER. CANCEL (,I)
: The command *C(or *R),SNARJP,T=WSnnn,I was entered by the operator.

LU LOGGED OFF COND.
: A LOGOFF TYPE=COND command was entered from the workstation.

LU LOGGED OFF UNCOND.
: A LOGOFF TYPE=UNCOND command was entered from the workstation.

DFC INTERNAL CANCEL
: An event such as session abend occurred.

DFC RESTARTED LU
: JES3 entered a Clear or Start Data Traffic command for this session (instead of quiescing the session).

The trace table header contains the following:

Offset
: **Description**

X'08'
: Workstation name

X'0D'
: Logical unit (LU) name

X'15'
: Session bind options:

  X'80'
  : Peripheral data set information records (PDIRs)

X'40'
Card format input

X'20'
Card format output

X'10'
Document format output

X'08'
Inbound compression

X'04'
Outbound compression

X'02'
Inbound compaction

X'01'
Outbound compaction

X'16'
Session bind options:

X'80'
ASCII

X'40'
Cards may span request/response units (RUs)

X'17'
Console simulation:

X'80'
Console is simulated

X'38'
Address of next available trace entry (the preceding 8 bytes contain the most current entry)

X'3C'
End of trace table

Each trace table entry is eight bytes long. The general format of an entry is:

module-id	subpath	data
0	1	2-8

module-id
A one-character identifier for the module being traced. For the IATSNDx series of modules, the module ID is the last letter of the module name. For other modules, identifiers are:

Module ID
Module

W
IATSNLD

X
IATSNLO

Y
IATSNLS

Z
IATSNLB

subpath
A two-digit number that identifies the trace point within the module.

data
The traced information, which varies with placement of the IATXSNTR macro and with its subparameters.

2 Trace table entries begin at offset X'40'. With no table wraparound, the first entry will be the oldest, and offset X'38' will point to the next available entry. With a table wraparound, offset X'38' will point to the oldest entry.

3 To analyze a trace entry, first locate the path identifier in the first two bytes of the entry. The path identifier consists of a one-character module identifier and a two-digit subpath identifier. Next, look up the path identifier in the first column of Table 9 on page 72, and find the type of trace (PATH, DFC, RESP, or ERR) in the second column. The third column explains the circumstances of the trace and describes the format of the trace.

4 The logical unit control block (LCB) is the internal representation of a session. The LCB contains the session's send/receive request parameter lists (RPLs), the node initialization block (NIB) used to connect with the logical unit, stack pointers, and pointers for managing send/receive buffers.

5 There is one buffer entry (BFE) per request/response unit (RU). BFEs contain summaries of information about RUs, including chain element position and protocols. Each BFE points to its associated RU. The BFE is the basic interface to module IATSNDM, which updates session states for protocols.

6 The workstation block (WSB) is built by module IATINWS during processing of the RJPWS initialization statement. The WSB is the anchor for all session control blocks associated with a specific terminal.

7 The device entry (DVE) is used for allocating a device to a session, and is the mechanism used for managing session interrupt situations. Each LCB contains two push-down stacks, an inbound stack and an outbound stack. When a device is allocated to a session, its DVE is pushed into the appropriate stack. When the device is allocated, its DVE is removed from the stack.

Table 9. SNA RJP Recording Environment Trace Entries

IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
A01	ERR	There has been a VTAM macro error return. See “Trace entry formats” on page 99 for the trace format.
A05	PATH	An error return indicates that the request cannot be satisfied, but can be retried. IATSNDA issues an EXECRPL macro and checks the result. No data is traced.
A0D	PATH	IATSNDA is returning to its caller. Byte 5 of the trace entry contains the return offset if the return is not a normal return. Byte 5 can contain: **X'00'** Retry **X'04'** Permanent error **X'08'** Temporary error
IATSNDC Trace Entries Module IATSNDC is the workstation close module. It is called when a session is no longer needed, or when a session is to be temporarily released (a writer may temporarily release a session to allow sending of console data).		
Path ID	**Type**	**Explanation**

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
C01	PATH	During CLOSE processing, the quiesce-immediate bit was set on in the logical unit control block. Information about the device being closed is traced. The trace entry format is: **Offset** **Contents** **0** C01 **2** DVEDVSL **3** DVECON DVEDVSL **X'30'** Printer **X'20'** Reader or punch **X'10'** Exchange or basic exchange device **X'00'** Subaddress (for example, X'30' is PR1, X'31' is PR2) DVECON **X'08'** Outbound console on a stack **X'20'** Inbound console **X'28'** Inbound console on a stack
C03	PATH	A CLOSE macro has been issued for a writer. No data is traced.
C05	DFC	The writer has entered CLOSE processing specifying TYPE=TEMP, and its session may be interrupted. A Suspend Destination will be sent if the console close routine needs to send. A Suspend Destination, Change Direction will be sent if a Signal RU has been received from the workstation.
C07	DFC	One of the following will be sent for the writer being closed: • End Destination, End Bracket • End Destination, Change Direction • Abort Destination See “Trace entry formats” on page 99 for the trace formats.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
C0A	PATH	The console close routine will find a suspended writer and will send a Resume Destination. The resume address is traced. The trace entry format is: **Offset** **Contents** **0** C0A **2** FMH1DTY FMH1DTY **X'30'** Printer **X'20'** Punch **X'0F'** Subaddress (for example, X'30' is PR1, X'31' is PR2)
C0C	PATH	The console close routine will send End Destination, End Bracket to close a prior console Begin Bracket, Begin Destination. No data is traced.
C0E	PATH	The console close routine will send Only in Chain, Change Direction because it found a reader on the inbound stack. No data is traced.
C10	PATH	The workstation close processing abnormally ended while using this session.
CFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** CFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

IATSNDD Trace Entries

Module IATSNDD is the DFASY module. It is an exit routine that is scheduled when one of the following is sent by a workstation:

- Signal RU (request for Change Direction)
- Request Shutdown command

Path ID	Type	Explanation
D01	PATH	Identifies request/response unit (RU) type (Signal or Shutdown). A Signal RU is supported as a request for Change Direction. A Request Shutdown is a request for immediate session termination. The trace entry format is: **Offset** **Contents** **0** D01 **2** RPLCNTDC **3** RPLCNTSC **4-5** RPLSIGDA RPLCNTDC **X'10'** Signal RU received RPLCNTSC **X'10'** Request Shutdown command received RPLSIGDA • Must be X'0001' for Signal RU, otherwise the session will be terminated.
D02	PATH	Following processing of a Signal RU, module IATSNLO is scheduled. Module IATSNLO will send Suspend Destination, Change Direction. No data is traced.

IATSNDE Trace Entries

Module IATSNDE is the termination module. It is called when a session is to be quiesced or cleared, in response to an operator command or following a session error.

Path ID	Type	Explanation

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
E01	PATH	Module IATSNDE has been entered. Each entry to module IATSNDE causes a trace, even when no action is taken. The trace entry format is: **Offset** – **Contents** **0** – E01 **2-4** – caller-id **5** – type of quiesce requested Caller ID • See Figure 24. Type of quiesce requested **X'00'** – Quiesce at End Bracket **X'04'** – Quiesce immediately **X'08'** – Send Clear or Start Data Traffic command
E02	PATH	Module IATSNDE has been entered for a normal quiesce and has determined that the session is between brackets. No data is traced.
E05	PATH	The reset routine found the outbound console's device entry on the stack, but the console is waiting for a response to an End Destination. Since the console has already been through CLOSE processing, module IATSNDE will do the destack. The trace entry format is: **Offset** – **Contents** **0** – E05 **2** – WSBCOPN WSBCOPN **X'08'** – Console requested a session; an outstanding End Destination response exists.
E06	PATH	The reset routine found a writer on the stack, but the destack routine is waiting for a response to End Destination. Since the console has already been through CLOSE processing, module IATSNDE will do the destack. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
E07	PATH	All session users have been quiesced. Module IATSNDE is about to do the ENQUEUE for the CLSDST routine, or is about to call module IATSNDT to send a Start Data Traffic command. The trace entry format is: **Offset** **Contents** **0** E07 **2** LCBCSFL2 **3** LCBCSFL0 LCBCSLF2 **X'80'** Store session at end of chain **X'10'** Quiesce immediately **X'08'** Send Clear or Start Data Traffic command LCBCSFL0 **X'20'** Writer is in OPEN processing **X'10'** Console is in OPEN processing
E09	PATH	The SESSIONC (cleared) exit routine has been scheduled. No data is traced.

IATSNDM Trace Entries

Module IATSNDM is the state manager module. It updates the session state for brackets, chains, change directions, and function management headers.

Path ID	Type	Explanation
M01	PATH	Module IATSNDM has been entered. The trace entry format is: **Offset** **Contents** **0** M01 **2-3** caller-id Caller ID • See Table 13 on page 107.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
M04	PATH	Module IATSNDM did an ENQUEUE for inbound console data because Begin Bracket, Begin Destination Select was received. No data is traced.
M05	PATH	The line control block (LCB) is placed on the Open queue for processing.
M06	RESP	Routine NRSP was called to send a negative response. See "Trace entry formats" on page 99 for the trace format.
M09	DFC	A positive response was sent to the query request routine; a compaction table is being sent. The trace entry shows the query for the compaction table function management header. See "Trace entry formats" on page 99 for trace formats.
M0B	PATH	A negative response was sent to an inbound stream and a Cancel or End of Chain has been received. The trace entry format is: **Offset** **Contents** **0** M0B **2** RPLRH3 RPLRH3 **X'40'** End Bracket
MFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** MFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.

IATSNDN Trace Entries

Module IATSNDN is the negative response routine. It sends a negative response for data-related errors for VTAM-detected protocol violations.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
Path ID	**Type**	**Explanation**
N01	RESP	Module IATSNDN will send the negative response. Either module IATSNFI found a data-related error (sense - 1001), or VTAM detected an inbound protocol violation. See "Trace entry formats" on page 99 for the trace format.
NFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** NFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.
IATSNDO Trace Entries Module IATSNDO is the workstation open routine. It obtains sessions for writers and consoles.		
Path ID	**Type**	**Explanation**
O03	PATH	A Begin Bracket, Begin Destination is being sent for a console. The session is idle. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

004	PATH	A Suspend Destination is being sent for the indicated writer. The trace entry format is:
		Offset
		    Contents
		0
		    004
		2
		    FM1DTY
		FM1DTY
		X'F0'
		    Media indicator
		X'30'
		    Printer
		X'20'
		    Punch
		X'0F'
		    Subaddress (for example, 30 is PR1)

006	DFC	A Begin Destination is being sent on behalf of the writer. See "Trace entry formats" on page 99 for trace formats.
007	PATH	A peripheral data set information record (PDIR) is being sent for the writer. The PDIR copies field is traced.
009	PATH	A session was found for the calling writer. However, the buffer cannot be used because the receive exit routine may be receiving an inbound bracket. To prevent multiple simultaneous use of the logical unit control block (LCB), buffer entries (BFEs), and request units (RUs), a Begin Bracket, Only in Chain is sent. No data is traced.
00B	DFC	The compaction table will be sent. See "Trace entry formats" on page 99 for trace formats.
00D	PATH	A negative response was received during writer OPEN processing. No data is traced.
00F	PATH	The workstation open processing abnormally ended when using this session.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

Path ID	Type	Explanation
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
OFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** OFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.
IATSNDP Trace Entries Module IATSNDP is the RUPUT module. It obtains a request/response unit (RU) to be filled with data and makes the previously filled RU available to the send exit routine (IATSNDS).		
Path ID	**Type**	**Explanation**

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
P07	PATH	Module IATSNDP detected a session-related error. The error reason code returned to the caller is traced is follows: **Offset** **Contents** **0** P07 **2** reason code Reason Code **X'0C'** Temporary device error **X'10'** Permanent device error **X'14'** Session error **X'18'** Terminate immediately **X'20'** Intervention required (writer only)
P08	PATH	The workstation put processing abnormally ended when using this session.

IATSNDR Trace Entries

Module IATSNDR is the inbound response exit routine. IATSNDR is scheduled when a positive or negative response is received from a workstation. For positive responses, it calls module IATSNDM; for negative responses, it calls its PURGE routine to determine whether a Cancel must be sent.

Path ID	Type	Explanation
R01	RESP	A negative response to an outbound chain was received before the End of Chain RU was sent. This is an interrupt request block (IRB) scheduled entry to IATSNDR. Sense bytes are traced. See “Trace entry formats” on page 99 for the trace format.
R03	RESP	A negative response was received after the End of Chain RU was sent. This is a system request block (SRB) scheduled entry to IATSNDR. Sense bytes are traced. See “Trace entry formats” on page 99 for the trace format.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

R04	PATH	A negative response was received and the PURGE routine was called. The trace entry format is:
		Offset
		    Contents
		0
		    R04
		2
		    LCBWTRO
		3
		    DVEDTYP
		LCBWTRO
		X'20'
		    Writer is in OPEN processing
		X'10'
		    Console is in OPEN processing
		DVEDTYP
		X'80'
		    Console
		X'40'
		    Punch
		X'20'
		    Printer

R05	PATH	A negative response (sense 0802) was received to a writer OPEN request. A RECEIVE SPEC macro is issued for the expected LUSTAT. (Sense value 0802 means intervention required. The status is sent inbound when the device is readied.) No data is traced.
R07	PATH	A Begin Bracket, End Bracket will be sent because a permanent console error occurred following a console Begin Bracket, Begin Destination. No data is traced.
R09	PATH	In the case of a negative response to an outbound console RU, the PURGE routine determined that the send exit routine (IATSNDS) either is active or will be activated. No data is traced.
R0A	PATH	A Cancel RU is sent to cancel an outbound console request. No attempt is made to reactivate the send exit routine (IATSNDS). No data is traced.
R0D	PATH	A positive response to a writer End of Chain was received and the writer (SNDP) was posted to handle it. No data is traced.
R0E	PATH	In the case of a negative response to a writer RU, the PURGE routine determined that the send exit routine (IATSNDS) either is now active or will be activated. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
R0F	PATH	In the case of a negative response to a writer RU, the PURGE routine determined that the send exit routine (IATSNDS) was no longer active and so posted the writer (IATSNDP) to handle the negative response. No data is traced.
R10	PATH	The SRB error routine, SRBTERR, has been invoked because a SEND EOC request completed with a temporary error because of a negative response to a previous RU. No data is traced.
R11	PATH	When processing a temporary error condition for a SEND EOC request, the SRBTERR routine determined that the SEND was issued by a writer and that the IRB negative response exit already processed the pending - R. Therefore, SRBTERR posted the writer (SNDP) to handle the error. No data is traced.
R12	PATH	When processing a temporary error condition for a SEND EOC request, SRBTERR routine determined that the IRB negative response exit had not yet processed the pending - R. Therefore, SRBTERR exited from SRB processing. No data is traced.
RFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** RFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.

IATSNDS Trace Entries

Module IATSNDS is the send exit routine. It is scheduled through a system request block (SRB), and it issues SEND macros if data is available.

Path ID	Type	Explanation

<table>
<tr><td colspan="3">Table 9. SNA RJP Recording Environment Trace Entries (continued)</td></tr>
<tr><td colspan="3">IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.</td></tr>
<tr><th>Path ID</th><th>Type</th><th>Explanation</th></tr>
<tr><td>S02</td><td>PATH</td><td>VTAM responded to a SEND macro with the error return code 0C, 0D (request cancelled, prior negative response outstanding). The SEND request was for an outbound console RU. The trace entry format is:

Offset
    Contents
0
    S02
2
    RPLCHN

RPLCHN
X'80'
    First of Chain
X'40'
    Middle of Chain
X'20'
    End of Chain
X'10'
    Only in Chain</td></tr>
<tr><td>S03</td><td>PATH</td><td>VTAM responded to a SEND macro with the error return code of 0C, 0D (request cancelled, prior negative response outstanding). The SEND request was for writer output. The trace entry format is:

Offset
    Contents
0
    S03
2
    RPLCHN

RPLCHN
X'80'
    First of Chain
X'40'
    Middle of Chain
X'20'
    End of Chain
X'10'
    Only in Chain</td></tr>
</table>

Table 9. SNA RJP Recording Environment Trace Entries (continued)

Path ID	Type	Explanation
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
IATSNDT Trace Entries Module IATSNDT is the restart routine. It initializes a session for logon complete and session restart situations. At every End of Chain, IATSNDT determines what activity should occur next. At First of Chain and Middle of Chain, IATSNDT activates receive or send exits.		
Path ID	**Type**	**Explanation**
T01	PATH	Module IATSNDT has been entered. The trace entry format is: **Offset** **Contents** **0** T01 **2** caller-id Caller ID • See Table 14 on page 108.
T02	PATH	The receive system request block (SRB) is reactivated. No data is traced.
T04	PATH	The start data traffic exit routine has been scheduled. No data is traced.
T06	PATH	The session is between brackets and in normal quiesce state. No data is traced.
T09	PATH	The line control block (LCB) is placed on the Open queue for processing.
T0A	PATH	A RECEIVE macro is issued for the expected LUSTAT after a negative response (0802) to a writer or console data chain. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

T0B	PATH	The writer's session will be interrupted because the console will send or because Signal was received. The trace entry format is:
		Offset
		    Contents
		0
		    T0B
		2
		    RPLRH3
		3
		    DVEDVSL
		RPLRH3
		X'20'
		    Change Direction
		DVEDVSL
		X'30'
		    Printer
		X'20'
		    Reader or punch
		X'10'
		    Exchange or basic exchange device
		X'0F'
		    Subaddress (for example, X'30' is PR1, X'31' is PR2)

T0C	PATH	The compare-and-swap lock between IATSNDT and IATSNDO is checked. No data is traced.

T0D	PATH	The SNDTCONS routine has been entered under the assumption that the console must be serviced. The trace entry format is:
		Offset
		    Contents
		0
		    T0D
		2
		    DVEDTYP
		DVEDTYP
		X'80'
		    Console
		X'40'
		    Punch
		X'20'
		    Printer

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
T0E	PATH	The SNDTCONS routine will send Only in Chain, Change Direction in the case where IATSNDV received a Change Direction, but in the process the console acquired another session. No data is traced.
T0F	PATH	An End Bracket will be sent to the workstation. No data is traced.
T10	PATH	A Resume Destination will be sent. A writer was suspended for a reader or console completion and the address of the device on which the writer is to resume activity is traced. The trace entry format is: **Offset** **Contents** **0** T10 **2** DVEDVSL DVEDVSL **X'30'** Printer **X'20'** Reader or punch **X'10'** Exchange or basic exchange device **X'0F'** Subaddress (for example, X'30' is PR1, X'31' is PR2)
T13	PATH	The session is between brackets and has issued a RESETSR macro to put the session in continue any (CA) mode.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

TFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active.
		Offset
		    Contents
		0
		    TFF
		2
		    MODE
		3
		4
		    RPLPLHPT
		MODE
		X'00'
		    The abnormal end is a DM551.
		X'80'
		    The abnormal end is a X'AFB'.
		RPLPLHPT is the link register of the current RPL user.

IATSNDU Trace Entries

Module IATSNDU is the output routine that is used by the restart (module IATSNDT) to activate the Send exit routine (module IATSNDS). Module IATSNDU is also used by the Send exit routine for sending of the front request/response unit (RU) or for sending a cancel command

Path ID	Type	Explanation
U01	DFC	The SENDIT routine is about to send the front RU. Only the first End of Chain (Only in Chain) between function management headers is traced to avoid frequent End of Chain, positive response sequences likely for outbound mains. See “Trace entry formats” on page 99 for the trace formats.

U02	PATH	The writer is sending a Set Vertical Format (FCB load) sequence. The trace entry format is:
		Offset
		    Contents
		0
		    U02
		2-5
		    SUPCARR
		SUPCARR
		• Function control block (FCB) name

U03	PATH	IATSNDU has detected a purging chain state, and will send a cancel command. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
U05	PATH	IATSNDU has received an 0C,0D return code on an outbound console SEND request (indicating a Send was cancelled because a previous negative response was outstanding). The trace entry format is: **Offset** **Contents** **0** U05 **2** RPLCHN RPLCHN **X'80'** First of Chain **X'40'** Middle of Chain **X'20'** End of Chain **X'10'** Only in Chain
U07	PATH	IATSNDU has received an 0C,0D return code on a SEND request for writer output (indicating a Send was cancelled because a previous negative response was outstanding). The trace entry format is: **Offset** **Contents** **0** U07 **2** RPLCHN RPLCHN **X'80'** First of Chain **X'40'** Middle of Chain **X'20'** End of Chain **X'10'** Only in Chain

<table>
<tr><td colspan="3">Table 9. SNA RJP Recording Environment Trace Entries (continued)</td></tr>
<tr><td colspan="3">IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.</td></tr>
<tr><td>Path ID</td><td>Type</td><td>Explanation</td></tr>
<tr><td>UFF</td><td>ABEND</td><td>An attempt was made to reuse a request parameter list (RPL) which is still active.

Offset
    Contents
0
    UFF
2
    MODE
3
4
    RPLPLHPT

MODE
X'00'
    The abnormal end is a DM551.
X'80'
    The abnormal end is a X'AFB'.

RPLPLHPT is the link register of the current RPL user.</td></tr>
<tr><td colspan="3">IATSNDV Trace Entries

Module IATSNDV is the receive exit routine. It contains two SRB-scheduled routines: receive any (RCVANY) and receive specific (RCVSPEC).</td></tr>
<tr><td>Path ID</td><td>Type</td><td>Explanation</td></tr>
<tr><td>V01</td><td>PATH</td><td>The receive any routine has been scheduled and a Begin Bracket request/ response unit (RU) has been received. The session direction, regardless of initial setting, has been forced to inbound. No data is traced.</td></tr>
</table>

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
V04	PATH	A non-data RU such as LUSTAT has been received. The trace entry format is: **Offset** Contents **0** V04 **2** RPLCNTDC **3** RPLCNTDF RPLCNTDC **X'40'** Ready to Receive (RTR) command received **X'20'** LU status received RPLCNTDF **X'80'** Data RU **X'40'** Cancel **X'04'** Chase
V05	PATH	VTAM has detected an inbound protocol error and requires JES3 to send a negative response with the sense bytes traced. The trace entry format is: **Offset** Contents **0** V05 **2-5** LCBSNS LCBSNS • Sense Bytes (See *VTAM Macro Language Reference*).
V06	DFC	A First of Chain or Only in Chain has been received. See "Trace entry formats" on page 99 for trace formats.
V07	PATH	Module IATSNDV will send a Signal (0001) RU to request Change Direction. The console routine entered OPEN processing and found no available sessions and no currently outbound sessions. Therefore, it set an indicator so module IATSNDV would request interruption of an outbound session. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
V08	PATH	A purging chain state has been detected, probable because module IATSNDN sent a negative response. The first entry to the PURGE routine will be traced, and the receipt of the End of Chain. Cancel will be traced. Intervening RUs are not traced. The trace entry format is: **Offset** **Contents** **0** V08 **2** RPLCNTDF **3** RPLCHN RPLCNTDF **X'80'** This is a data RU **X'40'** Cancel **X'04'** Chase RPLCHN **X'80'** First of Chain **X'40'** Middle of Chain **X'20'** End of Chain **X'10'** Only in Chain
V09	PATH	A cancel command or end of chain has been received, and a purging chain state exists. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
V0C	PATH	A data flow control request/response unit (RU) has been received. The trace entry format is: **Offset** **Contents** **0** V0C **2** validity **3** LCBRXM **4** LCBCNSO **5** DVEDVSL validity **X'80'** Byte 5 (DVEDVSL) contains a valid address **X'00'** Byte 5 (DVEDVSL) contains an invalid address **X'80'** Wait for Logical Unit Status (LUS) command. The sense bytes contain X'0802' **X'40'** Wait for Logical Unit Status (LUS) command. The sense bytes contain X'081B' **X'20'** Unit is available if RU is an LUS command; unit is unavailable in all other cases. LCBCNSO **X'20'** OPEN processing being performed for a writer. **X'10'** OPEN processing being performed for a console. DVEDVSL

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries **Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.**		
Path ID	**Type**	**Explanation**
V0C (continued)		Valid only if byte 2 (validity) contains X'80'. Upon receipt of a negative response (sense bytes contain X'0802' or X'081B') module IATSNDR provides the address of the device entry representing the unit for which there is a wait for an LUS command. **X'30'** Printer **X'20'** Reader or punch **X'10'** Exchange or basic exchange device **X'00'** Console **X'0F'** Subaddress (for example, X'30' is PR1, X'31' is PR2)
V0D	PATH	The DFCRU subroutine will send a Begin Bracket, End Bracket, Only in Chain, Null request/response unit (RU) for an error recovery program when a LUSTAT follows a console Begin Destination.
V0F	PATH	The “receive any” exit has been scheduled for a session that is already inbound. Another “receive any” will be issued without issuing a “receive specific.”
VFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** VFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.
IATSNLB Trace Entries Module IATSNLB builds required control blocks for a new logon and searches the remote logon table (RLT) entries for workstations which require logon.		

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation
Path ID	**Type**	**Explanation**
BFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** BFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.

IATSNLO Trace Entries:

Module IATSNLO provides the SNA DSP with the following routines: console queued-to-depth, console message appendage, operator command processor, and work queue processor. The services provided are requested by TCB/SRB/IRB routines through the IATXENQ macro.

Path ID	Type	Explanation

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.		
Path ID	**Type**	**Explanation**
X01	PATH	The work queue processor routine sends Suspend Destination, Change Direction if the writer is 'temporarily closed'. Module IATSNDD initiated the request because a Signal RU was received. The trace contains the address of the suspended unit. The trace entry format is: **Offset** **Contents** **0** X01 **2** DVEDVSL DVEDVSL **X'30'** Printer **X'20'** Reader or punch **X'10'** Exchange or basic exchange device **X'00'** Console **X'0F'** Subaddress (for example, X'30' is PR1, X'31' is PR2)
XFF	ABEND	An attempt was made to reuse a request parameter list (RPL) which is still active. **Offset** **Contents** **0** XFF **2** MODE **3** **4** RPLPLHPT MODE **X'00'** The abnormal end is a DM551. **X'80'** The abnormal end is a X'AFB'. RPLPLHPT is the link register of the current RPL user.

Table 9. SNA RJP Recording Environment Trace Entries (continued)

IATSNDA Trace Entries

Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.

Path ID	Type	Explanation

IATSNLS Trace Entries

Module IATSNLS is the SNA RJP subtask. It:

- Opens the access method control block (ACB) and issues a SETLOGON macro
- Closes the ACB and returns to MVS upon termination of SNA RJP
- Contains VTAM exit routines scheduled through IRBs

Path ID	Type	Explanation
Y03	PATH	The OPNDST exit routine has been entered. A response has been received to the JES3 bind request. No data is traced.
Y06	PATH	The CLSDST exit routine has been entered. No data is traced.

Y0D	PATH	The LOSTERM routine has been entered (because of logoff, buffer limit exceeded, or lost contact). LOSTERM reason codes are documented in module IATSNLS. See *VTAM Macro Language Reference* for additional codes. The trace entry format is:
		Offset
		    Contents
		0
		    Y0D
		2
		    LOSTERM
		LOSTERM
		Major codes are:
		X'14'
		    LU logoff immediate
		X'20'
		    LU logoff conditional
		X'24'
		    Buffer limit exceeded
		Note: If the buffer limit is exceeded 5 times, a CLR/Start Data Traffic will be issued for the session.

IATSNRS Trace Entries

Module IATSNRS is responsible for resetting:

- Printers
- Punches
- Card readers
- Consoles

Path ID	Type	Explanation
H01	PATH	Module IATSNRS is entered. No data is traced.

Table 9. SNA RJP Recording Environment Trace Entries (continued)		
IATSNDA Trace Entries		
Module IATSNDA is the error check module. It is called to issue the CHECK macro upon completion of an asynchronous request. Module IATSNDA is also called if the contents of register 15 are nonzero following issuance of a VTAM macro either upon acceptance of an asynchronous request, or upon completion of a synchronous request.		
Path ID	**Type**	**Explanation**
H02	PATH	The console device is being reset. No data is traced.
H03	PATH	The console device is closed. No data is traced.
H04	PATH	The writer type devices are reset. No data is traced.
H05	PATH	The reader type devices are reset. No data is traced.

While attempting to logon to a SNARJP workstation, JES3 encountered an error. JES3 returns sense information to the VTAM application or workstation. The LOGON command failed for one of the following reasons:

Table 10. Sense codes

Sense Code in Hex	Explanation
0801	The resource is not available. The LOGON command was entered issuing a request to a workstation that is not defined to JES3 or JES3 is unable to obtain the necessary resources to establish the session.
0804	An incorrect password was specified by a workstation logging on.
0805	JES3 reached the maximum number of active sessions.
080F	The workstation is not available for logon. The maximum number of attempts to logon has been reached.
0815	The workstation is already logged on.
0818	The workstation is currently ending.
0821	The workstation specified incorrect parameters.

Trace entry formats

DFC Trace Entry Format, FMH Present:

Offset
 Contents

0
 path-id

2
 BFECFLG1

3
 FMHLNGTH

4
 FMHTYPE

5
 FMH1DTY
 FMH2CODE

6
FMH1DSFL

7
FMH1ERCL

BFECFLG1

X'80'
First of Chain

X'40'
End of Chain

X'20'
Middle of Chain

X'C0'
Only in Chain

X'10'
Next entry is function management header (FMH) present entry

X'08'
Begin Bracket

X'04'
End Bracket

X'02'
Change Direction

X'01'
Associated request/response unit (RU) is in ASCII

FMHLNGTH (length of the FMH)

FMHTYPE

X'01'
Type 1 header

X'02'
Type 2 header: JES3 peripheral data set information record (PDIR) or box query for compaction table

X'03'
Type 3 header: used by JES3 to send compaction tables

FMH1DTY (Type 1 headers only)

X'30'
Printer

X'20'
Reader or punch

X'10'
Select-diskette/data format is SNA

X'00'
Console

FMH2CODE (Type 2 and type 3 headers)

X'03'
Box query for compaction table (type 2 headers)

X'02'
Compaction table (type 3 headers)

X'01'
Print/punch setup header (type 2 headers)

FMH1DSFL (Type 1 headers only)

X'80'
Suspend Destination

X'40'
Begin Destination

X'20'
End Destination

X'10'
Select-diskette/data format is non-SNA

X'E0'
Resume Destination

X'C0'
Continue Destination

X'A0'
Abort Destination

X'04'
Stream will be compressed

X'02'
Stream will be compacted

FMH1ERCL (Type 1 headers only - logical length of the stream)

DFC Trace Entry Format, FMH Not Present:

Offset
Contents

0
path-id

2
BFECFLG1

3-4
BFEDATL

BFECFLG1

X'80'
First in Chain

X'40'
End of Chain

X'20'
Middle of Chain

X'C0'
Only in Chain

X'10'
Next entry is FMH present entry

X'08'
Begin Bracket

X'04'
End Bracket

X'02'
Change Direction

X'01'
Associated RU is in ASCII

BFEDATL

is the RU length

RESP Trace Entry Format:

Offset
: **Contents**

0
: path-id

2-5
: sense bytes

Sense Byte 1

X'80'
: Path error

X'40'
: RH error in the transmitted RU (RH indicates chaining, brackets, RMH, CD)

X'20'
: State error, such as:

  X'20010000'
  : Sequence error

  X'20020000'
  : Chaining violation

  X'20030000'
  : Bracket protocol error

X'10'
: Request error

  X'10010000'
  : Deblock/decompress error, inbound

  X'1008xxxx'
  : FMH error:

    X'1008080B'
    : Invalid compaction table name

    X'10082001'
    : Invalid destination, destination is active

    X'10082004'
    : Interruption level violation

    X'10082007'
    : Destination not available

    X'10082008'
    : Invalid end sequence

    X'10082009'
    : Invalid FMH length

    X'1008200A'
    : Invalid field setting

    X'10082010'
    : Bind FMH header violation

    X'10082019'
    : Stack reference error

X'10084001'
Invalid FMH type

X'10084002'
Invalid FMH code

X'10084007'
Media not supported

X'10084009'
Concatenation error

X'08'
Request reject, such as:

X'08020000'
Intervention required

X'08140000'
Bracket reject, Ready to Receive may follow

X'081B0000'
Bracket reject, LU status may follow

ERR Trace Entry Format:

Offset
Contents

0
path-id

2
RPLREQ

3
RPLRTNCD

4
RPLFDB2

5-6
caller-id

RPLREQ

- Request type, traced if a logical unit control block (LCB) pointer exists.

X'15'
Set logon

X'16'
Simulate logon

X'17'
Open Destination

X'1A'
Inquiry, session parameters

X'1F'
Close Destination

X'22'
Send

X'23'
Receive

X'24'
Reset Send or Receive

X'25'
Clear or Start Data Traffic

RPLRTNCD

Return code, traced if an LCB pointer exists.
See *VTAM Programming.*

RPLFDB2

Feedback code, traced if an LCB pointer exists.
See *VTAM Programming.*

Caller ID

See Table 11 on page 104.

Table 11. Caller IDs, Path A01

Caller ID	Caller	Explanation
A03	IATSNDA	ERCK000 called internally after EXECRPL macro issued.
A04	IATSNDA	ERCK000 called internally after EXECRPL macro issued.
C04	IATSNDC	Cancel send by the writer CLOSE routine.
C06	IATSNDC	Suspend Destination or Suspend Destination, Change Direction sent by the writer CLOSE routine.
C08	IATSNDC	End Destination, End Bracket or End Destination, Change Direction or Abort Destination sent for the writer.
C0B	IATSNDC	Resume Destination select sent by the console CLOSE routine.
C0D	IATSNDC	End Destination, End Bracket sent by the console CLOSE routine.
C0F	IATSNDC	Only in Chain, Change Direction sent to resume activity of an inbound reader interrupted for the outbound console.
E08	IATSNDE	SESSIONC macro issued (SRB scheduled).
E0A	IATSNDE	SESSIONC macro entered cleared exit. IATXERCK macro issued to check a VTAM return code.
M02	IATSNDM	Send positive response (SRB control).
M03	IATSNDM	Send positive response (DSP control).
M07	IATSNDM	Negative response sent by the NRSP routine.
M08	IATSNDM	Send positive response to query for compaction table.
M0A	IATSNDM	Compaction table sent.
M0C	IATSNDM	Send End Bracket or Change Direction for ERP after negative response sent and Cancel or End of Chain seen.
M0E	IATSNDM	POSREXIT system request block (SRB) scheduled after sending of positive response is complete.
N02	IATSNDN	Negative response sent.
N03	IATSNDN	NREXIT SRB scheduled after sending of negative response is complete.
O05	IATSNDO	Suspend Destination sent by the console OPEN routine (writer is temporarily closed).
O08	IATSNDO	Peripheral data set information record (PDIR) or Begin Destination sent.
O0A	IATSNDO	Writer Begin Bracket sent.

Table 11. Caller IDs, Path A01 (continued)

Caller ID	Caller	Explanation
00C	IATSNDO	Compaction table sent.
00F	IATSNDO	End Bracket sent from the reject routine for an ERP (after negative response to writer Begin Destination or compaction table).
R02	IATSNDR	Positive or negative response received after End of Chain RU sent.
R06	IATSNDR	PURGE routine issued Receive Spec for LU status after negative response (0802) was sent to writer Begin Destination.
R08	IATSNDR	PURGE routine sent Begin Bracket, End Bracket, Only in Chain to workstation (permanent console device error).
R0B	IATSNDR	PURGE routine issued Cancel after negative response to data chain.
S01	IATSNDS	Send exit (Check RU sent by IATSNDU).
T03	IATSNDT	RESETSR exit routine scheduled.
T05	IATSNDT	Start data traffic SESSIONC exit routine scheduled.
T07	IATSNDT	RESETR macro issued by Between Brackets routine to put session in ANY mode (SRB).
T08	IATSNDT	RESETR macro issued by Between Brackets routine to put session in ANY mode (DSP).
T11	IATSNDT	Common error check (IRB/SRB).
T12	IATSNDT	Common error check (DSP).
U04	IATSNDU	Common error check called by the SENDIT routine (after sending front RU) or by the CANCEL routine (DSP control).
U06	IATSNDU	Common error check called by the SENDIT routine (after sending front RU) or by CANCEL (SRB control).
V02	IATSNDV	Common error check (CHECK=yes).
V03	IATSNDV	Common error check (CHECK=no).
Z01	IATSNLB	CLSDST macro was issued for LOGON abort.
Z02	IATSNLB	OPNDST macro was issued.
W01	IATSNLD	SIMLOGON macro was issued.
W02	IATSNLD	CLSDST (error) macro was issued from JESTAE routine (ABEND during logon.
X02	IATSNLO	Work queue processor sent Suspend Destination, Change Direction.
X03	IATSNLO	CLSDST macro was issued by work queue processor.
Y01	IATSNLS	OPEN/CLOSE subtask issued SETLOGON macro.
Y02	IATSNLS	OPEN/CLOSE subtask issued RECEIVE macro to allow data transfer from any LU.
Y04	IATSNLS	OPNDST exit.
Y07	IATSNLS	CLSDST exit.
Y08	IATSNLS	CLSDST error exit.
Y09	IATSNLS	SETLOGON exit.
Y0A	IATSNLS	SIMLOGON exit.
Y0B	IATSNLS	Logon exit (INQUIRE macro was issued for SESSPARMS and logon data).

Table 11. Caller IDs, Path A01 (continued)		
Caller ID	**Caller**	**Explanation**
Y0C	IATSNLS	CLSDST macro was issued in logon exit.
Y0F	IATSNLS	CLSDST macro was issued in ESTAE routine.

Table 12. Caller IDs, Path E01		
Caller ID	**Caller**	**Explanation**
DA02	IATSNDA	Error condition, return code (RTNCD) is greater than X'14'.
DA03	IATSNDA	Error condition, return code (RTNDC) is zero.
DA04	IATSNDA	Exception condition routine gets FDBK2 for basic mode (SNA RJP uses record mode).
DA08	IATSNDA	Asynchronous retry limit was reached.
DA09	IATSNDA	Synchronous retry limit was reached (SIMLOGON).
DA0A	IATSNDA	Data integrity routine gets FDBK2 for basic mode.
DA0B	IATSNDA	Environmental error routine gets unknown FDBK2.
DA0C	IATSNDA	Unrecoverable error routine terminates for all codes except X'12'.
DC01	IATSNDC	Reader entered CLOSE and End Destination has not arrived.
DC02	IATSNDC	Inbound console entered CLOSE and End Destination Select has not arrived.
DD01	IATSNDD	Unsupported DFASY exit routine request or unsupported SIGNAL code.
DF01	IATSNDF	Functional recovery routine cancels session for SRB abend on session.
DM01	IATSNDM	End Bracket was processed, but attempt to decrease workstation session counts resulted in a negative value (RB control).
DM02	IATSNDM	End Bracket was processed, but attempt to decrease workstation session counts resulted in a negative value (DSP control).
DM03	IATSNDM	End Bracket was processed without prior End Destination Select; destack implied for all session users (RB control) TYPE=CLEAR.
DM04	IATSNDM	End Bracket was processed without prior End Destination Select; destack implied for all session users (DSP control) TYPE=CLEAR.
DM05	IATSNDM	FMH routine was called to process an FMH that occurred on First of Chain, but will take effect on End of Chain. No FMH backout bits were on, nor was End Destination Select pending (RB control).
DM06	IATSNDM	FMH routine was called to process an FMH that occurred on First of Chain, but will take effect on End of Chain. No FMH backout bits were on, nor was End Destination Select pending (DSP control).
DM07	IATSNDM	JES3 sent an exchange or basic exchange header and the device entry (DVE) could not be located.
DM08	IATSNDM	NRSP routine has been called for a bracket error, or has been called for an outbound session.
DM09	IATSNDM	Change Direction routine attempted to update workstation session counts with a resulting negative value (RB control).
DM10	IATSNDM	Change Direction routine attempted to update workstation session counts with a resulting negative value (DSP control).
DM11	IATSNDM	JES3 received a negative response sequence error (TYPE=CLEAR).

Table 12. Caller IDs, Path E01 (continued)

Caller ID	Caller	Explanation
DM12	IATSNDM	An only in chain, end bracket, with FMH header detected while in chain state. Session terminated. (RB mode)
DM13	IATSNDM	An only in chain, end bracket, with FMH header detected while in chain state. Session terminated. (DSP mode)
DO01	IATSNDO	A new compaction table was sent and rejected; the previous (active) table was re-sent and also rejected.
DR01	IATSNDR	Negative response received to Suspend Destination Select, Resume Destination Select, Continue Destination Select (TYPE=CLEAR).
DR02	IATSNDR	Negative response received for error recovery program RU; there is a path or response header error; or a negative response was received with the error code 20xx, where xx is not 01.
DR03	IATSNDR	Negative response received after the SEND of the EOC RU was scheduled.
DR05	IATSNDR	The negative response exit in IATSNDR has detected an incorrect sense code of X'1008'.
DT11	IATSNDT	Module IATSNDP called IATSNDT to restart the session traffic outbound and the session flipped to inbound. Session direction changed by the RECEIVE exit in IATSNDV.
DV01	IATSNDV	DFCRU routine was called and it received an error return from IATXERCK upon sending an error recovery program RU.
DV02	IATSNDV	BUFF routine found the inbound stack to be empty, indicating no active inbound users.
DV03	IATSNDV	A permanent error was detected in the CHKOUT routine. CHKOUT found the LCBIQF flag on, indicating that a quiesce normal was in progress. CHKOUT will call the termination routine (IATSNDE).
LC01	IATSNLC	Operator cancel or SNA RJP cancel (TYPE=Q,QI).
LD01	IATSNLD	JESTAE recovery after DM551.
LS01	IATSNLS	OPNDST failed.
LS02	IATSNLS	LOSTERM routine was entered, not logoff immediate. (TYPE=Q for logoff conditional, TYPE=CLEAR for BUFLIM exceeded.)
LS03	IATSNLS	LOSTERM routine was entered, logoff immediate.
LS04	IATSNLS	ESTAE recovery for LOSTERM abend.
LS05	IATSNLS	ESTAE recovery for RESP IRB routine abend.
LS06	IATSNLS	LOPNDST exit entered for a session that has an outstanding operator CANCEL.

Table 13. Caller IDs, Path M01

Caller ID	Caller	Explanation
C02	IATSNDC	Positive response to End Destination (reader).
C09	IATSNDC	Console close positive response to End Destination Select.
G01	IATSNDG	Send positive response to End of Chain (data chain).
G03	IATSNDG	Send positive response to Chase or Cancel.
N04	IATSNDN	Negative response sent, receive exit has seen End of Chain or Cancel.

Table 13. Caller IDs, Path M01 (continued)

Caller ID	Caller	Explanation
O01	IATSNDO	Begin Destination Select arrived, call for positive response (reader).
O02	IATSNDO	Positive response to inbound console Begin Destination Select.
P02	IATSNDP	Process positive response to writer End of Chain.
P03	IATSNDP	Negative response received to writer chain; End of Chain was already sent.
R0C	IATSNDR	Process Purging Chain State or positive response to End of Chain RU.
V0A	IATSNDV	Negative response sent, receive exit routine has seen End of Chain or Cancel.
V0B	IATSNDV	Update session state for First of Chain, Only in Chain.

Table 14. Caller IDs, Path T01

Caller ID	Caller	Explanation
E08	IATSNDE	Send Start Data Traffic.
G02	IATSNDG	Issue a Receive.
M0D	IATSNDM	ERP inbound complete.
M0F	IATSNDM	Issue Receive after positive response to End of Chain.
N05	IATSNDN	Issue Receive; End of Chain has not arrived and Receive exit routine is not active.
P01	IATSNDP	I/O not pending, buffer 50% full or End of Chain, activate send exit routine.
P04	IATSNDP	Negative response was received for writer chain and End of Chain had already been sent; give the console or reader a chance to use the session.
P05	IATSNDP	Activate send exit to Cancel-for-Writer chain (negative response received).
P06	IATSNDP	Activate send exit to Cancel-for-Console chain; negative response was received.
V0E	IATSNDV	Data flow control RU processed.
Y05	IATSNLS	OPNDST complete, send Start Data Traffic.

Typical SNA RJP protocol sequences

A general understanding of SNA RJP protocol sequences is important when using traces for debugging. Figure 8 on page 110 contains sample protocols you can use in establishing a context for interpreting trace output.

Abbreviations used in Figure 8 on page 110 are:

+R
Positive Response

-R
Negative Response

BB
Begin Bracket

BDS
Begin Destination

CD
Change Direction

CDS
Continue Destination

CTAB
Compaction Table

EB
End Bracket

EDS
End Destination

EOC
End of Chain

FMH
Function Management Header

FOC
First in Chain

LUSTAT
Logical Unit Status

MOC
Middle of Chain

OC
Only in Chain

PDIR
Peripheral Data Set Information Record

RDS
Resume Suspended Destination

RH
Request Header

RQD
Request Definite Response

RQE
Request Exception Response

RU
Request Unit

SDS
Suspend Destination

SVF
Set Vertical Format

TH
Transmission Header

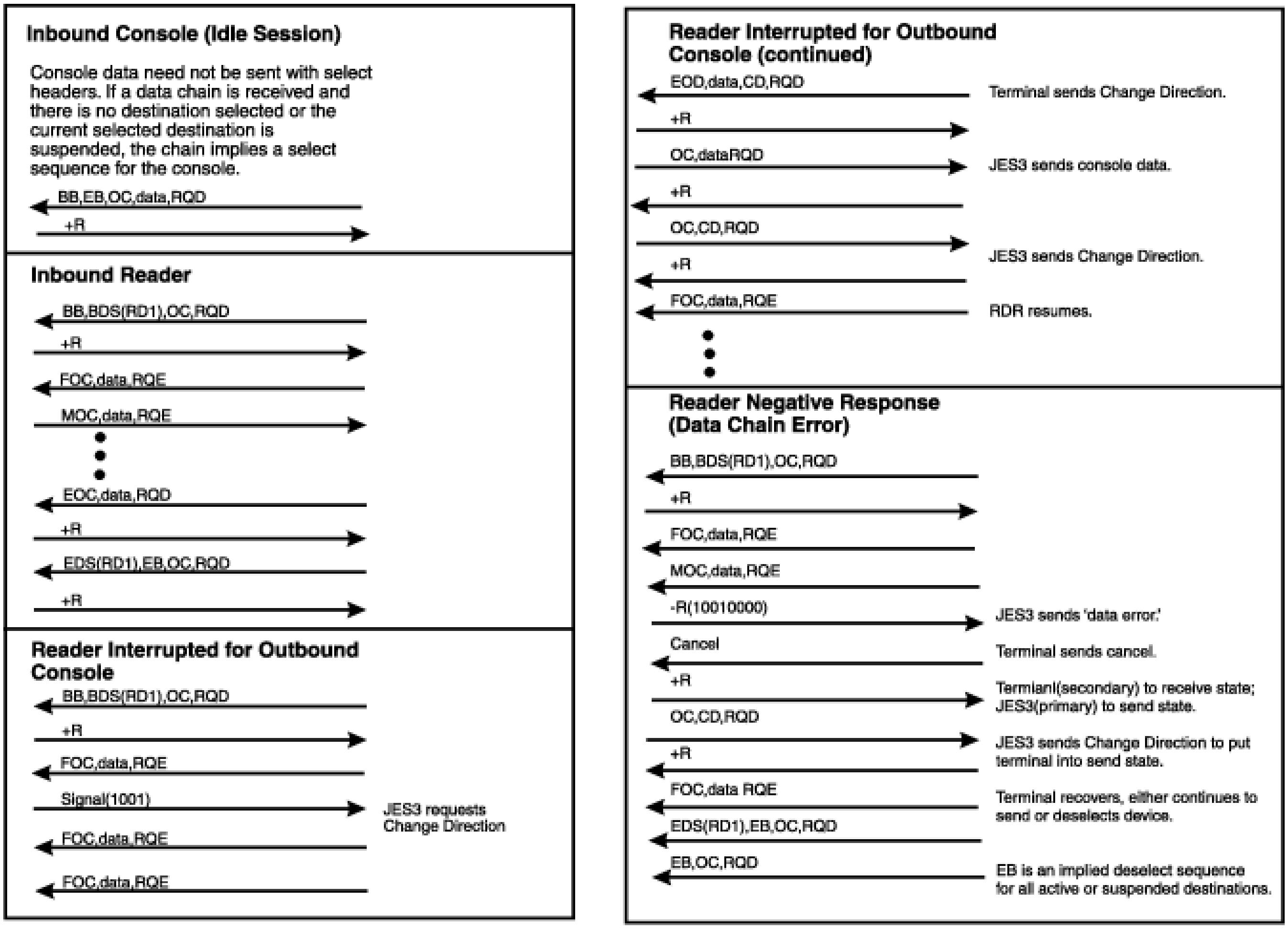


Figure 8. Typical SNA RJP protocol sequences (a)

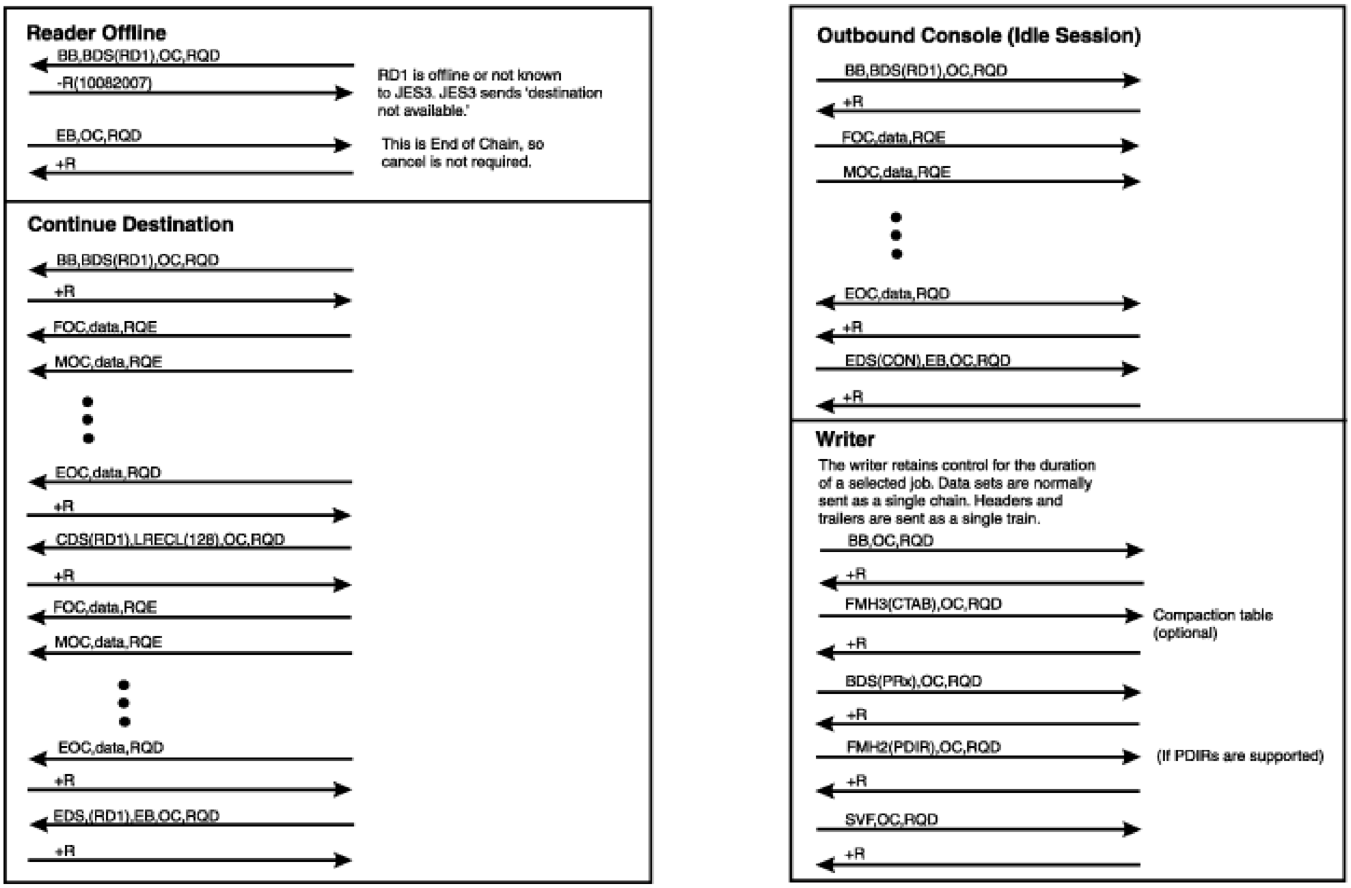


Figure 9. Typical SNA RJP protocol sequences (b)

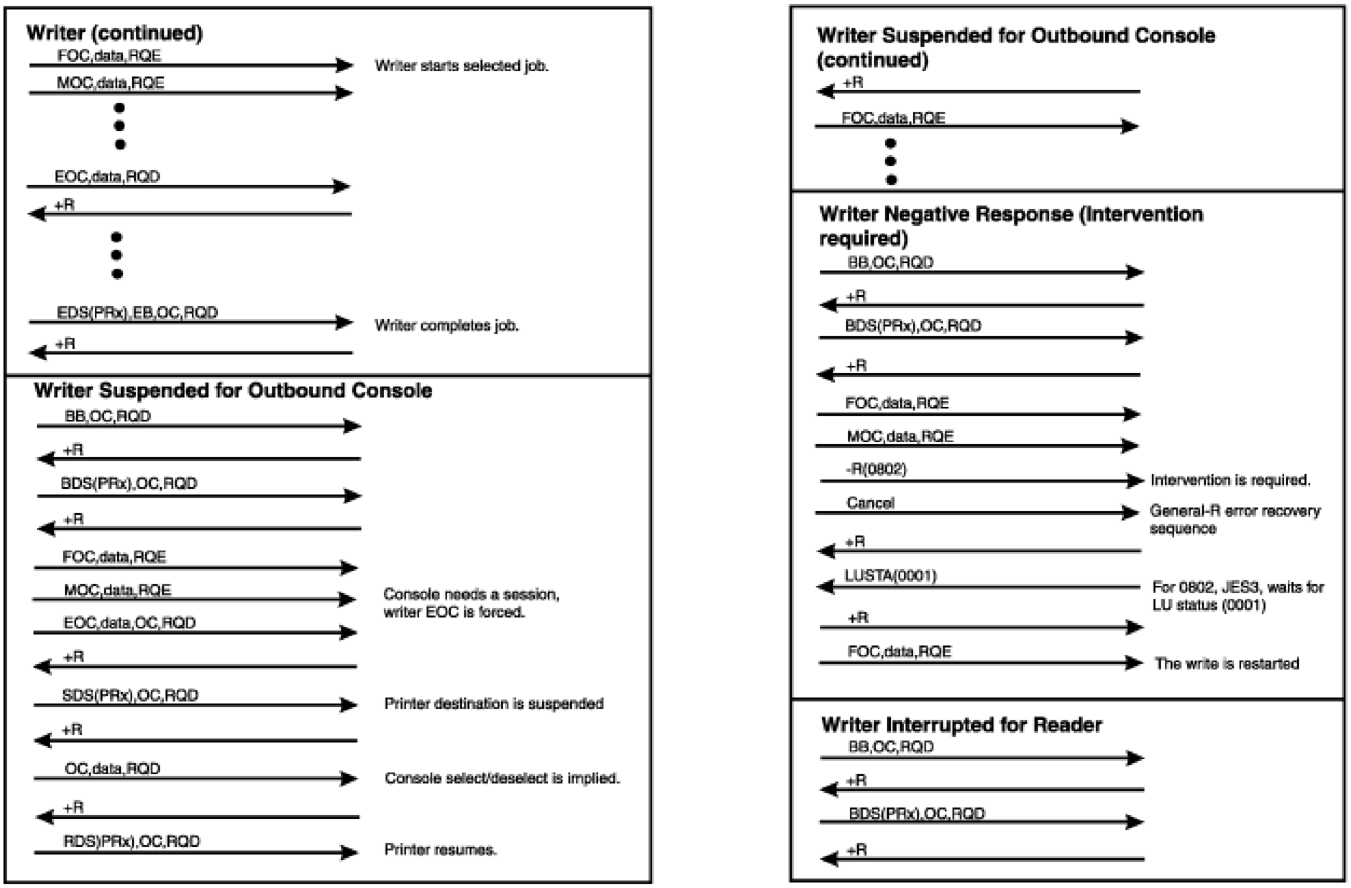


Figure 10. Typical SNA RJP protocol sequences (c)

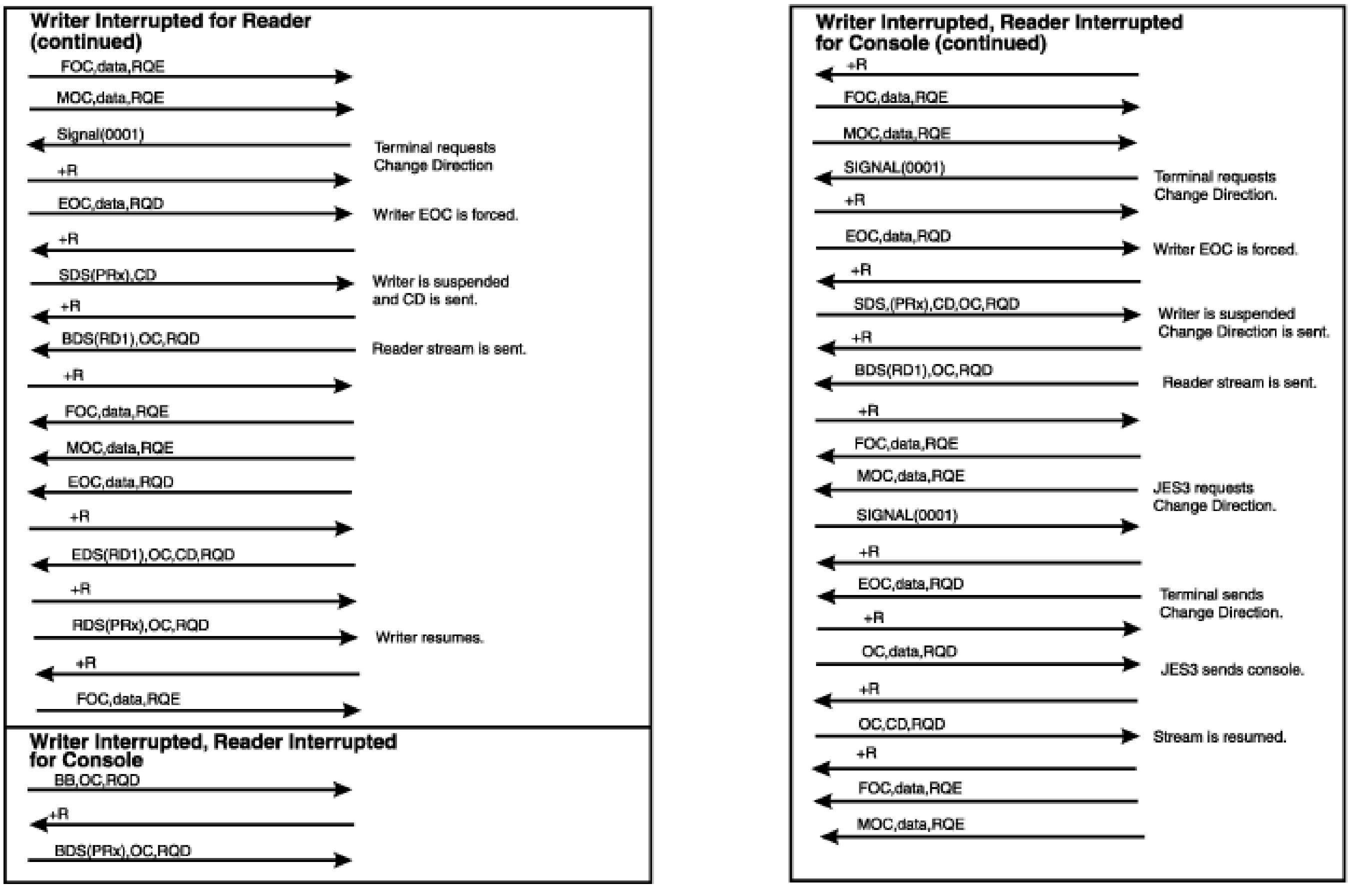


Figure 11. Typical SNA RJP protocol sequences (d)

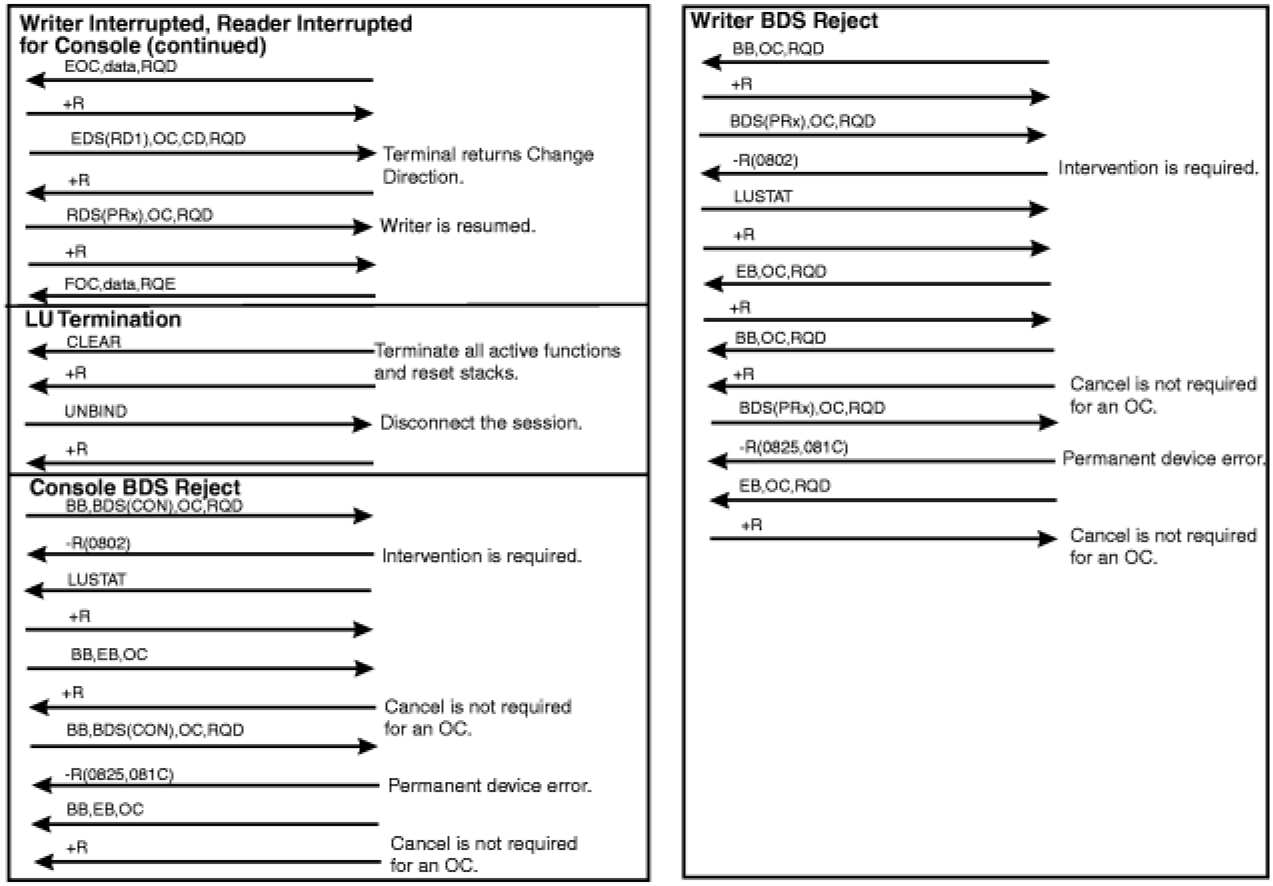


Figure 12. Typical SNA RJP protocol sequences (e)

Trace data reduction

To reduce the number of repetitive entries that would otherwise appear in a trace, the SNA RJP recording environment performs some data reduction and, for certain situations, selectively prints entries.

For inbound chains, traces include every First of Chain and End of Chain request/response unit (RU) for path ID V06. However, intervening Middle of Chain RUs are not traced (protocols may be sent on First of Chain or End of Chain, but not Middle of Chain).

For outbound chains, traces include only the first End of Chain between activity changes at path ID U01. An activity change is defined as processing for a function management header, Begin Bracket, Change Direction, or End Bracket RU. Thus, for outbound chains, the trace table will show only one data chain although many data chains may have been sent. Outbound protocols are always traced. Also, writer cancel data set conditions are always traced (in this case, an Only in Chain, Null RU may be sent), and FCB load sequences (such as Set Vertical Format) are traced. Data reduction for outbound chains prevents trace entries for the frequently-occurring End of Chain, positive response sequences. If the entry for path ID U01 is suppressed, the entries for path ID M01 and R0D are also suppressed (the entries for path ID M01 and R0D would be that for the positive response). Figure 13 on page 115 illustrates selective tracing for a standard writer sequence and for a writer sequence where the writer is interrupted for console activity:

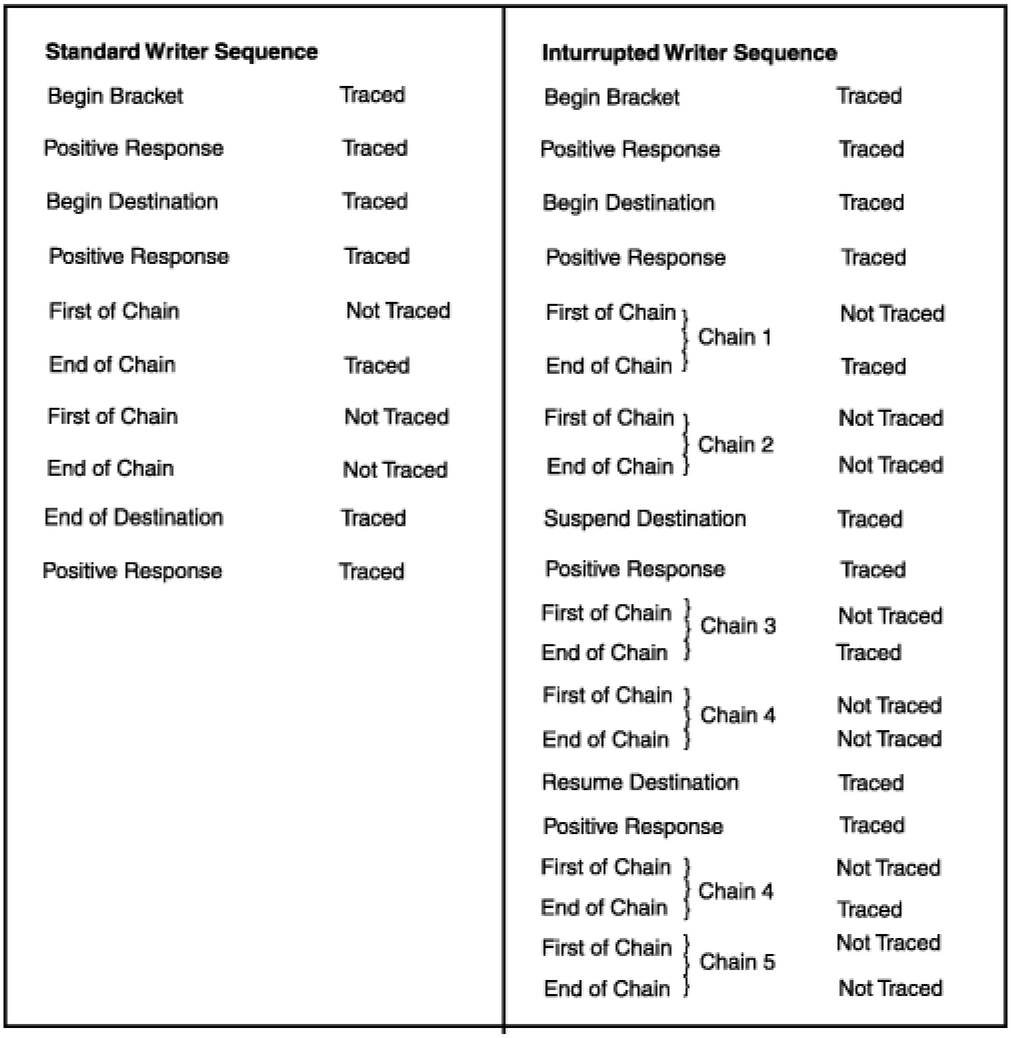


Figure 13. Examples of selective tracing

Entries to modules IATSNDA and IATSNDE are always traced at path IDs A01 and E01, respectively. Entry to module IATSNDM is always traced at path M01 except as noted earlier for outbound chains. Entry to module IATSNDT at path ID T01 is selectively traced. Events not traced at path T01 are:

- **Positive responses to outbound chains:** If a positive response to an outbound console chain is received, module IATSNDR will invoke module IATSNDM for updating session states. In this case, module IATSNDM will always use its EOCH routine to invoke module IATSNDT. Similarly, if a positive response to an outbound writer chain is received, module IATSNDP will invoke module IATSNDM to update session states. However, in this case, IATSNDM will not invoke IATSNDT. Instead, control will be returned to IATSNDP, and IATSNDP will invoke module IATSNDT to restart session activity.
- **Positive responses to inbound Only in Chain, no data:** If an Only in Chain, no data RU is received or, in certain cases, if an Only in Chain, function management header (FMH) is received, module IATSNDM will use its EOCH routine to send the required positive response and will then call module IATSNDT. (Module IATSNDM is called by module IATSNDV for First of Chain processing.)
- **Reactivation of send/receive exits:** Module IATSNDT may be called by module IATSNDG to reactivate the receive exit routine, as would happen when the receive exit routine had previously filled all buffers and the reader has processed enough buffers to resume receiving. Module IATSNDT may also be called by module IATSNDP to reactivate the send exit routine. Neither of these entries to module IATSNDT are traced at path ID T01. There will, however, be a trace entry for reactivation of the receive exit routine at path ID T02. For reactivation of the send exit routine, there will be no trace in module IATSNDT.

Snapshot dump output

When the SNA RJP recording environment is activated, a snapshot dump is produced and printed automatically every time a decompress or deblock error is found in an inbound stream. The format of a snapshot dump is different from that of a trace.

```
                      ****************************************************************************************************
                      *                                        -R(1001) SNAP   79.109                                    *
                      ****************************************************************************************************

********  ERROR BFE  1

09053464  1C2728  001C2A00 00B60008 20000000 00000000  00000000 00000000 00000000 00000000 *................................*
          1C2748  00000000                                                                    *....                         *

********  LCB - BFE'S START AT 1C26E0 RU'S START At IC2800  2

09053466  1C1F38  D3C3C240 D3E4F3F7 F7F6C440 00000000  001BEAC4 30592005 000C7320 00000100 *LCB LU3776D .......D............*
          1C1F58  00000000 00000000 00000000 00000000  00000000 00000000 00000000 010303A3 *................................*
          1C1F78  A3708000 03858501 00011000 00B10000  80000100 40000840 40404040 40404000 *.................... ..       .*
          1C1F98  001BEB00 00000000 00000000 0000000E  00000005 00010000 00040029 001C2728 *................................*
          1C1FB8  00102770 001C2770 001C27DC 00080100  001C2900 00BD0007 80000000 00000000 *................................*
          1C1FD8  00000000 00000000 00000000 00000000  00000000 00000000 50000000 00000002 *........................&.......*
          1C1FF8  00000007 28008000 00800000 C8400008  80014020 00000000 00000000 20030000 *............H .... .... ........*
          1C2018  00000000 00000000 00000000 00000000  00004200 00200070 00000000 00000000 *................................*
          1C2038  00000000 00001000 00800000 001A5E50  00000000 00000000 30592005 20800000 *...............&................*
          1C2058  00000000 00000000 00000000 90309450  00000000 80800000 40000000 00000000 *...............&........ .......*
          1C2078  00000000 00000000 00000000 00000000  00000000 80008010 10010000 00000000 *................................*
          1C2098  00000000 001C1F38 00000000 00000000  00000000 00202370 00000000 00000000 *................................*
          1C20B8  00000000 20002020 00800000 001A5E50  00000000 001C2B00 30592005 20800000 *...............&................*
          1C20D8  00000000 000000B4 00000100 90309450  00000000 80800009 42000000 00000000 *...............&................*
          1C20F8  00000000 00000000 00000000 00000000  001C1F38 80008020 00000000 001BC690 *..............................F.*
          1C2118  00000000 001C1F38 00000000 00000000  00000000 00201770 00000000 001BAA48 *................................*
          1C2138  00000000 00001000 00800000 001A5E50  00000000 001C222C 30592005 28800000 *...............&................*
          1C2158  00000000 00000000 00000000 10308450  00000000 80800000 20000000 00000000 *...............&................*
          1C2178  00000000 00000000 00000000 00000000  00000000 80008010 00000000 00000000 *................................*
          1C2198  00000000 001C1F38 00000000 00000000  00000000 00200070 00000000 00000000 *................................*
          1C21B8  00000000 00001000 00800000 001A5E50  00000000 00000000 30592005 20800000 *...............&................*
          1C21D8  00000000 00000000 00000000 10309450  00000000 80800000 40000000 00000000 *...............&........ .......*
          1C21F8  00000000 00000000 00000000 00000000  00000000 80008010 00000000 00000000 *................................*
          1C2218  00000000 001C1F38 00000000 00000000  00000000 D0000040 30592005 001C1F38 *............................ ....*
          1C2238  D3E4F3F7 F7F6C440 D9C5C3D6 D9C44040  C06D0000 01800000 19000002 68000001 *LU3776 RECORD  .................*
          1C2258  00000000 00000000 00000000 001C1F74  00000000 00000000 40000050 00000000 *..........................&.....*
          1C2278  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000 *................................*
          1C2298  00000000 00000000 001BF280 001C2AB6  001BED9C 00500028 00200000 00410030 *..........2..........&..........*
          1C22B8  00000100 04000000 00000000 00000000  00000000 00000000 00000000 00000000 *................................*
          1C22D8  00000000 00000000 00000000 00000000  F31EC3C1 D9C440F0 F0F41EC3 C1D9C440 *................3.CARD 004.CARD *
          1C22F8  F0F0F51E C3C1D9C4 40F0F0F6 1EC3C1D9  C440F0F0 F71EC3C1 D9C440F0 F0F81EC3 *005.CARD 006.CARD 007.CARD 008.C*
          1C2318  C1D9C440 F0F0F91E C3C1D9C4 40F0F1F0  1E000000 00000000 00000000 00000000 *ARD 009.CARD 010................*
          1C2338  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000 *................................*
```

ERROR BFE contains the address of the RU for which a negative response was sent.

The reason for the negative response is at offset X'384'. Reason codes are:

X'02'
Decompression error, module IATSNPI. Possible causes are:

1. The string control byte (SCB) count indicates more data than exists in the current RU.
2. The SCB indicates compaction, but decompaction is not supported.
3. Pointers were incorrectly managed, and a data byte was taken to be an SCB (resulting in #2, above).
4. The SCB count is zero.

X'03'
The transparent data (TRN) count indicated more data than was available.

X'04'
There is a short record in the current RU, and the bind image specifies that data cannot span RUs (readers only).

The presentation services interface area begins at offset X'334'. Four values in the interface area control the decompression process:

Offset
Meaning

X'33C'
The current position of module IATSNPI in the RU

X'340'
: The current position of module IATSNPI in the 512-byte work area

X'344'
: The number of bytes to be processed in the RU

X'346'
: The number of unused bytes in the 512-byte work area

The function management inbound area begins at offset X'368'. Relevant values are:

Offset
: **Meaning**

X'36C'
: Scan pointer to the RU or 512-byte work area

X'376'
: The maximum number of records that will fit in the caller's area

X'378'
: The number of unused record slots in the caller's area

X'37C'
: The data count for the temporary work area

X'37E'
: The count from the last TRN,CNT sequence

X'3B0'
: The start of the temporary work area, which is used for spanning

Format of a BSC Network Trace Entry

The BSC network logging facility is a debugging aid for nodes that use BSC networking protocols. An entry is added to the trace data set from each I/O operation performed on a BSC networking line.

The following is a sample of the trace function report:

```
                  **************************************************************************************************
                  *          NODE2                         JES3 NETWORK I/O LOG OUTPUT    85.011       LINE1
                  **************************************************************************************************

10212577  019472A0 40000000 08000008 820AF856 087F9C80  00FCD590 020AF218 00000000 0194730C * .........8.......N...2.........*
LNIOSB    019472C0 00000000 00000000 40070000 00000000  00000000 00000000 00000000 820AF850 *.............................8&*
          019472E0 820AF850 00000000 00323210 020AF210  00FCD590 01000000 00100000 00000000 *..8&..........2...N.............*
          01947300 00000000 00000000 00000000                                               *............                   *

10212577  0194730C E2D9C240 00000000 00F91A00 00000008  00000000 8100FAC0 80FE07EA 019472A0 *SRB .....9......................*
SRB       0194732C 00000000 00000000 00000000                                               *...........                    *

CCWCHAIN  020AF210 04200001 00323083                                                        *........                       *

READ      020AF083 00                                                                       *.                              *

10212578  019472A0 40000000 08000008 820AF856 087F9C80  00FCD590 020AF150 0C00018E 0194730C * .........8.......N...1&........*
LNISOB    019472C0 00000000 00000000 40070000 00000000  00000000 00000000 00000000 820AF850 *.............................8&*
          019472E0 820AF850 00000000 00323140 020AF140  00FCD590 01000000 00000000 00000000 *..8&....... ..1 ..N.............*
          01947300 00000000 00000000 00000000                                               *................               *

10212579  0194730C E2D9C240 00000000 00E91A00 00000008  00000000 8100FAC0 80FE07EA 019472A0 *SRB .....9......................*
SRB       0194732C 00000000 00000000 00000000                                               *............                   *

CCWCHAIN  020AF140 07600001 00000000 02200190 004C6008                                      *................               *

READ      02095008 323D                                                                     *..

10212580  019472A0 40000000 08000008 820AF856 087F9C80  00FCD590 020AF210 0C00018E 0194730C * .........8.......N...2.........*
LNISOB    019472C0 00000000 00000000 40070000 00000000  00000000 00000000 00000000 820AF850 *.............................8&*
          019472E0 820AF850 00000000 003231F0 020AF1F0  00FCD590 01000000 00100000 00000000 *..8&.......0..10..N.............*
          01947300 00000000 00000000 00000000                                               *............                   *

10212580  0194730C E2D9C240 00000000 00F91A00 00000008  00000000 8100FAC0 80FE07FA 019472A0 *SRB .....9......................*
SRB       0194732C 00000000 00000000 00000000                                               *............                   *

CCWCHAIN  020AF1F0 04600001 00323083 01600002 0032343A  07600001 00000000 02200190 004C6008 *................................*

READ      020AF083 07                                                                       *.                              *

WRITE     020AF43A 012D                                                                     *..                             *

READ      02095008 1070                                                                     *..                             *
```

The time-stamp is in the form *hhmmssth*, where *hh* is the hour, *mm* is the minute, *ss* is the second and *th* is the tenths and hundredths of a second. The time-stamp indicates the time of day the trace entry was made and appears at the beginning of each trace entry.

LNIOSB is the input/output supervisor block for the line. It is mapped by IECDIOSB.

CCWCHAIN is the full channel program used which caused this trace entry to be taken.

READ and WRITE refer to data read from or written to the line and bear a direct relationship to the CCW chain. Any CCW which causes data to be read, such as READ or SENSE, will cause a READ data entry to be made. Any CCW which causes data to be written will cause a WRITE entry to be made. These full READ and WRITE data entries will follow CCWCHAIN and appear in an order corresponding to the order of the CCW string.

Exception Responses

JES3 may receive an exception response after transmitting data to a remote workstation, or it may transmit an exception response after receiving data from a remote workstation. For each exception response, 01 console. The meanings of exception response codes are described in *z/OS MVS System Messages, Vol 5 (EDG-GLZ)*.

Actions taken by SNA RJP to recover from exception response situations depend upon the type and seriousness of the error. Failing devices are varied offline. Errors related to data files cause input jobs to be flushed and output data sets to be requeued in hold status. When permanent session errors occur, the session is terminated.

Some exception responses are the result of inoperable devices or line failures and program debugging would be meaningless. Others can be program-related, as when an invalid protocol is transmitted by JES3 or when input data is misinterpreted by JES3. Before notifying the IBM representative about program-related problems, obtain the following:

- A listing of the initialization stream
- SNA RJP trace output
- The console log containing the exception response message

No Communication Between a Workstation and the Host

In the event that SNA RJP will not accept input from a remote workstation console or reader and at the same time will not transmit to the console, printer, or punch at that workstation, the operator of the remote console should direct the host operator to restart SNA RJP for the workstation. If such a problem occurs repeatedly and you seek assistance from the IBM representative, obtain the following:

- A listing of the initialization stream.
- SNA RJP trace output.
- The console log.
- An MVS dump of JES3 address space (with the CSA), taken before restarting or canceling the workstation.

Format of TCP/IP/NJE Trace Records

TCP/IP/NJE trace records are generated by IAZNJTCP at the direction of JTRACE and ITRACE on the Netserv and socket definitions. These trace records are collected by using GTF record F60, subtype 0004.

Each record contains an identifier consisting of the string "NETSERV" or "SOCKET", which is followed by the letter "I" or "J". The "NETSERV" or "SOCKET" characters identify the level of the trace record. The letter "I" or "J" identifies the type of trace record (for example, ITRACE or JTRACE). An ITRACE record contains internal trace information that is passed between IAZNJTCP and TCP/IP. A JTRACE record contains NJE control information and data. NJE control information and data is a subset of the trace information that is produced by BSC line logging. Compressed data, control information, and header/trailer records are generated in TCP/IP/NJE. Trace records consisting of CCW, IOSB, or SRB information, unlike BSC logging, are not generated in TCP/IP/NJE.

TCP/IP traces contain most trace records at the socket level. Trace records at the Netserv level are typically produced early in the signon sequence before a socket connection is established.

ITRACE and JTRACE records are controlled by the ITRACE= and JTRACE= parameters that is on the NETSERV or SOCKET initialization statements or on the *MODIFY,NETSERV and *MODIFY,SOCKET commands. The records are written using the Generalized Trace Facility (GTF). See "Using the Data Collected by the Generalized Trace Facility" on page 130 for more information.

IAZNJTCP produces a third type of trace record that is called Verbose Trace (VTRACE). VTRACE records are controlled by the VTRACE= parameter that is on the NETSERV and SOCKET initialization statements or on the *MODIFY,NETSERV and *MODIFY,SOCKET commands. VTRACE records are produced as console messages that are written by IAZNJTCP. They are not written, intercepted, or otherwise handled by JES3.

The following example is a TCP/IP/NJE trace after it has been collected and formatted in IPCS.

```
**** GTFTRACE DISPLAY OPTIONS IN EFFECT ****
     USR=ALL
   **** GTF DATA COLLECTION OPTIONS IN EFFECT: ****
     USRP option
        **** GTF TRACING ENVIRONMENT ****
Release: SP7.0.7 FMID: HBB7720 System name: SY1
CPU Model: 4381 Version: FF Serial no. 111515
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 280000A4 E3E3D9C3 998583A5 00000000 | ...uTTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000008 00000001 00000000 | ................ |
+0060 17594028 00000008 00000000 00000000 | .. ............. |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000086 00010400 | ...........f.... |
+0090 00000000 00000000 00000008 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B8 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 | ........ |
GMT-04/30/2005 23:38:07.523579 LOC-04/30/2005 19:38:07.523579
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 300000A1 E3E3D9C3 998583A5 00000000 | ...~TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000080 00000001 00000000 17594030 | ............. . |
+0060 0000000E 00000000 00000000 00000000 | ................ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000086 00010400 00000000 | .......f........ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B8 00000010 174097C8 00000000 | . p...... pH.... |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00 | ..... |
GMT-04/30/2005 23:38:07.523677 LOC-04/30/2005 19:38:07.523677
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 28000024 E3E3D9C3 998583A5 00000000 | ....TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 | ........ |
GMT-04/30/2005 23:38:07.523772 LOC-04/30/2005 19:38:07.523772
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 280000A4 E3E3D9C3 998583A5 00000000 | ...uTTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 0000000E 00000001 00000000 | ................ |
+0060 17594030 0000000E 00000000 00000000 | .. ............. |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000086 00010400 | ...........f.... |
+0090 00000000 00000000 0000000E 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B8 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 | ........ |
GMT-04/30/2005 23:38:07.523964 LOC-04/30/2005 19:38:07.523964
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3D140 7CF0F0F0 F0F0F0F1 | SOCKETJ @0000001 |
+0030 80000016 00000016 00000000 00000006 | ................ |
+0040 1002838F CF000000 0000 | ..c....... |
GMT-04/30/2005 23:38:07.524045 LOC-04/30/2005 19:38:07.524045
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 300000A1 E3E3D9C3 998583A5 00000000 | ...~TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000080 00000001 00000000 17594028 | .............. . |
+0060 00000008 00000000 00000000 00000000 | ................ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000086 00010400 00000000 | .......f........ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B8 00000010 174097C8 00000000 | . p...... pH.... |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00 | ..... |
GMT-04/30/2005 23:38:07.524168 LOC-04/30/2005 19:38:07.524168
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 28000024 E3E3D9C3 998583A5 00000000 | ....TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 | ........ |
GMT-04/30/2005 23:38:07.524241 LOC-04/30/2005 19:38:07.524241
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 300000A1 E3E3D9C3 A2859584 00000000 | ...~TTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000080 00000001 00000000 1755265C | ...............* |
+0060 00000016 00000000 00000000 00000000 | ................ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 0000008A 00010400 00000000 | ................ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B4 00000010 174097C8 00000000 | . p...... pH.... |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00 | ..... |
GMT-04/30/2005 23:39:07.524583 LOC-04/30/2005 19:39:07.524583
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 28000024 E3E3D9C3 A2859584 00000000 | ....TTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 | ........ |
GMT-04/30/2005 23:39:07.525144 LOC-04/30/2005 19:39:07.525144
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 280000A4 E3E3D9C3 A2859584 00000000 | ...uTTRCsend.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000016 00000001 00000000 | ................ |
+0060 1755265C 00000016 00000000 00000000 | ...*............ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 0000008A 00010400 | ................ |
+0090 00000000 00000000 00000016 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B4 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 | ........ |
GMT-04/30/2005 23:39:07.525471 LOC-04/30/2005 19:39:07.525471
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 280000A4 E3E3D9C3 998583A5 00000000 | ...uTTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000008 00000001 00000000 | ................ |
+0060 17594028 00000008 00000000 00000000 | .. ............. |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000086 00010400 | ...........f.... |
+0090 00000000 00000000 00000008 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B8 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 | ........ |
GMT-04/30/2005 23:39:07.525582 LOC-04/30/2005 19:39:07.525582
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 300000A1 E3E3D9C3 998583A5 00000000 | ...~TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000080 00000001 00000000 17594030 | ............. . |
+0060 0000000E 00000000 00000000 00000000 | ................ |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000086 00010400 00000000 | .......f........ |
+0090 00000000 00000000 00000000 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 174097B8 00000010 174097C8 00000000 | . p...... pH.... |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00 | ..... |
GMT-04/30/2005 23:39:07.525664 LOC-04/30/2005 19:39:07.525664
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 28000024 E3E3D9C3 998583A5 00000000 | ....TTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 00000000 | ........ |
GMT-04/30/2005 23:39:07.525756 LOC-04/30/2005 19:39:07.525756
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3C940 7CF0F0F0 F0F0F0F1 | SOCKETI @0000001 |
+0030 280000A4 E3E3D9C3 998583A5 00000000 | ...uTTRCrecv.... |
+0040 00000000 00000000 00000000 00000000 | ................ |
+0050 00000000 0000000E 00000001 00000000 | ................ |
+0060 17594030 0000000E 00000000 00000000 | .. ............. |
+0070 00000000 00000000 00000000 00000000 | ................ |
+0080 00000000 00000000 00000086 00010400 | ...........f.... |
+0090 00000000 00000000 0000000E 00000000 | ................ |
+00A0 00000000 00000000 00000000 00000000 | ................ |
+00B0 00000000 174097B8 00000010 174097C8 | ..... p...... pH |
+00C0 00000000 00000000 00000000 00000000 | ................ |
+00D0 00000000 00000000 | ........ |
GMT-04/30/2005 23:39:07.525960 LOC-04/30/2005 19:39:07.525960
```

```
HEXFORMAT AID FF FID 00 EID EF60
+0000 00FA1780 D1C5E2F3 E2F34040 C7E3D9C3 | ....JES3S3 GTRC |
+0010 00000004 00010001 E2E8F140 40404040 | ........SY1 |
+0020 E2D6C3D2 C5E3D140 7CF0F0F0 F0F0F0F1 | SOCKETJ @0000001 |
+0030 80000016 00000016 00000000 00000006 | ................ |
+0040 1002848F CF000000 0000 | ..d....... |
GMT-04/30/2005 23:39:07.526049 LOC-04/30/2005 19:39:07.526049
```

For general information on JES3 GTF trace records and how the record header is mapped, see “Using the Data Collected by the Generalized Trace Facility” on page 130. For TCP/IP records specifically, the information that follows the GTF record header is mapped by macro IATYG004.

Dump Job Trace Output

Three types of trace output may be obtained from the dump job facility (DJ):

- Channel command word (CCW) tracing
- Control block (CB) name tracing
- Control block data (CBD) tracing

If ALL is specified on the TRACE= parameter of the *START command, all three types of tracing are performed. The output of DJ tracing is written to the DJ message log data set and is described below.

CCW Trace Output

When CCW tracing is requested, the dump job facility traces the channel command words for each I/O operation. A trace entry is generated for each CCW in the channel program that is about to be initiated.

```
                              1
********  CCW TRACE --  01210000 200010E8
********  CCW TRACE --  1F000000 60000001
********  CCW TRACE -- +03000000 20000001
IAT7229 DJ572-0017: SUCCESSFULLY DUMPED JOB PAGE      (0005)
********  CCW TRACE --  0120A878 20000050
********  CCW TRACE --  27000000 60000001
********  CCW TRACE -- +03000000 20000001
********  BLK TRACE -- JCT  DUMPED   FOR JOB OUT03     (0008)
```

1
Is the contents of a CCW in the channel program. If a plus sign(+) precedes the CCW, the CCW is chained to the CCW that precedes it. In this example, 1F000000 60000001 is chained to 03000000 20000001.

CB Name Trace Output

When CB name tracing is requested, the dump job facility traces the names of the control blocks and multi-record files (MRFs) (pointed to by the job data set (JDS) control block) that are dumped or restored for each job or DJC network. No data is traced. A single trace entry is generated each time a control block or MRF is dumped or restored. The entry identifies the name of the control block or MRF and the associated job or DJC network.

```
                         1       2             3
********  BLK TRACE -- JCT  DUMPED  FOR JOB PAGE     (0005)  4
********  BLK TRACE -- JDAB DUMPED  FOR JOB PAGE     (0005)
********  BLK TRACE -- OSE  DUMPED  FOR JOB PAGE     (0005)
********  BLK TRACE -- JST  DUMPED  FOR JOB PAGE     (0005)
********  MRF TRACE -- JDS  DUMPED  FOR JOB PAGE     (0005)
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JCLIN          5 RECORD CNT = 0000000004
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JESMSG           RECORD CNT = 0000000007
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JESJCL           RECORD CNT = 0000000031
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JESYSMSG         RECORD CNT = 0000000005
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JCBLOCK          RECORD CNT = 0000000046
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JOURNAL          RECORD CNT = 0000000000
********  MRF TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005) -- JESI0001         RECORD CNT = 0000000013
********  JMR TRACE -- MRF  DUMPED  FOR JOB PAGE     (0005)
```

1
Is the ID of the control block being traced (for example, JCT, or JDAB) or MRF.

2
DUMPED indicates that the control block or MRF is being written to tape. RESTORED may appear instead, and indicates that the control block or MRF is being written back to spool.

3
Indicates the DJC network or specific job with which the control block data or MRF is associated. **JOB** appears in all the trace entries for job-related control blocks (for example, JCT and JDAB). The number in parentheses is the job number of the job at the time it was dumped. **NET** will appear instead, but only in the trace entries for control blocks that describe a DJC network such as JNCB or NCB.

4
Indicates the release identification (fmid), such as HJS2329, of the control block data or the ddname associated with the MRF. This is included in the trace entry only if control block translation is being performed.

5
RECORD CNT=nnnnnnnn indicates the number of logical records in the file and appears only for MRF tracing.

CBD Trace Output

When control block data tracing is requested, the dump job facility traces the names of the control blocks and multi-record files or MRFs that are dumped or restored for each job or DJC network in the same way as control block name tracing. In addition, the dump job facility traces the actual data contents of the control block buffers.

When TRANS=YES is specified, the dump job facility traces both the input and output versions of the control blocks. That is, the dump job facility traces the control blocks when they are read in from tape or spool before translation and then again when they are restored to spool or dumped to tape after translation.

Note that the traced versions of the control block buffers might not always appear in sequence in the Dump Job message log data set. Other processing being performed may result in messages or other type of trace entries being generated between the control block traces. Nor does a one to one correspondence between the traced versions of a control block buffer always exist. A single input control block buffer may expand into two or more control block buffers when the translation is performed.

When TRANS=NO is specified, the dump job facility traces only single copies of each control block buffer when it is dumped or restored.

```
          000000  80000000 D1D5C3C2 D5C5E3F3 40404040     00020000 0D7904D0 80000000 00700002
          000020  00000000 00000200 00000000 00000000     001B6BB0 00000000 00000000 00000000
          000040  00000000 00000000 00000000 00000000     00000000 00000000 00000000 00000000
          000060  00000000 00000000 00000000 00000000
                            1      2          3                      4             5
********  BLK TRACE -- JNCB DUMPED   FOR NET NET3            -- HJS2327

        6 000000  00000000 D1D5C3C2 D5C5E3F3 40404040     E3C1D7C5 0D79004E 00020000 00000000
          000020  00000000 00000000 00000000 00000000     00000000 00000000 00000000 00000000
          000040  00000000 00000000 00000000 0000

********  BLK TRACE -- NCB  READ IN  FOR NET NET3            -- HJS2329
```

1
Is the ID of the control block being traced (for example, JCT or JDAB) or MRF.

2
indicates either DUMPED, RESTORED, or READ IN. **DUMPED** indicates that the control block or MRF is being written to tape. If translation is required, it has already been translated by this time. **RESTORED** indicates that the control block or MRF is being written back to spool. If translation is required, it has already been translated by this time. **READ IN** indicates that the control block was read in from tape (if restoring) or spool (if dumping). This type of tracing only occurs when translation is in effect and the data has not yet been translated.

3
Indicates the DJC network or specific job with which the control block data or MRF is associated. **NET** appears only in the trace entries for control blocks that describe a DJC network such as JNCB or NCB. **JOB** appears in all the trace entries for job-related control blocks (for example, JCT and JDAB). The number in parentheses is the job number of the job at the time it was dumped.

4
Indicates the release level (fmid), such as HJS2327, of the control block data or the ddname associated with the MRF. **fmid** is included in the trace entry only if control block translation is being performed.

5
RECORD CNT=nnnnnnnn indicates the number of logical records in the file and appears only for MRF tracing.

6
Indicates the control block data in hexadecimal format. The entire control block buffer is traced.

Storage Dumps

An abnormal end of JES3 produces a storage dump of the JES3 address space. In certain situations, it can become necessary or desirable to produce such an abend dump intentionally. Use the *DUMP command for this purpose. After the dump, JES3 must be reinitialized, as the *DUMP command causes JES3 to end. You cannot enter the *DUMP command in the input stream.

Dumps produced by the *DUMP command, or because of a JES3 failure, are handled according to the specification made at initialization time on the OPTIONS statement. See *z/OS JES3 Initialization and Tuning Reference* for additional information. The type of dump taken at the time of the failure is indicated by JES or MVS:

- A JES3-formatted dump is written to the JESABEND data set. This data set is defined by the JESABEND DD statement in the JES3 procedure.
- An MVS dump of JES3 is written to either the SYSUDUMP or SYSABEND data set, depending upon which DD statement is used in the JES3 procedure. The storage areas dumped are controlled by the IEADMP00 or IEAABD00 dump default lists in SYS1.PARMLIB. These dump lists can be dynamically changed by the MVS CHNGDUMP (CD) command. See *z/OS MVS System Commands* for more detail on CHNGDUMP.

When a system failure occurs, the system attempts to write a storage dump on a SYS1.DUMP system data set, record the failure on the SYS1.LOGREC data set, recover from the failure, and continue processing.

If you want a dump of the JES3 address space without terminating the JES3 address space, you can issue the MVS DUMP command. For more information about the MVS DUMP command, see *z/OS MVS System Commands*.

JES3 Dump Suppression

JES3 failsoft (ABENDDMxxx) dumps taken on the global processor can be suppressed using the JES3 dump suppression facility. All JES3 failsoft codes with the exceptions of dumps taken during initialization or dumps taken as a result of the *FAIL,DSP,DUMP command (ABENDDM133), can be suppressed. Dump suppression remains active across a JES3 hot start and warm start.

JES3 dump suppression can only be used for JES3 failsoft dumps (ABENDDMxxx). To suppress other types of dumps, such as an ABEND0C4 or an ABEND2FB, see *z/OS Problem Management*.

JES3 dump suppression is available only when a JES3 failsoft normally issues a dump for ABENDDMxxx failures. This is set by the OPTIONS initialization stream statement, by either specifying the WANTDUMP=YES parameter or by omitting the WANTDUMP parameter from the OPTIONS statement.

If your system automatically asks the operator if a dump is to be taken (WANTDUMP=ASK), or if dumps are automatically bypassed (WANTDUMP=NO), JES3 dump suppression is not available. To change the WANTDUMP parameter, a warm start of JES3 is required.

Output Service Diagnostic Mode

Using the output service diagnostic mode, you can display information on the data sets that are selected by a writer for processing. The output service diagnostic mode is invoked by including the D parameter on the *CALL, *START, *RESTART, and *CANCEL command. The diagnostic mode remains active until it is reset using the /D parameter.

When the output service diagnostic mode has been invoked for a writer, messages IAT7006 and IAT7060 are displayed to identify the data set that was selected for output processing. Following message IAT7006, the output service diagnostic mode displays a seven byte field of information, within the text of message IAT7060, about the writer data area. The writer data area is mapped by either:

- IATODWD for a hot or dynamic writer
- IATODFD for a FSS writer

This data is obtained from the following fields in the writer work area in module IATODWD: WTRIMFLP, WTRIFLG1, WTRIFLG2, WTRIFLG3, WTRIFLG4, WTRIFLG5, and WTRINDX. The data FSS mode writers also display this information from IATODFD and append five additional bytes (WTRFFLG1, WTRFFLG2, WTRFFLG3, WTRFFLG4, and WTRFFLG5) to the message. See *z/OS JES3 Messages* for an explanation of these messages.

The following data displayed in message IAT7060:

Table 15. IAT7060 data. Data displayed by message IAT7060

Field	Byte	Bits	Name	Description
diagfld	1		WTRIMFLP	Flag byte
		1...	WTRISTRT	Command is an *START
		.1..	WTRIRSTR	Command is an *RESTART
		..1.	WTRICNCL	Command is an *CANCEL
		...1	WTRICALL	Command is an *CALL
		.... 1...	WTRISYND	Writer synchronization has been done
		.... .1..	WTRIJOBS	Job selected
		.... ..1.	WTRIDSS	Data set selected
		1	WTRIMNT	Mount (setup) condition
diagfld	2		WTRIFLG1	Save area for OSEDFLG1

Table 15. IAT7060 data. Data displayed by message IAT7060 *(continued)*

Field	Byte	Bits	Name	Description
diagfld	3		WTRIFLG2	Flag byte
		1...	WTRIOS	OSE selected flag
		.1..	WTRISTUP	Command implementation in setup
		..1.	WTRINNPR	processing
		...1	WTRIREOF	No NPRO value specified
		.... 1...	WTRISTER	EOF on repositioning forward
		.... .1..	WTRIERIN	Syntax error detected
		.... ..1.	WTRINEGV	Parameter error detected
		1	WTRIPFOK	Ignore selection characteristics (/ used) WTRIPFOR has a valid value
diagfld	4		WTRIFLG3	Flag byte
		1...	WTRIDSBG	Data started
		.1..	WTRIDSDN	Data completed
		..1.	WTRIPAGE	Reposition by pages
		...1	WTRIDSLD	Data set label exit called
		.... 1...	WTRITRNC	Short output required
		.... .1..	WTRIRSCD	Job rescheduling required
		.... ..1.	WTRIRJPE	Terminate by RJP cancel
		1	WTRIKPJS	Keep job start PPQ/PDQ
diagfld	5		WTRIFLG4	Flag byte
		1...	WTRIEND	Termination flag
		.1..	WTRIHOT	Hot writer flag
		..1.	WTRIRSCH	Job (PDQ) rescheduling required
		...1	WTRIDLE	Hot writer going idle
		.... 1...	WTRICHNG	OSE rescheduling required
		.... .1..	WTRINDSR	Data set rescheduling required
		.... ..1.	WTRICPPL	Plus copies option
		1	WTRICPMI	Minus copies option
diagfld	6		WTRIFLG5	Flag byte
		1...	WTRISREQ	Setup required
		.1..	WTRIJOB	Job selected flag
		..1.	WTRIDS	Data set selected flag
		...1	WTRIMANM	Dynamic manual mode
		.... 1...	WTRINONE	OPEN LABEL=NONE required
		.... .1..	WTRIDSOP	Data set opened
		.... ..1.	WTRIWMSG	Wait message queued
		1	WTRIVLOR	Volume label open required

Table 15. IAT7060 data. Data displayed by message IAT7060 *(continued)*

Field	Byte	Bits	Name	Description
retindex	7		WTRINDX	Return index for input message. This field can have any one of the following indicated: **Hex Value** **Name and Description** **0** WTRIJS - Job select **4** WTRISU - Device setup **8** WTRIVO - Volume open **C** WTRIRM - Ready message **10** WTRIDSO - Data set open **14** WTRIDSR - Data set repositioning **18** WTRIDL - DEBLOCK loop **1C** WTRIEP - EOD put **20** WTRIPT - Put truncate **24** WTRIPO - Put output **28** WTRIDSD - Data set done **2C** WTRIDSC - Data set complete **30** WTRIGNO - Get next OSE **34** WTRITLC - Trailer label close

The following data is also displayed for FSS mode writers:

Table 16. IAT7060 data. Data displayed by message IAT7060 for FSS mode writers

Field	Byte	Bits	Name	Description
diagfld2	8		WTRFFLG1	Flag byte
		1...	WTRFMFSS	This is an FSS writer
		.1..	WTRFFSS	This writer supports an FSS
		..1.	WTRFFDA	This writer supports an FSA
		...1	WTRFFSSA	FSS is active
		.... 1...	WTRFFSAA	FSA is active
		.... .1..	WTRFRESP	Order response pending
		.... ..1.	WTRFMPER	OSMP in command error processing
		1	WTRFNCKP	New checkpoint buffer without spool address
diagfld2	9		WTRFFLG2	Flag byte
		1...	WTRFMPDL	ADELETE module IATOSMP
		.1..	WTRFISET	Setup to complete processing
		..1.	WTRFSRC	OSFS received reject command
		...1	WTRFUIR	Update intervention required
		.... 1...	WTRFCPMQ	Checkpoint error message queued
		.... .1..	WTRFPORQ	POST for GETDS required
		.... ..1.	WTRFDUMP	Operator requested dump during failsoft - abend FSS address space with dump
		1	WTRFRCUR	Failsoft recursion
diagfld2	10		WTRFFLG3	Flag byte
		1...	WTRFGTRL	Release writer's pending OSEs
		.1..	WTRFTREQ	Set order required
		..1.	WTRFSVAL	DS validation on synch order required
		...1	WTRFSMSG	WTRIOSE has message IAT7018 in formation
		.... 1...	WTRFDRET	OSMP return without command implementation
		.... .1..	WTRFDSUP	WTRFDSAD DS unprintable by FSS
		.... ..1.	WTRFSARS	FSA restart requested
		1	WTRFDVRS	Device is to be restarted
diagfld2	11		WTRFFLG4	Flag byte
		1...	WTRFDCPI	WTRFDSAD DS checkpoint invalid
		.1..	WTRFRSCD	RELDS incomplete received
		..1.	WTRFJTRL	Job trailer was specified on synch order to device
		...1	WTRFJNDS	JESNEWS being selected
		.... 1...	WTRFJNNX	JESNEWS to be sent next
		.... .1..	WTRFCLR	PDQ clear in progress
		.... ..1.	WTRFFAIL	FSS and writer to terminate
		1	WTRFDOSU	Update DOSE on PDQWOSWR

Table 16. IAT7060 data. Data displayed by message IAT7060 for FSS mode writers *(continued)*

Field	Byte	Bits	Name	Description
diagfld2	12		WTRFFLG5	Flag byte
		1...	WTRFRSTR	FSS writer to restart after IPL of FSS main
		.1..	WTRFSTRS	Staging area received—resent over restart
		..1.	WTRFSYWT	Waiting for data set synchronization message
		...1	WTRFFRIP	FSA restart in progress
		.... 1...	WTRFJOSL	Job/OSE selected status lock

IOERR Output

IOERR output is produced after an I/O error is detected by IOS, recognized by IATDMIT, and processed by IATDMER. Sample IOERR output is shown in Figure 14 on page 129. Because recovery from the I/O error can involve multiple retries, there could be more output than is shown. The output goes to the class specified in the DBGCLASS parameter of the STANDARDS initialization statement if the retry occurred on the global in the JES3 address space. Local JES3 and all C/I FSS IOERR activity is not traced, except through messages to the operator.

```
******************************************************************************************************************************
                                                IOERR OUTPUT         87.202
******************************************************************************************************************************

11314507 01179040 44000000 08000041 81CBB454 00419080 00F73FC0 0207A028 0D4007F4 011790F4 *..........7......4...4.*
IOSB     01179060 00BDEB70 00000000 40170000 00000000 00000000 00000000 00000000 81CBC2A0 *...................B..*
         01179080 81CBC0FE 81CB97F0 00399000 0207A000 00BDEE0C 00000061 00000000 00000000 *....0..................*
         011790A0 1800020B 00000000 1800020B C9E2D940 BAFF0000 019BC3B0 00399030 011792E0 *.....ISR.....C.........*
         011790C0 0207A000 81CBA550                                                       *.....&
ROR      0207A000 07400006 00399030 23400001 00399037 31600005 00399032 08000000 00399010 *.......................*
DMC      0207A020 054007F4 002E900C 03000000 00000000 00000000 00020B76 C4D4C340 0205C000 *..4...........DMC.....*
00399000 0207A040 00000000 00000000 00000000 00000001 00000000 00000000 00000000 7FFCFB40 *...................... *
         0207A060 2100C800 00000000 00000000 00000000 00000000 00000000 0201F1C0 00000000 *..H.............1.....*
         0207A080 00000000 00000000 00000CC8 019BC3B0 81CB874E 00000000 00000000 00000000 *......H..C....+........*
         0207A0A0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         0207A0C0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         0207A0E0 C4C1E340 0207A000 00000000 00050000 05140005 00000514 00000000 00000000 *DAT....................*
         0207A100 00000000 07B9229E 00000001 00000001 00000001 00000054                   *...................
ERROR    0205C000 C4C1E340 0207A000 00000000 00020000 197F0002 0000197F 00000000 00000000 *DAT....................*
DAT      0205C020 00000000 07B9229E 00000001 00000001 00000001 0000001F                   *...............002E9000

FDB/DSS  0201F1C0 C4E2E240 009F7AF8 00000000 A0000001 00020000 197F0002 0000197F 00000000 *DSS..8.................*
         0201F1E0 00000000 00000000 0201FC90 00BDEB70 00F33E00 0201FD34 00000000 009E9AC0 *..........3............*
         0201F200 0201F990 00000CC8 00000000 00000000 00000000 00000000 00000000 7FFCCC30 *..9..H.................*
         0201F220 7FFCCD18 00000008 2ED50000 00000000 00000000 00000000 00000000 00000000 *......N................*
         0201F240 00000000 81CB8A78 8115439A 00000033 00F55600 00000CC8 00F73FC0 81CB8AAE *..........5...H.7......*
         0201F260 80C2D0A2 81CB8080 00BDEB70 0207A000 0201F1C0 80C2B540 00C2C540 80C29A60 *.B.........1.B..BE.B...*

1314508 011792E0 44000000 08000041 81CBB454 00419080 00F73808 7F51F028 0C4003F4 01179394 *..........7..0...4.....*
IOSB     01179300 00BDEB70 00000000 40170000 00000000 00000000 00000000 00000000 81CBC2A0 *...................B..*
         01179320 81CBC0FE 81CB97F0 00092000 7F51F000 00BDEE0C 00000000 00000000 00000000 *....0.....0............*
         01179340 05000D01 00000000 05000D01 C9E2D940 BAFF0000 019BC5C0 000920C8 00000000 *......ISR...E....H.....*
         01179360 7F51F000 81CBA550                                                       *..0..&
ERROR    7F51F000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
DMC      7F51F020 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
002D6000 7F51F040 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         7F51F060 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.....z.................*
         7F51F080 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         7F51F0A0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         7F51F0C0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         7F51F0E0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 *.......................*
         7F51F100 00000000 00000000 00000000 00000000 00000000 00000000                   *...............
ERROR    00000000 040C0000 810940F0 00000000 00000000 00FDB0B0 00000000 070C0000 810F9066 *.....0.................*
DAT      00000020 071C3000 821F70C6 071C1000 82112CF6 00000000 00000000                   *.......F.......6......
0000000
```

Figure 14. IOERR Output

This section of IOERR output contains data about the I/O operation that failed. Shown first is a time stamp, in the form hhmmssth where hh is the hour, mm is the minute, ss is the second, and th is tenths and hundredths of a second. Also shown are the IOSB, DMC, DAT, and the FDB (for JSAM errors) or DSS (for USAM errors). The real storage addresses of the DMC and DAT appear beneath the words ‘ERROR DAT’, respectively.

This section of IOERR output shows the content of the DMC and DAT upon entry to the JES3 channel-end routine (before retry of the I/O operation).

The IOERR output shows the content of control blocks after retry of the I/O operation. The retry may have been a successful retry or an unsuccessful retry. Included are the IOSB, DMC, DAT, and the FDB (for JSAM errors) or DSS (for USAM errors). The IOERR also shows the content of the IEB. The IEB summarizes I/O error retry attempts.

Using the Data Collected by the Generalized Trace Facility

You can use the generalized trace facility (GTF) to trace information such as the message traffic in your installation. For information on starting GTF, see z/OS JES3 Commands. For background information on message processing, see:

- *z/OS JES3 Initialization and Tuning Guide*
- *z/OS JES3 Customization*

Setting up and tracing JES3 events

In the GTF procedure, you either:

- Specified the name of a data set allocated for GTF records
- Did not specify a data set. If you did not specify a data set, the GTF records remain in storage.

Before GTF records are created, GTF must be started.

Starting GTF - Example

```
S gtfproc.GTF
```

gtfproc is the procedure library name that contains the JCL used to start GTF. GTF is the name that the GTF address space can be referred to (for example, in a STOP comand).

The following is an example of a procedure used to start GTF. In this procedure,the GTF output will be written to a data set, but you can change it so that the GTF records remain in-storage in the GTF address space. See *z/OS MVS Diagnosis: Tools and Service Aids* for more information.

GTF Start Procedure - Example

```
//GTFJES3 PROC MEMBER=GTFJES3
//IEFPROC EXEC PGM=AHLGTF,PARM='MODE=EXT,DEBUG=NO,TIME=YES',
//  TIME=1440,REGION=2880K
//IEFRDER DD   DSNAME=SYS1.JES3.TRACE,UNIT=SYSALLDA,SPACE=(TRK,20),
//             DISP=(NEW,CATLG),VOL=SER=TSPACE
//SYSLIB  DD   DSNAME=SYS1.PARMLIB(&MEMBER),DISP=SHR
```

In this example, the GTF procedure points to a member GTFJES3 in SYS1.PARMLIB. The following shows the contents of that member:

```
TRACE=USRP
USR=(F60)
END
```

Note that in the member USR=(F60) is specified. This is necessary because JES3 GTF records are created using the event identifier X'F60'. If you do not specify this event identifier in the GTF procedure, you can specify it in response to AHL125A when GTF is started (see below).

The following shows the messages that are displayed when GTF is started:

GTF Start Messages

```
  AHL121I   TRACE OPTION INPUT INDICATED FROM MEMBER GTFJES3  OF PDS
   SYS1.PARMLIB
  TRACE=USRP
  USR=(F60)
  END
  AHL103I   TRACE OPTIONS SELECTED --USR=(F60)
 *10 AHL125A   RESPECIFY TRACE OPTIONS OR REPLY U

  10,U
```

Reply U, unless you want to change the options

After GTF is started, you must also activate JES3 GTF tracing using the *TRACE command. For example, if you want to trace events related to Workload Management (WLM), you would issue the following command:

Tracing WLM Events

```
*TRACE,ON,WLMENF
```

As a result, the following message is issued:

```
IAT7136 JES3 GTF TRACE STATUS
  TRACE ID   TRACE NAME   STATUS   TRACE ID   TRACE NAME   STATUS
  --------   ----------   ------   --------   ----------   ------
        14   WLMENF       ACTIVE
```

You then issue commands, run jobs, or do whatever you need to do to cause the GTF records to be created. For example, if you are tracing WLM-related events, you might issue an F WLM,RESOURCE= command or a VARY WLM,POLICY= command. After the trace records have been created, you should turn JES3 GTF tracing off.

Turning GTF Tracing Off

```
*TRACE,OFF,WLMENF
```

As a result, the following message is issued:

```
IAT7136 JES3 GTF TRACE STATUS
  TRACE ID  TRACE NAME   STATUS     TRACE ID  TRACE NAME   STATUS
  --------  ----------   ------     --------  ----------   ------
        14   WLMENF      INACTIVE
```

If the GTF output is being written to a data set, you must stop the GTF address space. If the GTF output is being kept in storage in the GTF address space, you must issue an MVS DUMP command to dump the GTF address space. In this example, because the GTF output is being written to a data set, the following command is issued to stop the GTF address space:

Stopping the GTF Address Space

```
P GTF
```

The following shows the messages that are displayed when GTF is stopped:

```
AHL006I  GTF ACKNOWLEDGES STOP COMMAND
AHL904I  THE FOLLOWING TRACE DATA SETS CONTAIN TRACE DATA :
          SYS1.JES3.TRACE
IEF404I  GTFJES3 - ENDED - TIME=17.20.09
```

In the above example, the GTF output was written to a data set SYS1.JES3.TRACE. The following job can be used to print the GTF output and delete the data set:

Printing GTF Output

```
//GTFPRINT JOB ...
//STEP1    EXEC  PGM=IDCAMS
//SYSPRINT DD    SYSOUT=A
//PRINTDD  DD    DSNAME=SYS1.JES3.TRACE,
           DISP=(OLD,DELETE)
//SYSIN    DD    *

    PRINT  INFILE(PRINTDD) -
            DUMP

/*
```

The GTF output has the following format:

```
IDCAMS  SYSTEM SERVICES                    TIME: 17:26:47
LISTING OF DATA SET -SYS1.JES3.TRACE

RECORD SEQUENCE NUMBER - 1
000000  0001FFFF CA5BB03B 09D89CE9 9B080000  00090001 0000C7E3 E2400100 4000E2D7
*.....$...Q.Z..........GTS .. .SP*
000020  F64BF04B F640C8C2 C2F6F6F0 F640E2E8  F1404040 4040FF11 53054381 00000000  *6.0.6 HBB6606
SY1     ..........*
000040  00000000 0000FFFF CA5B1700 00000000  00090001 0000
*.........$...........          *

RECORD SEQUENCE NUMBER - 2
000000  FF00B03B 09ED44CF 7D02EF60 00FADE00  E6D3D440 40404040 C7E3D9C3 0000000E
*........'..-....WLM     GTRC....*
000020  00010001 E2E8F140 40404040 E6D3D4C5  D5C64040 40404040 E2E8F140 40404040  *....SY1
WLMENF      SY1     *
000040  00000039 80000000 B03B09ED 44C23402  04B25000 04CB7018 01000000 00000000
*.............B....&.............*
000060  C3C8C1D9 C1F2F37C 7B5B4040 40404040  00000000 00000000 00000000 00000000
*CHARA23@#$      ................*

RECORD SEQUENCE NUMBER - 3                   E6D3D440 40404040 C7E3D9C3 0000000E
000000  FF00B03B 09F27073 7406EF60 00FADE00  D5C64040 40404040 E2E8F140 40404040
*.....2.....-....WLM     GTRC....*
000020  00010001 E2E8F140 40404040 E6D3D4C5  04B25000 04CB7018 01000000 00000000  *....SY1
WLMENF      SY1     *
000040  00000039 80000000 B03B09F2 706DA206  00000000 00000000 00000000 00000000
*...........2._....&.............*
000060  C1C2C3C4 C5C6C7C8 C9D1 F0F1 F2F3F4F5 00000000 00000000 00000000 00000000
*ABCDEFGHIJ012345................*
```

The records written by JES3 contain the string GTRC at offset X'18' into the record. The GTRC is the JES3 GTF record header. It is eight bytes long and mapped by macro IATYGTRC. The information that follows the JES3 GTF record header is event specific and mapped by an event specific macro. For example, the event specific information for the WLMENF event (event number 14) is mapped by IATYG014.

Events Eligible for Tracing

Table 17 on page 133 identifies the GTF records that are written to the GTF data set for each event that JES3 traces.

Table 17. GTF Records Created to Trace an Event

Event No.	Event Name	GTF Record Macro	Module	Description
1	WTOSSI	IATYG001	IATSIWO	Created for a single line WTO at entry to the subsystem interface.
2	WTOSSI	IATYG002	IATSIWO	Created for a single line WTO at exit from the subsystem interface.
3	WTOSSI	IATYG003	IATSIWO	Created when information is sent to the JES3 global if a WTO requires special processing in the global (for example, an automatic reply), or when User Exit 69 determines that the information should be routed to the global so that User Exit 70 can examine it.
4	NJETCP	IATYG004	IATNTTXR	Created by exits NXASTRAC and NXSTTRAC when called by IAZNJTCP to trace Netserv or Socket level activity.
5	WTLSSI	IATYG005	IATSIWO	Created for a WTL request at entry to the subsystem interface.
6	WTLSSI	IATYG006	IATSIWO	Created for a WTL request at exit from the subsystem interface.
7	MBSTATS	IATYG007	IATSIAD	Created during unallocation of a multiple-buffer spool input data set.
8	WTOSSI	IATYG008	IATSIWO	Created for a multi-line WTO (major WQE) at entry to the subsystem interface.
9	WTOSSI	IATYG009	IATSIWO	Created for a multi-line WTO (major WQE) at exit from the subsystem interface.
11	WTOSSI	IATYG011	IATSIWO	Created for a multi-line WTO (minor WQE) at entry to the subsystem interface.
12	WTOSSI	IATYG012	IATSIWO	Created for a multi-line WTO (minor WQE) at exit from the subsystem interface.
14	WLMENF	IATYG014	IATMSEWL	Created when a WLM ENF signal is processed by JES3's listen exit.
15	WLMMDSFCT	IATYG015	IATMDWLE	Created when a WLM related event is processed by the MDS (SETUP) FCT.
16	WLMMDSJOB	IATYG016	IATMDWLE	Created when a job is updated by MDS as a result of a WLM related event.
17	WLMGMSFCT	IATYG017	IATMSWLE	Created when a WLM related event is processed by the GMS (MAIN) FCT.
18	WLMGMSJOB	IATYG018	IATMSWLE	Created when a job is updated by GMS as a result of a WLM related event.
19	SAPI	IATYG019	IATSISO	Created when a SAPI request is received through the subsystem interface and when information is returned to the subsystem interface caller.

Table 17. GTF Records Created to Trace an Event (continued)				
Event No.	**Event Name**	**GTF Record Macro**	**Module**	**Description**
20	WLMWLMFCT	IATYG020	IATWLEVT	Created when a WLM Event Control Block (WEV) is ready to be processed by the WLM FCT.
21	SSI80	IATYG021	IATSIES	Created when an Extended Status SSI80 request is received through the subsystem interface and when information is returned to the subsystem interface caller.
24	WLMSAMPSC	IATYG024	IATWLCSM	Created after sampling data has been passed to WLM/SRM.
25	WLMSAMPRC	IATYG025	IATWLCSM	Created after sampling data has been passed to WLM/SRM.
26	JOBDELAY	IATYG026	IATGRDLY	Created after a job's delay status has been changed.

Job Validation SNAP Output

During a JES3 warm start with or without analysis or hot start with or without analysis, JES3 evaluates the jobs that remain in the job queue to ensure they can be restarted when JES3 has been reinitialized.

To validate a job on the job queue, JES3 evaluates job-related control blocks. If JES3 determines a control block is not valid, JES3 issues message IAT4174. Message IAT4174 allows the operator to:

- Take a SNAP of the incorrect control block
- Cancel the job
- End JES3 initialization

Respond SNAP to message IAT4174 to obtain information that can help you determine why JES3 found the job in error.

If you have started JES3 without analysis, JES3 only provides you with the:

- Job control table (JCT)
- Job track allocation table (JBT)
- Job data set control block (JDS)
- Job description accounting block (JDAB)
- Job management record (JMR)

If JES3 is started with analysis, JES3 provides additional job-related control blocks.

Evaluating SNAP Output from Job Validation

JES3 generates five sections when you ask JES3 to provide SNAP output for the incorrect job. These sections provide you with information that you can use to determine why JES3 found the job incorrect.

You can use the first section of the job validation SNAP output, the **SNAP of the Job Validation Work Area**, to identify the contents of the work area used by the job validation DSP. The work area contains the addresses of the job's control blocks that are in storage.

The second section of the SNAP output, the **Job Validation Work Area Status Indicators**, provides a summary of the:

- Errors JES3 found while validating the job
- Processing JES3 performed for the job

The third section, the **Job Validation JES3OUT/Console Messages**, provides you with messages that summarize the reasons JES3 found the job incorrect.

You can use the fourth section, **Summary of Spool Records Validated**, to identify the control blocks associated with the job and their chaining structure.

The last section, the **SNAPs of the incorrect control blocks for the job**, provides a snap of the job's control blocks that were incorrect.

To evaluate SNAP output for a job:

1. Examine the JES3OUT/CONSOLE MESSAGE section of the SNAP output. This section and *z/OS JES3 Messages* should provide you with the reasons JES3 found the job incorrect.
2. Examine the SUMMARY OF SPOOL RECORDS section of the SNAP output. This section provides you with a list of the spool records associated with the job. If JES3 found an incorrect spool record associated with the job, JES3 snaps the contents of the spool record to the SNAP output.

   If JES3 found the spool record incorrect because it was unable to read or write to the spool record, a failsoft (DM) code and dump will provide you with additional information. See *z/OS JES3 Diagnosis Reference* for information for the failsoft code.

   If JES3 found the spool record incorrect for some other reason, a message may be provided under the SNAP output for the control block. Verify the length of the record and its variable sections. If the control block contains scheduler elements for the job, ensure the control block contains valid SEs.

Format of Job Validation SNAP Output

These sections should provide you with enough information to determine why the job is incorrect:

- SNAP of the Job Validation Work Area (IATYJVW)
- Job Validation Work Area Status Indicators
- Job Validation JES3OUT/Console Messages
- Summary of Spool Records Validated
- SNAPs of the incorrect control blocks for the job

SNAP of the job validation work area (IATYJVW)

```
************************************ WAVE3     (JOB10002) VALIDATION SNAP
****************************************
*** SNAP OF THE JOB VALIDATION WORK AREA (IATYJVW) ***

JOBNM WAVE3      JOBID JOB10002
JVDAD 00000000   SRVAD 024EC4BC   JCTSZ 01A00      MSGQ  025065E8   MSGQE 025065E8   SYSTM
FSSID
JCT   024EC31C   JDAB  00000000   JMR   00000000   FUNC  0B         ACTSE 024EC480   DSPNM OUTSERV
RESQ  024B4118   RCEAD 00000000   JDSCT 0001

JCFDB 000100008979000000000000    JDFDB 0002000010ED049080000000    JMFDB 0002000019EC049080000000
JSFDB 000000000000000000000000    DJFDB 000000000000000000000000


 +0000  D1E5E640 00000000 00000000 024EC4BC  01A00001 00000000 00000005 00000000
*JVW .........+D................*
 +0020  00000000 0010002F 00000001 E6C1E5C5  F3404040 D1D6C2F1 F0F0F0F2 025065E8  *............WAVE3
JOB10002 ..Y*
 +0040  025065E8 00000000 00000000 00000000  00000000 00010000 89790000 00000000
*...Y............................*
 +0060  024EC31C 00020000 19ED0490 80000000  00000000 00020000 19EC0490 80000000
*.+C.............................*
 +0080  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00020000
*................................*
 +00A0  19E30490 80000000 024B4118 00000000  024EC2B0 006C0001 40840080 01001060  *.T
 +00C0  0B000000 024EC480 02429E00 024EC484  7F515A98 0242A1B8 D6E4E3E2 C5D9E540
*.....+D......+D.".!.....OUTSERV *
        **** +00E0 TO +00FF SUPPRESSED, DATA CONTAINS ZEROS ****
 +0100  00000000 00000000 00000000 00000000  00000000 00020000 19E10690 80000000
*................................*
 +0120  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00020000
*................................*
 +0140  19E50490 00000000 00000000 00000000  00000000 00000000 00000000 00000000
*.V..............................*
        **** +0160 TO +019F SUPPRESSED, DATA CONTAINS ZEROS ****
 +010A  7F518 FC 024EC13C 0245D872 E6D6E2C5  00000000 00000000 00000000 00000000
*"....+A...Q.WOSE................*
        **** +01C0 TO +021F SUPPRESSED, DATA CONTAINS ZEROS ****
 +0220  00000000 00000000 00000000 00000000  00000000 004A0000 C9C1E3F4 F1F3F140
*.......................IAT4131 *
 +0240  E2D7D6D6 D340D9C5 C3D6D9C4 40C5D9D9  D9D940C4 C5E3C5C3 E3C5C440 4DD1C3E3  *SPOOL RECORD ERROR
DETECTED (JCT*
 +0260  405D40C6 D6D940D1 D6C240E6 C1E5C5F3  40404040 4DD1D6C2 F1F0F0F0 F25D0000  * ) FOR JOB WAVE3
(JOB10002)..*
        **** +0280 TO +029F SUPPRESSED, DATA CONTAINS ZEROS ****
 +02A0  00000000 00000000 00000000 00000000                                       *................
```

Validation SNAP Heading:

Each job that JES3 found incorrect during JES3 initialization is identified by a heading. The heading contains the job name, the job identifier, which is followed by the heading VALIDATION SNAP.

SNAP of the JOB Validation Work Area:

The JVW contains job-related information that JES3 uses during job validation/restart processing. You can use the information in the JVW to:

- Identify the incorrect job
- Locate addresses of control blocks that are in storage that represent the job
- Identify the parameters used on the IATXVFDB and IATVXSRV macros. The parameters specified on these macros can be used on subsequent occurrences of the IATXVFDB, IATXVSRV and IATXVTAT macros.

JOBNM cccccccc - The job name of the job JES3 is validating.

JOBID cccccccc - The job identifier of the job JES3 is validating.

JVDAD cccccccc - The address of the job validation data csect for the job validation/restart FCT.

SRVAD cccccccc - The address of the first spool validation entry (SRV). Each SRV entry represents a control block that the job validation/restart FCT validates.

JCTSZ cccc - The length of the JCT record.

MSGQ cccccccc - The address of the beginning of the message queue for the job. Buffers that contain messages are added to the queue when the job validation/restart routines issue either a IATXVSRE or IATXVMSG macro.

MSGQE cccccccc - The last buffer that contains a message on the message queue.

SYSTM cccccccc - Name of the main that the job was running on before JES3 was restarted. The job must be active for the name to appear.

FSSID cccccccc - The id of CI FSS address space that is processing the job. The active SE must be CI for a name to appear in this field.

JCT cccccccc - The address of the JCT in storage.

JDAB cccccccc - The address of the JDAB in storage.

JMR cccccccc - The address of the JMR in storage.

FUNC nn - is a footprint that identifies the processing the job validation DSP was performing when the error occurred.

A footprint of:
Indicates JES3:

1
was validating the fixed segment of the JCT

2
was validating the scheduler elements (SEs) in the JCT

3
was validating the status of the job

4
was performing initial job spool space validation

5
was initiating I/O for spool control blocks

6
was validating the spool data management control blocks for the job

7
was validating the fixed segment of the JDAB

8
was validating the SEs in the JDAB

9
was validating the JMR

10
was ensuring the job's JCT and JDAB contained the same SEs

11
started DSP specific job validation processing

12
was performing job validation cleanup

13
was performing job validation I/O services (IATXVIO) cleanup

14
job validation complete

ACTSE ccccccccc - The address of the scheduler element (SE) that the job was active in when the job failed.

DSPNM cccccccc - The name of the DSP that the job was active in when JES3 terminated.

RESQ cccccccc - The address of the RESQUEUE for the job.

RCEAD cccccccc - The address of the RCE for the job.

JDSCT cccc - The number of JDSes associated with the job.

JCFDB cccccccc - The file descriptor block (FDB) that contains the address of the job control table (JCT) for the job.

JDFDB cccccccc - The FDB that contains the address of the job data accounting block (JDAB) for the job.

JMFDB cccccccc - The FDB that contains the address of the job management record (JDAB) for the job.

JSFDB cccccccc - The FDB that contains the address of the job summary table (JST) for the job.

DJFDB cccccccc - The FDB that contains the address of the dynamic job summary table (DJST) for the job.

+nnnn - is the offset into the JVW. The information that follows is the contents of the JVW in hex and EBCDIC.

Job Validation Work Area Status Indicators

```
JOB VALIDATION WORK AREA STATUS INDICATORS

     JVWSTA1    X'80' - SPOOL RECORD ERROR DETECTED
                X'04' - JOB SPOOL SPACE NOT REALLOCATED

     JVWSTA3    X'80' - JDAB HAS AN ISDRVR SCHEDULER ELEMENT

     JVWSTA4    X'01' - JVW SNAP PROCESSING ACTIVE

     JVWSTA6    X'10' - OSE SCHEDULED OR DATA SET PROCESSED

     JVWSTA7    X'40' - RQ BUILT BY DSP VALIDATION RESTART
                X'20' - DSP USE COUNT UPDATED BY VALIDATION RESTART
```

The Job Validation Work Area Status Indicators identify the status of the job. You can use the status indicators from the job validation work area to obtain an understanding of the types of errors that caused JES3 to find the job incorrect.

For each flag that is on in the JVW, the job validation work area status indicators section of the SNAP provide you with:

- The bits that are set for the flag
- An explanation of the bit

The status indicators in the job validation work area (JVW) are set by the job validation/restart routines.

Job Validation JES3OUT/CONSOLE Messages

```
JOB VALIDATION JES3OUT/CONSOLE MESSAGES
     IAT4131 SPOOL RECORD ERROR DETECTED (JCT ) FOR WAVE3    (JOB10002)
```

The job validation JES3OUT/CONSOLE message section of the SNAP output produced for a job contain informational messages that JES3 issued while validating the job. They summarize the reasons why JES3 found the job incorrect.

Summary of Spool Records Validated

```
****  SUMMARY OF SPOOL RECORDS VALIDATED FOR JOB WAVE3    (JOB10002)  ****

     SEQ#   ROOT   SPOOL-ADDRESS   -ID-   SPOOL RECORD DESCRIPTION

   *    1    ---   0001.00008979   JCT    JOB CONTROL TABLE ENTRY
   *    2      1   0002.000019E1   JBT    JOB TRACK ALLOCATION TABLE
        3      1   0002.000019EB   JDS    JOB DATA SET CONTROL BLOCK
        4      1   0002.000019ED   JDAB   JOB DESCRIPTION/ACCOUNTING BLOCK
        5      1   0002.000019EC   JMR    JOB MANAGEMENT RECORD
        6      1   0002.000019E3   JST    JOB SUMMARY TABLE
        7      1   0002.000019E2   DJST   DYNAMIC JOB SUMMARY TABLE
        8      1   0002.000019E5   OSE    OUTPUT SERVICE ELEMENT
        9      8   0002.000017B1   WOSE   WORK OUTPUT SERVICE ELEMENT
```

The Summary of Spool Records Validated identifies the control blocks that JES3 validated for the job. You can use this section to identify the chaining structure of the job's control blocks. Each control block is assigned a sequence number. The sequence number is used to identify the control block that contains the addresses of the job's other control blocks. For example, the job's JCT is assigned a sequence number of 1 and it contains the addresses of the job's JBT, JDS, JDAB, JMR, JST, DJST, and the job's OSE. (These control blocks have a sequence number of 1 under the heading ROOT.) The job's OSE is assigned a sequence number of 8 and contains the address of the job's WOSE. (The WOSE has a sequence number of 8 under the heading ROOT.)

If an * precedes the sequence number of the control block, it indicates JES3 logged diagnostic messages for the control block. The diagnostic messages can be found preceding the SNAP of the control block.

SEQ# nnnn - A record sequence number used to identify the record.

ROOT nnnn - Identifies the control block, by sequence number, that contains the address of the control block.

SPOOL-ADDRESS cccccccc - The spool record address of the control block on spool.

ID cccc - The acronym that identifies the control block.

SPOOL RECORD DESCRIPTION - A description of the record being validated.

SNAP of the Job's Incorrect Control Blocks

```
JCT   FOR JOB WAVE3    (JOB10002) AT 0001.00008979 DDNAME=JES3JCT  CYL=000002E H=0 R=3

      ***  SPOOL RECORD DIAGNOSTIC/ERROR MESSAGES  ***

      JBT FDB ERROR



+0000  00010000 89790000 D1C3E340 00000000   00000000 00000000 00000000 D1C3E340
*........JCT ................JCT *
+0020  016C015C 00040000 27120000 E6C1E5C5   F3404040 00000000 00000000 040102FF
*.%.*........WAVE3   ............*
+0040  00000064 000005DC 000003E8 00C81111   02000200 1F000000 00000000 00000000
*...........Y.H..................*
+0060  00000000 00000000 00000000 00020000   19ED0490 80000000 00020000 19E10690
*................................*
+0080  80000000 00000000 00000000 22D43E6C   00000000 00020000 19EB0490 80000000
*.............M.%................*
+00A0  00020000 19E50490 80000000 00020000   19EC0490 80000000 00020000 19E30490
*.....V.......................T..*
+00C0  80000000 00000000 00000000 00000000   00000000 0000D3D6 C3C1D340 4040C140
*.......................LOCAL   A *
+00E0  40404040 40400000 00000000 00000000   00000000 00010000 00000400 00000000
*      ..........................*
+0100  04000000 04000000 0000003B 9E4122D4   00010000 00000000 00000000 00000000
*...............M................*
+0120  00000000 00002720 000C851C 00000000   00000000 00000000 00000000 00000000
*................................*
       **** +0140 TO +015F SUPPRESSED, DATA CONTAINS ZEROS ****
+0160  00000000 00000000 9E4122D4 00000000   00000000 00000000 C000011B C0000216
*...........M....................*
+0180  40000307 00000415 00000000 00000000   00000000 00000000 00000000 00000000
* ...............................*
```

cbname FOR JOB jobname (jobid) at adr1 DDNAME=ddname CYL=ccccccc H=h R=r is the heading that identifies the control block that JES3 validated.

- cbname identifies the control block.
- jobname identifies the job the control block represents.
- jobid is the job identifier that is associated with the job.
- adr1 is the spool record address (M.R) of the control block.
- ddname is the name of the data set where the control block resides.
- adr2 is the address (cylinder, head, and record) of the control block on spool.

SPOOL RECORD DIAGNOSTIC/ERROR MESSAGES - informational messages that identify why JES3 found the job's control block incorrect.

SNAP of the control block - A snap of the control block. For information on the contents of these control blocks, see *z/OS MVS Data Areas*, in the z/OS Internet library (www.ibm.com/servers/resourcelink/svc00100.nsf/pages/zosInternetLibrary).

Chapter 3. Using IPCS to View JES3 Information

You can view a dump data set by using the interactive problem control system (IPCS). IPCS is an interactive, online facility used to diagnose problems. IPCS allows the installation to examine information in a dump data set without having to print the data. It provides the option of printing the information in the data set and allows you to:

- Locate key control blocks
- View a portion of or the entire formatted dump
- View portions of storage
- Format specific control block mappings

In addition to the capabilities that IPCS provides, JES3 support in IPCS:

- Provides you with panel support that minimizes the number of IPCS subcommands you have to issue to retrieve JES3 diagnostic information.
- Allows you to logically group information to diagnose a problem or to create groups of information for a particular dynamic support program (DSP) or JES3 function. "Tailoring Your IPCS JES3 Session" on page 146 contains additional information on creating models for control blocks and creating control block groups.
- Allows you to supplement the diagnostic information IBM supplies by adding formatters for control blocks that IBM does not supply or by creating formatters for control blocks that your installation has created.

To use the IPCS JES3 panels to view JES3 information, select JES3 in the Component Analysis option. You can display JES3 diagnostic information by:

- Using the panels provided in the JES3 Component Analysis Option. Using the panels minimizes the number of IPCS subcommands you have to issue to retrieve JES3 diagnostic data.
- Issuing IPCS subcommands. See *z/OS MVS IPCS Commands* for additional information on IPCS subcommands.

You may choose one particular method of accessing JES3 diagnostic information or you can combine methods. *z/OS JES3 Diagnosis Reference* contains some IPCS subcommands you may find useful while using the panels.

Before starting an IPCS session, read the following topics in *z/OS MVS IPCS User's Guide* to create a dump data set and establish an IPCS session:

- Introduction to IPCS
- Accessing IPCS
- Using the IPCS Dialog

You should also be familiar with the different types of information you can obtain using IPCS. Table 18 on page 142 identifies the different options available through the IPCS JES3 panels and through IPCS subcommands.

Table 18. Types of JES3 Output Available through IPCS			
Type of JES3 Information	**Selection on IPCS JES3 - Primary Options Panel**	**IPCS Subcommand**	**Documentation for Output**
Summary Information through control blocks	• CI FSS Summary Information • JES3 Summary Information	VERBEXIT JES3	*z/OS JES3 Diagnosis*
Formatted JES3 Control Blocks	• JES3 Control Block Information	CBFORMAT	
JES3 Event Trace Information	• Trace Information for JES3, CI FSS and Writer FSS • JES3 Summary Information • CI FSS Trace Information	VERBEXIT JES3	*z/OS JES3 Diagnosis Reference*; *z/OS JES3 Diagnosis*

Setting Up the IPCS JES3 Dialog

After you have allocated all the necessary data sets IPCS requires as stated in *z/OS MVS IPCS User's Guide*, select the 'JES3D' option on the **IPCS Component Analysis Option** panel.

Note:

1. The data set 'SYS1.SIATTBL0' must contain the members IATIPCSC, IATIPCSG, and IATIPCSS. If another data set is to be used, you must allocate the alternate data set with a DD statement that designates IATTABL as the DDNAME. (Do not allocate this data set to the ISPTLIB DD name or assign a LIBDEF for ISPTLIB to it.) The IATTABL data set must be partitioned and cannot be concatenated. If you are using IPCS to look at a dump that was created on a different JES3 release than the one currently running on the system to which you are logged on, you must allocate as an alternate data set a table data set from that release instead of the one for the JES3 release currently running.
2. You will have to scroll down the list of options before you will find the 'JES3D' option on the **Component Analysis Option** panel.
3. In order to bring up the JES3 dialog, you must include the members of 'SYS1.VvRrMm.SIATPARM' in the PARMLIB data set you use when you bring up IPCS. You can do this by copying the members into 'SYS1.PARMLIB' or an alternate PARMLIB data set as described in *z/OS MVS IPCS Customization*, or you can include 'SYS1.SIATPARM' in the alternate PARMLIB concatenation. If you copy the members, keep in mind that the members must be recopied if they are updated by JES3 maintenance.

The IPCS dialog displays the **IPCS JES3 - Primary Options** panel (Figure 15 on page 143) after you select the JES3 component.

```
------------------IPCS JES3 - Primary Options -------------------------

OPTION ===

Select one option only, and enter S next to it.

   _     JES3 Control Block Information
   _     JES3 Summary Information
   _     CI FSS Summary Information
   _     Trace Information for JES3, CIFSS and Writer FSS

            List of valid ASIDs (Y or N) ===> N      (Default is N)

Enter the default ASIDs to be used.

    ASID         Address Space                       Control Block Prefix
    ----         -------------                       --------------------
 X'_______'       JES3                                      IATY
 X'_______'       CI FSS                                    CI
 X'_______'       WTR FSS                                   WTR
 X'_______'       TSO User, Started Task, or Batch Job      JOB
 X'_______'       Other Address Space
```

Figure 15. IPCS JES3 - Primary Options Panel

On the IPCS JES3 - Primary Options panel you should:

1. Obtain a list of valid address space identifiers (ASIDs) for the dump. If you specify Y for yes, IPCS JES3 produces the output IPCS would produce for the SUMMARY subcommand. Use Table 19 on page 144 for information on locating the ASIDs you can specify on the IPCS JES3 - Primary Options panel.
2. Specify the ASIDs you want to use for the IPCS JES3 session.

   Each ASID is associated with a prefix and a type of address space. The following list identifies the available prefixes and their associated address spaces.

   Prefix
   : **Associated Address Space**

   CI
   : CI FSS address space

   JOB
   : Address space for a batch job, started task, or a TSO/E user

   IATY
   : JES3 address space or common storage

   WTR
   : WTR FSS address space

   Every control block IBM-supplies for IPCS JES3 is prefixed by either CI, IATY, WTR, or JOB. The prefix indicates which ASID is used to obtain the control block. If a control block is not prefixed, the ASID specified for Other Address Space is used to format the control block. You can respecify the ASID on any panel, and it will used as the ASID. You should use caution when respecifying ASIDs because you could eventually assign the same ASID to all the prefixes.
3. Select the type of data you want to display.

   IPCS JES3 allows you to display the following types of JES3 diagnostic information:

   - Summary information JES3 gathers from control blocks for processing in a JES3 or CI FSS address space.
   - JES3 control blocks that were created for processing in a JES3, CI FSS, or WTR FSS address space or an address space for a TSO/E user, started task, or batch job.
   - Events that are traced in a JES3, CI FSS, or WTR FSS address space.

Table 19. Locating ASIDs for JES3-related Problems

Address Space	How to Obtain the ASID
JES3	Locate the ASID for the JES3 address space by: 1. Indicating you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs. The output provides you with a list of the jobs that are in the dump. 2. Locate the entry for the JES3 ASID by entering 'L JES3' on the option command line. 3. Obtain the ASID for the JES3 address space on the far right of the entry.
CI FSS	If you have a **dump of the CI FSS address space** and the CI FSS abended, you can obtain the ASID for the CI FSS by either: • Locating message IAT3713 in the SYSLOG. Message IAT3713 contains the ASID and fssname of the CI FSS address space that failed. • OR by 1. Indicating you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs. The output provides you with a list of the jobs that are in the dump. 2. Locating the entry for the CI FSS ASID by entering 'L CIFSS' on the option command line. 3. Obtaining the ASID for the CI FSS address space on the far right of the entry. If you have a **dump of the JES3 address space** and there was a problem in communications between the JES3 and CI FSS, you can obtain the ASID for the CI FSS by: 1. Obtaining the ASID of the JES3 address space as described above. 2. Specifying the JES3 ASID for the IATY prefix on the "IPCS JES3 - Primary Options" panel. 3. Selecting the option Display all Control Block Groups from the "Display or Modify JES3 Control Block Information" panel. 4. Selecting the CIFSS, JES3 or a control block group you have defined that contains the DESTQ. You can examine the queue of staging areas on the destination queue 153 to determine the CI FSS address space JES3 last attempted to communicate with.

Table 19. Locating ASIDs for JES3-related Problems (continued)	
Address Space	**How to Obtain the ASID**
WTR FSS	When diagnosing WTR FSS address spaces, you should have obtained at least one of the following from the SYSLOG: • The FSS name of the WTR FSS • The name of the device (jname) • The address of the device If you have a **dump of a JES3 address space:** 1. Obtain the ASID of the JES3 address space as described above. 2. Specify the JES3 ASID for the IATY prefix on the "IPCS JES3 - Primary Options" panel. 3. Select the JES3 Control Block Information option from the "IPCS JES3 - Primary Options" panel. 4. Select the option Display all Control Block Groups from the "Display or Modify JES3 Control Block Information" panel. 5. Select the JES3 group or a control block group you have defined that contains the FSS control block The FSS control block contains the ASID of the WTR FSS address space in field FSSASID. If you have a **dump of only the WTR FSS address space,**: 1. Indicate you want a list of valid ASIDs for the dump by specifying Y for List of valid ASIDs on the "IPCS JES3 - Primary Options" panel. The output provides you with a list of the jobs that are in the dump. 2. Locate the job names that have the procname for a WTR FSS address space. You can identify the valid WTR FSS procnames by examining the JES3 FSSDEF initialization statements from your initialization stream, if available. 3. Record the ASIDs for each WTR FSS address space. 4. Return to the "IPCS JES3 - Primary Options" panel and select the JES3 Control Block Information option. 5. Select the Display all Control Block Groups option from the "Display or Modify JES3 Control Block Information" panel. 6. Select the WTRFSS group or a control block group you have defined that contains the FSCB control block. 7. Select the FSCB from the list of control blocks that are defined to the group. 8. For each ASID you recorded from step "3" on page 145 a. Enter the ASID of a WTR FSS address space on the "WTRFSCB - FSS/FSA Information" panel. b. Obtain the valid FSIDs for the WTR FSS address space c. Return to the "WTRFSCB - FSS/FSA Information" panel and enter a valid FSSID and FSAID for the ASID. If the FSAID is 0, FSCBNAME contains the fssname for the FSS address space. If the FSAID contains a hexadecimal number, FSCBNAME contain the name of the device. FSCBATRA contains the address of the trace area for the FSS or FSA.

Using Control Block Groups

All IBM-defined control blocks are grouped according to the address spaces where the control block resides. All the control blocks in the IBM-defined control block groups are prefixed to allow you to relate the ASID to the control block you require. The control blocks provided in a group can reside in either the specified address space or in common storage. The following are IBM-defined control block groups:

JES3
Contains control blocks that reside in the JES3 address space and in common storage. Use this control block group when diagnosing problems in the JES3 local or global address space.

CIFSS
Contains control blocks that reside in the CI FSS address space and in common storage. Use this control block group when you are diagnosing problems in a CI FSS address space.

WTRFSS
Contains control blocks that reside in the WTR FSS address space or in common storage. Use this control block group when you are diagnosing problems in a WTR FSS address space.

JOBASID
Contains control blocks that reside in the specified address space or in common storage. Use this control block group when you are diagnosing problems in an address space for a started task, batch job, or TSO/E user.

You should select a control block group based on the type of address space where the problem occurred. If your installation experiences a recurring problem or experiences problems in a specific functional area, you may want to create control block groups that will display information more closely related to the problem. See "Adding Control Block Models to Your IPCS JES3 Session" on page 146 for information.

Tailoring Your IPCS JES3 Session

You can enhance your IPCS JES3 session to include formatters for your installation-specific control blocks or control block groups that are specific to problems or JES3 functional areas where your installation may be experiencing a problem.

Adding Control Block Models to Your IPCS JES3 Session

It may be necessary for you to include control blocks in your IPCS session to allow you to view all the information necessary to solve a JES3 problem. The control block may be an IBM-defined control block your installation has modified or it may be a control block specific to your installation.

Creating a Model for a Modified IBM-defined Control Block

If your installation has added fields to an IBM-defined control block you change the control block's model to ensure it formats correctly. You can add the additional fields to the control block's model by using SMP/E or by:

1. Naming and creating a new member in the IATIPCSI member of SYS1.VnRnMn.SIATPARM for the control block your installation has modified.
2. Copying the model's source code for the control block from SYS1.VnRnMn.AIATSRC. Use Table 20 on page 154 to determine the model name for the control block you are creating a new model for.
3. Identifying the fields that your installation has added to the control block.
4. Adding the BLSQMFLD macros in the appropriate location in your copy of the model. *z/OS MVS Programming: Assembler Services Reference ABE-HSP* syntax for the macro.
5. Assembling and link-editing the new member into the appropriate system library. To use the model that contains the fields your installation has added, each system programmer requiring the control block's model must:

    a. Select the option JES3 Control Block Information from the **IPCS JES3 - Primary Options** panel.

    b. Select the option Add a Control block from the **Display or Modify JES3 Control Block Information** panel.

   c. Complete the information on the **Add a Control Block** panel.
6. Including the control block in an IBM-defined control block group or an installation-defined control block group.

Creating a Model for an Installation-defined Control Block

To add an installation-defined control block to your installation:

1. Name and create a new member in the IATIPCSI member of SYS1.VnRnMn.SIATPARM for the control block you are creating a model for.
2. Assign the model residency of AMODE31 and RMODE ANY
3. Code a CSECT for the model
4. Code a BLSMDEF macro. IBM suggests you include the following keywords on the macro invocation:

   CBLEN
   Specifies the total length of the control block.

   ACRONYM
   Specifies the contents of the control block acronym field.

   LBLSPC
   Specifies the spacing between label fields in the formatted output. All IBM-supplied formatters code a 20 as the value for this keyword.

   PREFIX
   Specifies the number of characters to be removed from the front of a field name to produce the field label.

   OFFSETS
   Specifies whether the field offset information should be printed at the beginning of each output line of the formatted control block. IBM suggests you specify PRINT as the value for this keyword.

   ACROLEN
   Specifies the length of the acronym name, defined by the ACRONYM keyword.

   MAINTLV
   Specifies the maintenance level of the control block.

   To obtain additional information for invoking the BLSQMDEF macro see *z/OS MVS Programming: Assembler Services Reference ABE-HSP*.

   Note: If the control block you are creating a model for includes a file descriptor block (FDB), IBM supplies the following models for FDBs:

   IATIPFDB
   Formats an FDB for a single-record file (SRF)

   IATIPFDM
   Formats an FDB for a multiple-record file (MRF)
5. Code a BLSQMFLD macro for each field in the mapping macro. IBM suggests you include the following keywords on the macro invocation:

   NAME
   Specifies the name of the control block field described by the BLSQMFLD macro.

   OFF
   Specifies the offset of the field from the beginning of the mapping macro.

   LEN
   Specifies the length of the control block field.

   VIEW
   Allows you to display selected types of fields in the control block.

   To obtain additional information for invoking the BLSQMFLD macro see *z/OS MVS Programming: Assembler Services Reference ABE-HSP*.

6. Code a BLSQMDEF END instruction to indicate you have included all the fields for the control block.

   To obtain additional information for invoking the BLSQMFLD macro see *z/OS MVS Programming: Assembler Services Reference ABE-HSP*.
7. Assemble and link-edit the new member into the appropriate system library. To use the model that contains the fields your installation has added, each system programmer requiring the control block's model must:
   a. Select the option JES3 Control Block Information from the **IPCS JES3 - Primary Options** panel.
   b. Select the option Add a Control block from the **Display or Modify JES3 Control Block Information** panel.
   c. Complete the information on the **Add a Control Block** panel.
8. Include the control block in an IBM-defined control block group or an installation-defined control block group.

Creating Control Block Groups

You can create control block groups that contain the control blocks that you may need to examine while you are diagnosing a particular problem. The control block groups are created for your user id, they cannot be shared by other users at your installation unless the other users create their own groups.

The IBM-supplied control block groups identify the control blocks that are available for a particular address space. You can create your own control block groups by adding and deleting control blocks from the IBM-supplied control block groups. The control blocks in your control block groups cross address space boundaries.

1. Determine the control blocks you need to diagnose the problem or functional area.
2. Identify the control blocks that IBM supplies models for. Table 20 on page 154 identifies the control blocks for which IBM supplies models.
3. Determine if your installation should create models for control blocks that IBM does not format. Select the correct prefix for the control block. If the control block resides in:
   - A CI FSS address space prefix the control block with CI.
   - An address space for a batch job, started task, or a TSO/E user prefix the control block with JOB.
   - The JES3 address space prefix the control block with IATY.
   - WTR FSS address space prefix the control block with WTR.

   You could follow the directions in "Adding Control Block Models to Your IPCS JES3 Session" on page 146 to add those control blocks that IBM does not provide formatters for.
4. Establish an IPCS session and select JES3 from the **IPCS Component Analysis** panel.
5. Select JES3 Control Block Information from the **IPCS JES3 - Primary Options** panel.
6. Select Add a user-defined Control Block Group from the **Display or Modify JES3 Control Block Information** panel.
7. Enter the control block group name next to each control block you want to include in your control block group for WTR FSS problems.
8. Press PF 3 to create the control block group and to enter the description of the control block group you just created.

Example of Creating a Control Block Group

If you were diagnosing a problem for a 3812 printer, you might want to create your own control block group to diagnose WTR FSS problems. Some of the control blocks you need to diagnose the problem could reside in the JES3 address space, common storage, and in the writer FSS address space.

The following is an example of how you might build a control block group, named MYWTR, to diagnose a problem for a 3812 printer driven by an FSA in a writer FSS address space.

1. *Determine the control blocks you need to diagnose the problem or functional area.*

   For example, to diagnose FSS-managed printers, you would need the following control blocks to diagnose a problem:

   - BFPX
   - CHK
   - DESTQ
   - FCT
   - FSA
   - FSBX
   - FSCB
   - FSCT
   - FSDB
   - FSIP
   - FSS
   - FSVT
   - GFC
   - IDX
   - INPX
   - JSPA
   - PDQ
   - OSE
   - QCP
   - RESPA
   - SUPUNITS
   - SRL
   - WTR
2. *Identify the control blocks that IBM supplies models for.*

   Table 20 on page 154 indicates IBM supplies models for the following control blocks.

   - BFPX
   - DESTQ
   - FCT
   - FSA
   - FSCB
   - FSS
   - OSE
   - PDQ
   - SUP
3. *Determine if your installation should create models for control blocks that IBM does not format.*

   If you created models for the:

- FSBX, FSDB, INPX, QCP, SRL, FSIP, JSPA, RESPA, CHK, FSCT, FSVT, and IDX, you would prefix those control blocks with WTR. When you selected one of the previous control blocks, IPCS JES3 would use the ASID specified for the WTR prefix to format the control block.

  Notice that the FSIP, JSPA, RESPA, CHK, FSCT, FSVT, and IDX are not JES3 control blocks. You can create formatters for these control blocks and include them into a control block group.
- PDQ, GFC, FSIP, JSPA, and RESPA, you would prefix those control blocks with IATY. When you selected one of the previous control blocks, IPCS JES3 would use the ASID specified for the IATY prefix to format the control block.

Notice that the FSIP, JSPA, and RESPA appear in both lists because these control blocks can reside in the WTR FSS address space and in the JES3 address space.

4. *Establish an IPCS session and select JES3 from the Component Analysis panel.*

```
 ------------------- IPCS MVS DUMP COMPONENT DATA ANALYSIS --------------------
 OPTION ===>                                                  SCROLL ===> CSR

 To display information, specify the corresponding option name or enter S
 to the left of the option desired.  Enter ? to the left of an option to
 display help regarding the component support.

   Name     Abstract
   IMSDUMP  IMS analysis
   IOSCHECK Active input/output requests
   IRLM     IMS Resource Lock Manager analysis
   JES2     JES2 analysis
s  JES3     JES3 analysis
   LISTEDT  Format eligible device table
   LLATRACE LNKLST lookaside trace
   LOGDATA  LOGREC formatter
   LPAMAP   Map link pack area
   MTRACE   Master trace formatter
   NUCMAP   Nucleus CSECT Map
   SADMPMSG Format SADMP console messages
   SMSDATA  SMS control block analysis
   SRMDATA  SRM control block analysis
   SUMDUMP  Format summary dump data
   SYMPTOMS Format symptoms
```

Figure 16. IPCS MVS Dump Component Data Analysis Panel

5. *Select JES3 Control Block Information from the IPCS JES3 - Primary Options panel (IATKPOM).*

```
------------------IPCS JES3 - Primary Options --------------------------

OPTION ===

Select one option only, and enter S next to it.

   S     JES3 Control Block Information
   _     JES3 Summary Information
   _     CI FSS Summary Information
   _     Trace Information for JES3, CIFSS and Writer FSS

            List of valid ASIDs (Y or N) ===> N      (Default is N)

Enter the default ASIDs to be used.

    ASID        Address Space                       Control Block Prefix
    ----        -------------                       --------------------
     _           JES3                                      IATY
     _           CI FSS                                    CI
     _           WTR FSS                                   WTR
     _           TSO User, Started Task, or Batch Job      JOB
     _           Other Address Space
```

Figure 17. IPCS JES3 Primary Option Panel (IATKPOM)

6. *Select the option. Add a user-defined Control Block Group from the Display or Modify JES3 Control Block Information.*

```
 -------------  DISPLAY OR MODIFY JES3 CONTROL BLOCK INFORMATION  -----
 OPTION ===

  Select one function only, and enter  S  next to it.

_    Display all control blocks
_    Display all Control Block Groups

_    List the Control Block Groups for a control block

_    Add a control block
S    Add a user-defined Control Block Group
_    Add a control block to an existing Control Block Group

_    Delete a control block from all Control Block Groups
_    Delete a control block from a Control Block Group
_    Delete a user-defined Control Block Group
```

Figure 18. Display or Modify JES3 Control Block Information Panel

7. *Enter the control block group name next to each control block you want to include in your control block group.*

   IPCS JES3 displays all the control blocks IBM has supplied models for and the control blocks have been added to the IPCS session. Place a unique control block group name next to each control block required in the control block group that you are creating.

```
-------------------  ADD A USER-DEFINED CONTROL BLOCK GROUP  -----------
OPTION ===                                                         SCROLL ===

 Enter a  one  to  eight  character Control Block Group name next to the
 control blocks that you want to assign to a new control block group.


 Group       Name       Description
 -----       ----       -----------
             CIBAL      Buffer Allocator Block
             CIDAT      Data Buffer Block
             CIDMC      Data Management Control Block
               .
               .
               .
 MYWTRFSS    IATYFSA    Functional Subsystem Application Table
 MYWTRFSS    IATYFSS    Functional Subsystem Table
               .
               .
               .
```

Figure 19. Add a User-Defined Control Block Group Panel

8. *Press PF 3 to create the control block group and to enter the description of the control block group you just created.* Figure 20 on page 151 illustrates the panel for specifying the description of the control block group.

```
-------------  DESCRIPTION FOR A USER-DEFINED CONTROL BLOCK GROUP  -----
OPTION ===



Enter a description for the new group MYWTRFSS you defined.


         Cross Address space group for WTR FSS problems ___
                        (Up to 50 characters)
```

Figure 20. Description for a User-Defined Control Block Group Panel

Helpful Hints for Using the IPCS JES3 Panel Dialog

The IPCS JES3 panel dialog consists of panels that help retrieve JES3 diagnostic information. Each panel has a panel identifier and help panels that may be useful when working with IBM service representatives.

To obtain the panel identifier, enter **PANELID** on the command line; the panel identifier appears in the upper left-hand side of the screen.

To obtain help information for error messages and help for the functional panels, press the PF1 key. If an error message is displayed in the upper right-hand corner of the screen, obtain an extended description of the error message, by pressing the PF1 key. The extended description of the error message appears immediately underneath the OPTION command line. If you need additional help on supplying information on an IPCS JES3 panel, you can press the PF1 key or enter HELP on the OPTION command line.

Using IPCS Subcommands to View JES3 Diagnostic Data

To view JES3 diagnostic information, enter an IPCS subcommand on the command line in an IPCS session. The following list identifies the IPCS commands you might find useful when diagnosing JES3 problems:

VERBEXIT
: Provides sections of the JES3 formatted dump. The JES3 formatted dump summarizes information from JES3 control blocks. See either "Viewing JES3 Formatted or Summary Information" on page 152 or *z/OS JES3 Diagnosis Reference* for information about the IPCS subcommand.

CBFORMAT
: Provides the contents of an entire JES3 control block. See either "Viewing specific JES3 control blocks mappings using IPCS" on page 153 or *z/OS JES3 Diagnosis Reference* with information about the IPCS subcommand.

LIST
: Provides a list of storage starting at a specified address. See either "Viewing Portions of JES3's Storage" on page 165 or *z/OS JES3 Diagnosis Reference* for information about the IPCS subcommand.

SUMMARY JOBSUMMARY ALL
: Provides a list of valid address space ids (ASIDs) for the dump that you are viewing. See either *z/OS MVS IPCS Commands* or *z/OS JES3 Diagnosis Reference* for information about the IPCS subcommand.

STACK x
: Places the symbol name for the requested control block on a stack. Use this command to aid in the retrieval of data you have already displayed. See *z/OS MVS IPCS Commands* for information about the IPCS subcommand.

WHERE
: Identifies the area in a dump where an address resides. See *z/OS MVS IPCS Commands* for information about the IPCS subcommand.

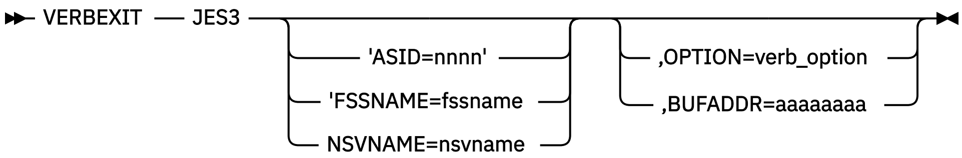
FIND
: Locates literal values in a dump. See *z/OS MVS IPCS Commands* for information about the IPCS subcommand.

Viewing JES3 Formatted or Summary Information

You can use the IPCS VERBEXIT command to view a portion of or the entire JES3 formatted dump online. The JES3 formatted dump provides summary information from JES3 control blocks. For additional restrictions and a list of keywords you may want to include on the VERBEXIT subcommand, see *z/OS MVS IPCS User's Guide*.

The syntax for the VERBEXIT command follows:

Note:



ASID=[nnnn | (nnnn)]
Formats the JES3 control blocks associated with a JES3, a CI FSS, a writer FSS address space, a Network Server, or an address space for a batch job, TSO/E user, or started task.

FSSNAME=fssname
Specifies the job name of a CI FSS address space or a writer FSS address space. Use the ASID= keyword if it is necessary to specify the JES3 address space. To obtain the job name associated with the required address space issue a JES3 *I,F,ACTIVE command to display information for all active FSSs.

NSVNAME=nsvname
Specifies the name of a Network Server (Netserv). This parameter, or alternatively ASID=nnnn, can be used to limit all Netserv and socket level formatting to the specified Netserv address space.

OPTION=verb_option
Specifies the portion of the JES3 formatted dump that you want to display. The verb_options and the portion of the JES3 formatted dump they display are shown in the table in Chapter 4, “JES3 Formatted dump,” on page 167. If you do not specify a verb_option, the entire JES3 formatted dump is displayed. If the JES3 address space does not contain the requested section of the dump, the system issues the following message to indicate the section does not exist:

```
NO DATA CAN BE ACCESSED
```

BUFADDR=aaaaaaaa
Specifies the address of the MRF buffer whose information has to be displayed. This option can be used only if OPTION=DAT is specified. For each record in the MRF buffer, the DATCC and a portion of data in the record is displayed.

Viewing specific JES3 control blocks mappings using IPCS

IPCS can also be used to view a single requested control block online. The CBFORMAT subcommand is used to format single control blocks with the field name followed by the values for the fields.

```
IATGRVT: 030010000

          Transfer Vector Table (TVT)

     +0024                        TVTLNGTH .  0D68       TVTINDAT .  0091193P
     +0000  NAME .....  IATGRVT   REL ......  HJS4421    DATE .....  06/28/91
     +0018  TIME .....  03.48     APAR .....  0300230B
     +002C              10255142  FCTTOP ...  0302FCC8   AINTDATA..  00000000
     +0038  ASPECB ...  00B49F7C  AWAITEP ..  03021388   ASAVE ....  03039ABC
     +0044  ARETNAD ..  03039B42  JESTAE ...  0000DCA8   FAILDSP ..  0000DB58
     +0050  TVTXBPL ..  03035EE4  TVTXGCL ..  03036564   TVTXRCL ..  030368A6
     +005C  TVTXDPL ..  03036AF4  TVTXCNDB .  03004BD8   TVTFTVT ..  03002C40
     +0068  TVTCTVT ..  03002320  TVTHOBOF .  7FFFFFFF   TVTRD005..  00000000
```

Figure 21. IPCS Output using the CBFORMAT Subcommand

The syntax for the CBFORMAT subcommand follows:

Note:

```
►► CBFORMAT — adr ─┬─ STRUCTURE(name) ─┬─►◄
                   └─ MODEL(name) ─────┘
```

adr

Specifies the address of the requested control block. See Table 20 on page 154 to determine if an address is required for the control block you want to format. If an address is not required, replace the structure name for the address.

STRUCTURE (name)

Specifies the name of the requested control block. See Table 20 on page 154 to determine the structure name of the control block you want to format.

MODEL (name)

Specifies the name of the IPCS model associated with the control block. See Table 20 on page 154 to determine the model name of the control block you want to format.

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand

Common Name	Structure (name)	adr	Model (name)	Formats the	Address contained in
ADA	IATYADA	Yes	IATIPADA	Authorization Data Area	Register 6 in IATSIAU
ARL	IATYARL	Yes	IATIPARL	Allocation resource list	RQARLADD in IATYRSQ ARLFCHN in IATYARL
BAL	IATYBAL	Yes	IATIPBAL	First buffer allocator block for the JES3 address space	SVTBALJC or SVTBALP in IATYSVT; TVTBALJ in IATYTVT
	CIBAL	No	IATIPBAL	First buffer allocator block for a CI FSS address space	
BFPX	WTRBFPX	Yes	IATIPBFP	FSA buffer prefix control block for a WTR address space	FSBXABUF in IATYFSBX INPXBFA in IATYINPX BFPXCHAN in IATYBFPX
BLK	IATYBLK	Yes	IATIPBLK	Block spooler parameter list	
	CIBLK	Yes	IATIPBLK	Block spooler parameter list	
	WTRBLK	Yes	IATIPBLK	Block spooler parameter list	
BWA	IATYBWA	Yes	IATIPBWA	Spool Browse Core Storage Buffer Work Area	DSBCBWKA
CAT	IATYCAT1 IATYCAT2	Yes Yes	IATIPCA1 IATIPCA2	Catalog allocate parameter list Catalog unallocate parameter list	LCTALLOC in IATYLCT for IATYCAT1; LCTUNALC in IATYLCT for IATYCAT2
CFGS	IATYCFGS	Yes	IATIPCFS	Configuration Services Data Area	ITKCFGTK in IATYITK INTCFGTK in IATYITK CFCFGTKN in IATYCFW
CFT	IATYCFT	Yes	IATIPCF1	CI FSS table	FSSEXTPT in IATYFSS IDACFTST in IATYIDA CFTCHAIN in IATYCFT for the next CFT in the chain
CLST	IATYCLST	Yes	IATABCLS	Data set concatenation list header and entries	DSBCLST
	IATYCLSH	Yes	IATIPCL1	Data set concatenation list header	DSBCLST
	IATYCLSE	Yes	IATIPCL2	Data set concatenation list entry	
CNB	IATYCNB	No	IATIPCNB	Console buffer control block	Address contained in ACONSBCB in IATYTVT
CNC	IATYCNC1	Yes	IATIPCC1	Console service constants	ACONCONS in IATYTVT for IATYCNC1

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
CNDB	IATYCNDB	Yes	IATIPCDB	Console Destination Block	CALLCNDB, LMOPCNDB in IATYNDT; CONCNDB in IATYCNS; CONSOLE in IATYPRM; DJCLCNDB in IATYDJB; DCON in IATYUTDA; FSACNDB and FSACNDB2 IN IATYFSA; FSSCNDBM, FSSCNDB, and FSSMCNDB IN IATYFSS; IQOSCNS, IQOSCNSL in IATYIQOS; ISDCNDB in IATYISD; JCTCNDB in IATYJCT; JDABCNDB in IATYJDA; JNDTCNDB IN IATYJNR; JSQCNDB in IATYJSQ; MDSCNDB, CNDBMDSM, CNDBMDSN, CNDBMDSS, CNDBMDSD in IATYMDS; MEMHCNDB, MEMECNDB in IATYMEM; MOOSCNSL, MOOSCNS in IATYMOOS; MPCCNDB in IATYMPC; NCDCNDBW in IATYNCD; NRSCNDB in IATYNRS; PURCNDB in IATYPUR; RDSCCNDB, RDSDCNDB in IATYRDS; RTTCNDB in IATYRLT; QMSCNDB, SRDCNDB in IATYSRD; SUPCNDB, SUPFCNDB, SUPICNDB, SUPRCNDB in IATYSUP; STATCNDB in IATYJMF; S34CNDB in IATYS34; TVTCNJEM, TVTCBDTM in IATYTVTC; VMSGCNDB in IATYVFY; VRYCNDB in IATYVRY; WSBCNDB in IATYWSB; WTDCNDB in IATYWTD; WTRDCCDB, WTRDDCDB in IATYWTR
CNS	IATYCNS1 IATYCNS4 IATYCNS6	Yes Yes Yes	IATIPCNS1 IATIPCNS4 IATIPCNS6	Console buffer map CONSACTN DSECT Console spool buffer	ACONSBCB in IATYTVT FCTCBPTR in IATYFCT JDABPFDB in IATYJDA
COW	IATYCOW	Yes	IATIPCOW	Client Work Area	SSS2JEST in IAZSSS2
CPB	IATYCPB	Yes	IATIPCPB	Cell pool control block	CPBNXCPB in IATYCPB for the next IAYTCPB
CSCP	IATYCSCP	Yes	IATIPCSCP	Chained single-record file (SRF) cell pool pointers	TVTCSCP in IATYTVT
DAT	IATYDAT	Yes	IATIPDAT	Data buffer block for the JES3 address space	BALDATBA and BALXDTBA of IATYBAL; DSBDATBA of IATYDSB; WTRIDATA of IATYWTR
	CIDAT	Yes	IATIPDAT	Data buffer block for a CI FSS address space	BALDATBA and BALXDTBA of CIBAL; WTRIDATA of IATYWTR
DLA	IATYDLA	Yes	IATIPDLA	DLOG address space data area	DLGDLA in IATYDLOG
DLG	IATYDLOG	Yes	IATIPDLG	DLOG common data area	SVTDLOG in IATYSVT
DMC	IATYDMC	Yes	IATIPDMC	Data management control block	BALDMCBA of IATYDSB DSBDMCBA of IATYDSB OSDDMCCP of IATYOSD - points to the first cell pool extent
	CIDMC	Yes	IATYIPDMC	Data management control block for a CI FSS address space	BALDMCBA of IATYDSB DSBDMCBA of IATYDSB OSDDMCCP of IATYOSD - points to the first cell pool extent
DOI	IATYDOI	Yes	IATIPDOI	Dataset Output Information	JDSDOFDB in IATYJDS, OSEOTFDB in IATYOSE
DOIX	IATYDOIX	Yes	IATIPDOX	Dataset Output Information Extension	DOIEXTOF in IATYDOI contains offset
DOT	IATYDOT	Yes	IATIPDOT	Dataset Output Table	JETEDTAD in IATYJET

Common Name	Structure (name)	adr	Model (name)	Formats the	Address contained in
DOTPLIST	IATYDOTP	Yes	IATIPDOP	IATXDOT Parameter List	Embedded in IATYPUR, IATYJAD, IATYJVW
DSB	IATYDSB	Yes	IATIPDSB	Data set block	DSSDSB in IATYDSS
	RCVR	Yes	IATIPRID	Receiver ID and log string from browse token	DSBRCVR in IATYDSB
DSN	IATYDSN	Yes	IATIPDSN	SETDSN table	VLMDSNPT in SETVOL (IATYVLM)
DSP	IATYDSP	Yes	IATIPDSP	Dynamic support program dictionary for the JES3 address space	FCTDSPDC of IATYFCT
	CIDSP	Yes	IATIPDSP	Dynamic support program dictionary for a CI FSS address space	FCTDSPDC of CIFCT
DSQ	IATYDSQ	Yes	IATIPDSQ	JES3 destination queue	DSQLOC in IATYTVT
DSS	IATYDSS	Yes	IATIPDSS	Data set status block for the JES3 address space	MEMDSS and MEMRRDSS in IATYMEM; DEBIRBAD in IEZDEB; ICTJCDSS, ICTJEDSS, ICTSYSDSS in IATYICT; DFRDSS in IATYDFR; DSBDSS in IATYDSB; SVTPBUFQ in IATYSVT; ICTCHAIN in IATYICT
	CIDSS	Yes	IATIPDSS	Data set status block for a CI FSS address space	MEMDSS and MEMRRDSS in CIMEM; DEBIRBAD in IEZDEB; ICTJCDSS, ICTJEDSS, ICTSYSDSS in CIICT; SVTPBUFQ in IATYSVT
DTR	IATYDTR	Yes	IATIPDTR	DLOG trace table header	DLGTRACE in IATYDLOG DTRCURR in IATYDTR DTRNEXT in IATYDTR
DTRE	IATYDTRE	Yes	IATIPDT2	DLOG trace table entry	
DUL	IATYDUL	Yes	IATIPDUL	Dump list for CSA	SVTDULST in IATYSVT
DVE	IATYDVE	Yes	IATIPDVE	SNARJP device entry table	Contiguous to the WSB
DYA	IATYDYA1 IATYDYA2	Yes Yes	IATIPDA1 IATIPDA2	Dynamic allocation buffer Request buffer Response buffer	SELDATA in IATYSEL SELDATA in IATYSEL
DYN	IATYDYN	No	IATIPDYN	DYNAL FCT data area	
DYQ	IATYDYQ	No	IATIPDYQ	Dynamic allocation queue entries	
DYR	IATYDYR	Yes	IATIPDYR	Dynamic allocation record control block	AWADYR in IATYAWA
	JOBDYR	Yes	IATIPDYR	Dynamic allocation record control block for a batch job or TSO	AWADYR in IATYAWA
	CIDYR	Yes	IATIPDYR	Dynamic allocation record control block for a CI FSS address space address space	AWADYR in IATYAWA
FCT	IATYFCT	No	IATIPFCT	Function control table chain for the JES3 address space	
	CIFCT	Yes	IATIPFCT	Function control table chain for the CI FSS address space	FCTTOP in CITVT RQFCTAD in IATYRSQ
FDD	IATYFDD	Yes	IATIPFDD	File directory entry for the JES3 address space	AIOFDTOP in IATYTVT
	CIFDD	Yes	IATIPFDD	File directory entry for the CI FSS address space	AIOFDTOP in CITVT
FSA	IATYFSA	Yes	IATIPFSA	Functional subsystem application table	FSSFSAPT in IATYFSS FSACHAIN in IATYFSA

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
FSCB	WTRFSCB	No	IATIPFSC	Functional subsystem control block a writer FSS address space	
FSL	IATYFSL	Yes		Failsoft logout message (IAT3713) for the JES3 address space	
	CIFSL	Yes		JES3 failsoft logout message (IAT3713) for a CI FSS address space	
FSS	IATYFSS	No	IATIPFSS	Functional subsystem table	
HWS	IATYHWS1 IATYHWS2 IATYHWS3	No Yes Yes	IATIPHWS IATIPHW1 IATIPHW3	High-watermark setup table Fixed portion Major entry Minor entry	TIHWST in IATYTVT for IATYHWS1; first major entry is contiguous to IATYHWS1; HWSMJCHN in IATYHWS1 for the next major entry; count of minor entries in HWSALTCT in IATYHWS2; minor entries are contiguous to IATYHSW2
	CIHWS1 CIHWS2 CIHWS3	Yes Yes Yes	IATIPHWS IATIPHW1 IATIPHW3	High-watermark setup table for the CI FSS address space Fixed portion Major entry Minor entry	TIHWST in IATYTVT for CIHWS1; first major entry is contiguous to CIHWS1; HWSMJCHN in CIHWS1 for the next major entry; count of minor entries in HWSALTCT in CIHWS2; minor entries are contiguous to CIHWS2
ICT	IATYICT	No	IATIPICT	Interpreter control table for the JES3 address space	
	CIICT	Yes	IATIPICT	Interpreter control table for a CI FSS address space	TVTICTCH in CITVT IDDICT in CIIDD1
IDA	IATYIDA	No	IATIPIDA	Interpreter Data Area	TVTIDAAD in IATYTVT
IDD	IATYIDD1 IATYIDD2 IATYIDD3 IATYIDD4	Yes Yes Yes Yes	IATIPID1 IATIP1D2 IATIPID3 IATIPID4	Interpreter DSP area for the JES3 address space Common section of the interpreter DSP area CI section of the interpreter DSP area Prescan section of the interpreter DSP area Post scan section of the interpreter DSP area	Register 13 of the CI DSP ICTIDD in IATYICT
	CIIDD1 CIIDD2 CIIDD3 CIIDD4	Yes	IATIPID1 IATIP1D2 IATIPID3 IATIPID4	Interpreter DSP area for a CI FSS address space Common section of the interpreter DSP area CI section of the interpreter DSP area Prescan section of the interpreter DSP area Post scan section of the interpreter DSP area	Register 13 of the CI DSP ICTIDD in CIIDD
IFC	IATYIFC	Yes	IATIPIFC	Interpreter FSS control block for the JES3 address space	TVTIFCAD in IATYTVT
	CIIFC	Yes	IATIPIFC	Interpreter FSS control block for a CI FSS address space	TVTIFCAD in CITVT
INC	IATYINC	Yes	IATIPINC	Intermediate console status table	Initialization spool record

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
INM	IATYINM	Yes	IATIPINM	Intermediate MSGROUTE table	Address contained in INTMSGID in IATYINT
IOP	IATYIOP IATYIOPE	Yes Yes	IATIPIOE IATIPIOP	JES3 I/O parameter block JES3 fixed section Extent entry	SVTIOPRM in IATYSVT or TVTIOPRM in IATYTVT for IATYIOP; IPBEXTAB in IATYIOP for IATYIOPE
ISR	IATYISR	Yes	IATIPISR	IOSB/SRB pair	IOPFRISR, IOPLOISR, IOPHIISR in IATYIOP SRBPARM in IHASRB
ITK	IATYITK	Yes	IATIPITK	Initialization task parameters	Local data in IATINTK, TVTITKPM in IATYTVT
JAD	IATYJAD	Yes	IATIPJAD	JDS Access Interface Data Area	TVTJADAD in IATYTVT, R13 in module IATDMJA
JCT	IATYJCT	Yes	IATIPJCT	Job control table	JQEFDB in IATYJQE JVWJCFDB and JVWJCT in IATYJVW
JCTX	IATYJCTX	Yes	IATIPJCX	JCT Extension	Adjacent to JCT
JDAB	IATYJDA1 IATYJDA2	Yes Yes	IATIPJD1 IATIPJD2	Job description accounting block for the JES3 address space Common section SE entries	JCTJDFDB in IATYJCT or RQJDBFDB in IATYRSQ for IATYJDA1; IATYJDA2 is contiguous to IATJDA1
	CIJDA1 CIJDA2	Yes Yes	IATIPJD1 IATIPJD2	Job description accounting block for a CI FSS address space Common section SE entries	JCTJDFDB in CIJCT or RQJDBFDB in CIRSQ for CIJDA1; CIJDA2 is contiguous to CIJDA1
JDE	IATYJDE	Yes	IATIPJDE	JES3 directory element for the JES3 address space	TVTJDEQ in IATYTVT
	CIJDE	Yes	IATIPJDE	JES3 directory element for a CI FSS address space	TVTJDEQ in CITVT
JDO	IATYJDOE	Yes	IATIPJDO	Job Data Set Output Entry	Follows the JDO fixed section
	IATYJDOF	Yes	IATIPJD3	Job Data Set Output Fixed Section	OSDHDJDO in IATYOSA, OSDCHALL in IATYOSA, OSDCHSTP in IATYOSA, OSDCHJOB in IATYOSA
JDS	IATYJDSE	Yes	IATIPJDS	Job Data Set Block Entry	Follows the JDS fixed section
	IATYJDSF	Yes	IATIPJD5	Job Data Set Block Fixed Section	JCTJDSFD in IATYJCT, RQJDSFDB in IATYRSQ
JET	IATYJET	Yes	IATIPJT1	JDS Entry Table header	CSBTUSER in JDS type CSBT entry
	IATYJETE	Yes	IATIPJT2	JDS Entry Table entry	CSBTUSER in JDS type CSBT entry
JIBX	IATYJIBX	Yes	IATIPJI4	JIB extension	JIBXTOFF contains the offset from JIBSTART
JMQ	IATYJMQ1 IATYJMQ2	Yes Yes	IATIPJM1 IATIPJM2	JESMSG queue control area Header section Entry section	TVTJMQA in IATYTVT IMQFIRST in IATYJMQ1. JMQEJNXT, JMQEJPRV, JMQEMNXT, and JMQEMPRV in IATYJMQ2.
JNM	IATYJNM	Yes	IATIPJNM	Job number table	JOBNRTN in IATYTVT
JNT	IATYJNT	Yes	IATIPJNT	Job-net control block	JNCBTOP in IATYTVT
JPRT	IATYJPRT	Yes	IATIPJPT	JCT data space page release table	JQXPAGRL in IATYJQX

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
JQE	IATYJQE	Yes	IATIPJQE	Job queue element	JQX4AD in IATYJQX
JQX	IATYJQX	No	IATIPJQX	JCT access method data area	TVTJQX in IATYTVT
JSQ	IATYJSQ	Yes	IATIPJSQ	Job select queue element	Imbedded in IATYJSA, IATYSTA
JVD	IATYJVD	Yes	IATIPJVD	Job validation/restart data csect	Register 13 if failed DSP is INJOBVAL JVWJVDAD in IATYJVD
JVL	IATYJVL	Yes	IATIPJVL	Job validation/restart error logout data area	Register 13 if the failed FCT is INJOBSNP
JVQ	IATYJVQ	Yes	IATIPJVQ	Job initialization job validation queue	JVDJVQAD in IATYJVD JVLJVQAD in IATYJVL JVWJVQAD in IATYJVW
JVW	IATYJVW	Yes	IATIPJVW	Job validation/restart work area	JVDJVWAD in IATYJVD JVQJVWAD, JVQJVWWQ, JVQJVWJQ, JVWJVWSQ and JVQJVWTQ in IATYJVQ, JVLJVWAD in IATYJVL, JVWNEXT in IATYJVD
LCA	IATYLCA	Yes	IATIPLCA	Locate communication area	LDALRLCA, LDACNLCA, and LDACCLCA in IATYLDA
LCB	IATYLCB	Yes	IATIPLCB	Logical unit control block	WSBLCB in IATYWSB DVELCB in IATYDVE
LCP	IATYLCP1 IATYLCP2 IATYLCP3	No Yes Yes	IATIPLP1 IATIPLP2 IATIPLP3	Locate checkpoint data area Header Main processor entries Job entries	LDALCPFD in IATYLDA for IATYLCP1; first IATYLCP2 entry is contiguous to IATYLCP1; next IATYLCP2 is in LCPMPNXT in IATYLCP2; first job entry is in LCPJB1ST in IATYLCP2 and next job entry is in LCPJBNXT in IATYLCP3
LCR	IATYLCR1 IATYLCR2	No Yes	IATIPLR1 IATIPLR2	Locate restart area Header Job entry	LDALCR in IATYLDA for IATYLCR1; LCRNEXT in IATYLCR1 is next IATYLCR1; IATYLCR2 is contiguous to IATYLCR1
LCT	IATYLCT1 IATYLCT2 IATYLCT3	Yes Yes Yes	IATIPLT1 IATIPLT2 IATIPLT3	Locate control table for the JES3 address space Master task section Locate subtask section Parmlist passed to IATLVAT	LDAMLCT in IATYLDA for IATYLCT1; LDALCT in IATYLDA and LCTNEXT in IATYLCT1 for IATYLCT2; LDAATLCT in IATYLDA for IATYLCT3
	CILCT1 CILCT2 CILCT3	Yes Yes Yes	IATIPLT1 IATIPLT2 IATIPLT3	Locate control table for a CI FSS address space Master task section Locate subtask section Parameter list passed to IATLVAT	LDALCT in CILDA for first CILCT1; LDAMLCT in CILDA for CILCT1; LCTNEXT in CILCT; LDAATLCT in IATYLDA
LDA	IATYLDA	No	IATIPLDA	Locate data area for the JES3 address space	TVTLDAAD in IATYTVT
	CILDA	Yes	IATIPLDA	Locate data area for a CI FSS address space	TVTLDAAD in CITVT

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
LSVT	IATYLSV1 IATYLSV2	No Yes	IATIPLDA	Locate subtask vector table for the JES3 address space Header section Table entries	LDALSVT in IATYLDA
	CILSV1 CILSV2	Yes Yes	IATIPLDA	Locate subtask vector table for a CI FSS address space Header section Table entries	LDALSVT in CILDA
MDS	IATYMDS	No	IATIPMDS	Main device scheduling table	Pointed to by MDSPARM in IATYTVT
MEM	IATYMEMH	No	IATIPMEMH	Memory data block for the JES3 address space	SVTMEMD in IATYSVT MEMCHAIN in IATYMEM MEMHEAD in IATYMEM
MGR	IATYMGR	No	IATIPMGR	Message routing table	SVTMGR in IATYSVT
MLWO	IATYMLWO	Yes	IATIPMLO	Multi-Line message token	MESSAGE macro parameter list on entry to MESSAGE service routine.
MPC	IATYMPC	No	IATIPMPC	Main processor control table	MAINDATA in IATYTVT MAINACT in IATYTVT SVTMPCDA in IATYSVT SVTMPACT in IATYSVT MPNEXT in IATYMPC
NAM	IATYNAH IATYNAE	Yes Yes	IATIPNAH IATIPNAE	SETNAMES table Header entry Format entry	SETNAMES in IATYTVT and SVTSETNM in IATYSVT for IATIPNAH
NCB	IATYNCB1 IATYNCB2 IATYNCB3	Yes Yes Yes	IATIPNC1 IATIPNC2 IATIPNC3	DJC net control block Prefix portion Fixed portion Variable portion	JNNCBFDB in IATYJNT for IATYNCB1; IATYNCB2 is contiguous to IATYNCB1; IATYNCB3 is contiguous to IATYNCB2
NCF	IATYNCF	Yes	IATIPNCF	New configuration data entry	CFSNCFAD in IATYCFGS NCFNEXT in IATYNCF
NCK	IATYNCK1 IATYNCK2	Yes Yes	IATIPNK1 IATIPNK2	DJC net checkpoint record Prefix portion Entry portion	DJCCKFDB in IATYTVT CKDJCFDB in IATYJCT
NDH	IATYNDH	Yes	IATIPNDH	Networking data set header	NTDHNDH in IATYNTDH NRDADSHB in IATYNRD ADSHWRK in IATYNFD NRSTDSHW in IATYNRS
NDN	IATYNDN	Yes	IATIPNDN	NJE Reader data area	
NDP	IATYNDP	Yes	IATIPNDN	NJE decompression parameter list	
NJH	IATYNJH	Yes	IATIPNJH	Networking job header	ISNHDFDB in IATYNIS NTHTNJH in IATYNTHT
NJT	IATYNJT	Yes	IATIPNJT	Networking job trailer	NTHTNJT in IATYNTHT
NRD	IATYNRD	Yes	IATIPNRD	NJE receiver work area	NDTNRDPT in IATYNDT, NDNNRDPT in IATYNDN
NTSV	IATYNTSV	Yes	IATIPNSV	Netserv table, as defined on the JES3 global	SUPFEND of the containing SUPUNIT; the SUPUNIT is pointed to by TVTNTSV in IATYTVT, SOCKNTSV in IATYSOCK, SUPCHAIN in IATYSUP, and SUPTYPCH in IATYSUP
OCF	IATYOCF	Yes	IATIPOCF	Old configuration data entry	CFSDCFAD in IATYCFGS OCFNEXT in IATYOCF

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
ODP	IATYODP	Yes	IATIPODP	NJE Reader data area	
OSA	IATYOSA	Yes	IATIPOSA	Output service data area	Register 13 contains its address in modules IATOSDR and IATOSDO
OSD	IATYOSD	Yes	IATIPOSD	Output service resident data area	TVTYOSD in IATYTVT
OSE	IATYOSEF IATYOSEV IATYOSED	Yes	IATIPOS3 IATIPOS1 IATIPOS2	Output service element Fixed section of the OSE Variable section of the OSE Data set section of the OSE	RQOSEFDB in IATYRSQ JCTOSEFD in IATYJCT OSDOSECH in IATYOSD JDABOSE and JDABOSES in IATYJDA
OSS	IATYOSSJ IATYOSSM	Yes Yes	IATIPOSS	Output service summary table	Select IATYOSSJ to obtain OSS control blocks for a job. RQOSSTOP in IATYRSQ points to the first OSS for a job. Select IATYOSSM to obtain OSS control blocks for a MOSE. OSEOSS in IATYOSE points to the first OSS on a MOSE chain.
OSPL	IATYOSPL	Yes	IATIPOSL	SPLITOSE service parameter list	
PAB	IATYPAB	Yes	IATIPPAB	PPQ Attributes Block	PPQPAB in IATYPPQ
PAR	IATYPAR	No	IATIPPAR	Interpreter parameter list for the JES3 address space	TIPARMS in IATYTVT
	CIPAR	Yes	IATIPPAR	Interpreter parameter list for a CI FSS address space	TIPARMS in CITVT
PCD	IATYPCD	Yes	IATIPPCD	Program Call Descriptor table	SVTPCDP in SSVT
PDQ	IATYPDQ	Yes	IATIPPDQ	Pending data set queue	WTRFPDQF in IATYWTR points to the first PDQ on the chain; WTRFPDQL in IATYWTR points to the last PDQ on the chain; WTRFPDQC in IATYWTR points to the PDQ at the channel; WTRFPDQS in IATYWTR points to the "synched to" entry
PPQ	IATYPPQ	Yes	IATIPPPQ	Pending Page Queue entry	WTROPPQF in IATYWTR
PRO	IATYPRO1 IATYPRO2	No Yes	IATIPPR0 IATIPPR1	Procedure library table for the JES3 address space Header section Entry section	TPROCCHN in IATYTVT ICTPRCAD in IATYICT
	CIPRO1 CIPRO2	No	IATIPPR0 IATIPPR1	Procedure library table for a CI FSS address space Header section Entry section	TPROCCHN in CITVT ICTPRCAD in CIICT
PUR	IATYPUR	Yes	IATIPPUR	Purge Data Area	R13 in module IATPURG
RAB	IATYRAB	Yes	IATIPRAB	USAM record allocation block	DSSRAB in IATYDSS IDDRAB in IATYIDD RQCIRAB in IATYRSQ
RIP	IATYRIP	Yes	IATIPRIP	Reply Information Prefix	JESXCF CADS buffer, at the starting data address minus the prefix length

Common Name	Structure (name)	adr	Model (name)	Formats the	Address contained in
RLT	IATYRLT	YES	IATIPRLT	RJP line &terminal table	RJPTAB IN IATYTVT SRTPRTRM IN IATYTVT SRTPSRT IN IATYTVT WSBRLTA IN IATYWSB LCBSRPL IN IATYLCB
RRE	IATYRRE	Yes	IATIPRRE	RAB Refresh element	DMCRREAD in IATYDMC
RSQ	IATYRSQ	Yes	IATIPRQ3 IATIPRQ2 IATIPRQ1 IATIPRQ4 IATIPRQ5 IATIPRQ6	Resident job queue table	
SDE	IATYSDE	Yes	IATIPSDE	SYSOUT application program interface DSP entry	TVTSDEAD, SDEFIRST, SDELAST, SDENEXT, SDEPREV, SDEIDLEQ
SDW	IATYSDW	Yes	IATIPSDW	SYSOUT application program interface DSP work area	SDESDWAD
SEE	IATYSEE	Yes	IATIPSEE	SAPI Exclusion Element	OSTSEEQ in IATYOST, RQSAPSEE in IATYRSQ
	IATYSE1	Yes	IATIPSE1	SAPI Thread Exclusion List	SEETHRED in IATYSEE
SEL	IATYSEL	Yes	IATIPSEL	Service entrance list for SSI requests	Register 1 of the SSISERV invocation AWASEL in IATYAWA
SETUNITS	IATYSET	No	IATIPSET	SETUNIT table entry	
SETVOL	IATYVLM	Yes	IATIPVLM	Resident volume allocation table	MDSVLCHN in IATYMDS SYSVOLAD in IATYSYS VLMCHAIN in IATYVLM DSNVOLAD in IATYDSN
SFW	IATYSFW	Yes	IATIPSFW	SYSOUT application program interface FCT work area	SDESFWAD
SLBF	IATYSLB2	Yes	IATIPSL2	SYSD data (SLBUFREC)	
	IATYSLB3	Yes	IATIPSL3	SYSLOG time stamp data (STCKDATA)	CLSTSYSD
SMW	IATYSMW	Yes	IATIPSMW	SSI 70 SWB merge/modify work area	
SNFS	IATYSNFS	Yes	IATIPSNF	SNARJP fail DSP work area	Register 2 in an AFB-08 dump and register 2 in DM552 and DM553 dumps
SOCK	IATYSOCK	Yes	IATIPSOC	Socket table, as defined on the JES3 global	TVTSOCK in IATYTVT SOCKNEXT in IATYSOCK SOCKNXNS in IATYSOCK SOCKNXND in IATYSOCK NTSVFSOC in IATYNTS NTSVLSOC in IATYNTS NJEFSOCK in IATYNJY NJELSOCK in IATYNJY
SPB	IATYSPB	Yes	IATIPSPB	Spool partition block	TVTSPLST in IATYTVT EXTSPB in IATYIOP
SPW	IATYSPW	Yes	IATIPSPW	SSI 82 spool partition work area	
SQD	IATYSQD	Yes	IATIPSQD	Subtask Queue Descriptor	GSDSQDAD in IATYGSD, GSGFRSQD in IATYGSG, QELDATA in IATYQUE, SQDNEXT in IATYSQD

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
SRT	IATYSRT	Yes	IATIPSRT	Resident SNA RJP table	SRJPSRT in IATYTVT
SRVC	IATYSRVC	Yes	IATIPSRV	Service Class table	WLM_SRVCFRS in IATYWLM, WLM_SRVCLAST in IATYWLM, SRVC_NEXT in IATYSRVC
SST	IATYSST	Yes	IATIPSST	Security subtask control table	
SSVT	IATYSVT	No	IATIPSVT	Subsystem vector table	
SSWE	IATYSSWE		IATIPSSW	Security subtask work element	NRDSSWRK in IATYNRD Pointers in IATYSST
SSX	IATYSSX	Yes	IATIPSSX	Security installation exit parameter list	Register 1 in IATUX58 and IATUX59
STA	IATYSTA	Yes	IATIPSTA	Staging area SELSTAG in IATYSEL MPSTAGE and MPSTATL in IATYMPC DSQQHD and DSQQTAIL in IATYDSQ STACHAIN and STAPREV in IATYSTA	
	CISTA	Yes	IATIPSTA	Staging area for a CI FSS SELSTAG in IATYSEL JADSTAR in IATYJAD	
STLP	IATYSTLP	Yes	IATIPSTL	Status List Parameter Area	GRESSTLP
STT	IATYSTT1 IATYSTT2	Yes Yes	IATIPST1 IATIPST2	Single track allocation table	JCTSTT of IATINJQ JBTSTT of IATYJBT
SUPUNITS	IATYSUP1 IATYSUP2 IATYSUP3 IATYSUP4	Yes	IATIPSU1 IATIPSU2 IATIPSU3 IATIPSU4	Support units table Fixed section - applies to all devices Initialization section Remote devices RJP lines	CONSUP in IATYCND; GLADDR in IATYFCT; FSASUPPT in IATYFSA; LCBFISU and LCBFOSUP in IATYLCB; MPSYSADD in IATYMPC; PRTAB, PUNTAP, SUPUNITS, SYSTAB in IATYTVT; WSPASUP in IATYWSP
SVTX	IATYSVTX	Yes	IATIPSVX	JES3 Subsystem Vector Table Fixed Extension	SVTSSVTX in IATYSVT
	IATYSVTX	Yes	IATIPSVP	JES3 Subsystem Vector Table Pageable Extension	SVTSSVTP in IATYSVT
SWBB	IATYSWBB	Yes	IATIPSWB	SWBCMPT service parameter list	
SWBC	IATYSWBC	Yes	IATIPSWC	SWBSPLCE service parameter list	
SWBG	IATYSWBG	Yes	IATIPSWG	SWBGET service parameter list	
SWBL	IATYSWBL	Yes	IATIPSWL	SWBSPLIT service parameter list	
SWBM	IATYSWBM	Yes	IATIPSWM	SWBMERGE service parameter list	
SWBT	IATYSWBT	Yes	IATIPSWT	SWBGETTU service parameter list	
SWBW	IATYSWBW	Yes	IATIPSWW	SWBWRITE service parameter list	
SWE	IATYSWE	Yes	IATIPSWE	SYSOUT application program interface wait for work element	TVTSAPWQ; SWEFIRST; SWELAST; SWENEXT; SWEPREV
SYM	IATYSYM	Yes	IATIPSYM	Symbol Substitution Work Area	DSBSYMWA in IATYDSB

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)					
Common Name	**Structure (name)**	**adr**	**Model (name)**	**Formats the**	**Address contained in**
SYSL	IATYSYS3	Yes	IATIPSY3	SYSLOG job data header	TVTYSYSL
	IATYSYS4	Yes	IATIPSY4	SYSLOG job data entry	
	IATYSYS5	Yes	IATIPSY5	SYSLOG job data build header	JVQSYSLH
	IATYSYS6	Yes	IATIPSY6	SYSLOG job data build entry	
SYSUNITS	IATYSYS	No	IATIPSYS	System units table	SYSUNITS in IATYTVT; SVTSYSUN in IATYSVT; SYSHNEXT in IATYSYS; SETADD in IATYSET; SUPADD in IATYSUP
S34	IATYS34	Yes	IATIPS34	SVC 34 data area	STADATA in IATYSTA
TEL	IATYTEL	Yes	IATIPTEL	Timer element	TVTTELTP in IATYTVT for the first TEL element; TVTTELEN in IATYTVT for the last TEL element; TELNEXT in IATYTVT for the next TEL; TELPREV in IATYTVT for the previous TEL; FCTTELPT in IATYFCT for the TEL elements for an FCT; TELFNEXT in IATYTEL for then next TEL element for an FCT
TVT	IATYTVT	No	IATIPTVT	Transfer vector table for the JES3 address space	
	CITVT	No	IATIPTVT	Transfer vector table for a CI FSS address space	
T35	IATYT35	Yes	IATIPT35	WTO/WTOR text and JES3 prefix	STADATA in IATYSTA
UX57	IATYU57	Yes	IATIPU57	Parameter list for exit IATUX57	
VIO	IATYVIO	Yes	IATIPVIO	Job validation I/O element	VIONEXT, VIOPREV, VIOIONXT in IATYVIO VIWVIOAD, VIWVIORF, VIWVIORL, VIWVIOWF, VIWVIOWL in IATYVIW
VITR	IATYVITR	Yes	IATIPVIT	Job validation I/O trace entry	VIWTRSTR in IATYVIW VIWTRCUR in IATYVIW
VIW	IATYVIW	Yes	IATIPVIW	Job validation I/O work area	JVWVIWAD in IATYVIW
WBQS	IATYWBQS	Yes	IATIPWB1	Workload Manager Batch Queue Sampling information - Matrix Prefix (WBQS_PREFIX)	SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, SRVC_CRSYSTEM in IATYSRVC, SRVC_PVSYSTEM in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM
	IATYWBQS	Yes	IATIPWB2	Workload Manager Batch Queue Sampling information - Sysplex Wide Service Class Data Entry (WBQS_SYSPLEX _SC_ENTRY)	SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM
	IATYWBQS	Yes	IATIPWB3	Workload Manager Batch Queue Sampling information - Sysplex Wide Report Class Data Entry (WBQS_SYSPLEX_ RC_ENTRY)	SRVC_CRSYSPLX in IATYSRVC, SRVC_PVSYSPLX in IATYSRVC, WLM_PVPLEXRC in IATYWLM, WLM_CRPLEXRC in IATYWLM
	IATYWBQS	Yes	IATIPWB4	Workload Manager Batch Queue Sampling information - System specific Service Class Data Entry (WBQS_SYSTEM_SC_ENTRY)	SRVC_CRSYSTEM in IATYSRVC, SRVC_PVSYSTEM in IATYSRVC
WKGS	IATYWKGS	Yes	IATIPWGS	IATGPJPS module work area	
WKSR	IATYWKSR	Yes	IATIPWSR	IATSIJP module work area	

Common Name	Structure (name)	adr	Model (name)	Formats the	Address contained in
WKSS	IATYWKSS	Yes	IATIPWSS	IATSIJPS module work area	
WJS	IATYWJS	Yes	IATIPWJ1	Workload Manager Job Sampling Element - GMS Job Sampling Element (WJS_GMSSTART)	WLM_WJSGMS in IATYWLM
	IATYWJS	Yes	IATIPWJ2	Workload Manager Job Sampling Element - MDS Job Sampling Element (WJS_MDSSTART)	WLM_WJSMDS in IATYWLM
	IATYWJS	Yes	IATIPWJ3	Workload Manager Job Sampling Element - Main Service Wait WLM Sampling Element (WJS_MSWSTART)	WLM_WJSMAINW in IATYWLM
WLM	IATYWLM	Yes	IATIPWLM	Workload Manager Data Area Element - (WLM_START)	TVTXWLM in IATYTVTX
WRKGR70	IATYG70	Yes	IATIPG70	IATGR70 module work area	
WRKSI70	IATYS70	Yes	IATIPS70	IATSI70 module work area	
WSB	IATYWSB	Yes	IATIPWSB	Workstation control block	IATYDVE
WSP	IATYWSP	Yes	IATIPWSP	Output service parameter mapping area	IATOSDR or IATYWTR
WTR	IATYWTR	Yes	IATIPWTI	Writer work/control area (input area)	WTRDIARE in IATYWTR
	IATYWTR	Yes	IATIPWTO	Writer work/control area (output area)	WTDAREA in IATYWTR
WTRX	IATYWTRX	Yes	IATIPWTX	Writer work/control area extension	WTROWTRX in IATYWTR
YIQOS	IATYIQOS	Yes	IATIPIQO	Output Service Inquiry data area	
YLGC	IATYLGC	Yes	IATIPLGC	Substitution Log Control	MEMSYMLG in IATYMEM for the first YLGC in the chain, YLGNEXT in IATYLC for the next YLC in the chain, SYMYLGC in IATYSYM for the YLGC used for writing to a particular logging dataset.
YMOOS	IATYMOOS	Yes	IATIPMOO	Output Service Modify data area	MOOSNEXT in IATYMOOS
YOSPC	IATYOSPC	Yes	IATIPOSP	IATOSPC Work area	Register 13 in IATOSPC
YSWBR	IATYSWBR	Yes	IATIPSWR	SWB Retrieve parameter list	
YUX72	IATYUX72	Yes	IATIPU72	IATUX72 parameter list	

Table 20. JES3 Control Blocks for IPCS JES3 and the IPCS CBFORMAT Subcommand (continued)

Viewing Portions of JES3's Storage

IPCS can also be used to view JES3's storage online. The LIST subcommand can be entered in a CLIST.

```
IATYTVT - JES3 TRANSFER VECTOR TABLE
LIST 03001000 ASID(X'0011') LENGTH(3432) STRUCTURE(IATYTVT)
+00000000  03001000.  C9C1E3C7  D9E5E340  C8D1E2F4  F4F2F140  |IATGRVT HJS4421 |
+00000010  03001010.  F0F661F2  F861F9F1  F0F34BF4  F8400000  |06/28/9103.48 ..|
+00000020  03001020.  0300230B  0D680000  0091193F  10255142  |.........j......|
+00000030  03001030.  0302FCC8  00000000  00B49F7C  03021388  |...H.......@...h|
+00000040  03001040.  03039ABC  03039B42  0000DCA8  0000DB58  |...........y....|
+00000050  03001050.  03035EE4  03036564  030368A6  03036AFA  |...U.......w....|
+00000060  03001060.  03004BD8  03002C40  03002320  7FFFFFFF  |...Q... ...."...|
```

Figure 22. IPCS Output using the LIST Subcommand

The syntax for the LIST subcommand follows:

Note:

►► LIST — *adr* — *length* ►◄

adr
Specifies the address of the requested control block.

Note: Use the FIND subcommand to locate the SSVT to obtain the addresses of other JES3 control blocks. After you have located the SSVT, you can locate the address of the required control block and use the LIST subcommand to display its storage.

length
Specifies the number of bytes to be displayed. The value can be specified as a decimal or hexadecimal value.

For restrictions and more information on IPCS keywords you may want to include on the LIST subcommand, see *z/OS MVS IPCS User's Guide* and *z/OS MVS IPCS Commands*.

Chapter 4. JES3 Formatted dump

The descriptions on the following pages should be used to identify areas in a formatted dump of a JES3 or CI FSS address space. Specific areas of a dump are shown, followed by an explanation. In the descriptions, the lowercase characters following the field names identify the type of data as follows:

- b - bit
- c - character
- dev - device
- d - decimal
- h - hexadecimal

To conserve space, the formatted dumps are truncated or compressed. More than one dump was used to produce these examples, and the order of items shown may not correspond to the order in a specific dump. Use the following chart to locate the segment of the formatted dump you are interested in. The chart also identifies the address space that provides information for the specified segment.

The page headings of each section of the formatted dump includes (in parentheses) the verb_option that you would use when referencing that section of the dump with IPCS.

Table 21. Segment of JES3 Dump

verb_option	Segment of JES3 Dump	Description	Address Space	Page
C/I	CIDRVR ECF identifier entries	Displays information that identifies the type of ECF/ EVENT, an FCT is awaiting on	JES3	“C/I” on page 260
	CIDRVR ECF list control block	Displays information required by the ECF list management routines	JES3	“C/I” on page 260
	C/I FSS tables	Contains data to keep track of the status and work being processed by C/I FSS	JES3	“C/I” on page 260
	C/I parameter tables	Contains the converter parmlist and region size for a particular PARMID	JES3, CI FSS	“C/I” on page 260
	C/I related TVT information	Displays the information related to C/I control blocks	JES3, CI FSS	“C/I” on page 260
	Interpreter data area	Contains information related to the CI FSS	JES3	“C/I” on page 260
	Interpreter control tables	Contains Converter/ Interpreter work area and status information	JES3, CI FSS	“C/I” on page 260
	PROCLIB tables	contains a header and an entry for every dataset in concatenation	JES3, CI FSS	“C/I” on page 260

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
COW	Client Output Work area	contains information pertaining to a SAPI thread COW and copy of its SSOB and SSS2.	JES3	"COW - Client output work area" on page 258
CSA	Address Range	maps the JES3 control blocks and data from CSA, SQA, the JES3 private area, and the JES3 auxiliary address space private area.	JES3, C/I FSS	"Address range" on page 255
DFC	Device fence control blocks	Contains information used to allocate or deallocate fenced devices for job class groups or DJC networks	JES3	"DFC-Device fence control blocks" on page 268
DJC	DJC JOBNET control blocks (JNCB)	contains information on the total network of jobs in DJC.	JES3, CI FSS	"DJC JOBNET Control Blocks" on page 254
DLY	JQEX delay information for jobs in main service	Delay information for jobs that are waiting to be scheduled for or active in main service	JES3	"DLY-JQEX delay information for jobs in main service" on page 269
DSP	DSP dictionary entries	Displays the information regarding each Dynamic Support Program entry	JES3, CI FSS	"DSP-DSP dictionary entries" on page 269
DYN	DYNAL FCT data area	information used to control the dynamic allocation requests to the DYNAL DSP.	JES3	"DYNAL FCT data area" on page 226
	ECF list	maintains information on the completion of I/O requests that are issued by the DYNAL FCT.	JES3	"DYNAL ECF List Control Block" on page 226
ENQ	AENQ control data entries	Contains information about exclusive or shared use of JES3 resources.	JES3, CI FSS	"ENQ" on page 271
	FCT AENQ elements	Contains information to map AENQ resource with the corresponding FCT	JES3, CI FSS	"ENQ" on page 271
	FCT AENQ element free queue	Contains information about the resources in the FCT AENQ element free queue	JES3	"ENQ" on page 271

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
FCT	Auxiliary Task Control Block	contains status and control information on the execution of the auxiliary task	JES3	"Auxiliary Task Control Block" on page 238
	FCT Ready Queue Summary	contains the addresses of the FCTs that have completed a JSAM I/O request.	JES3	"FCT READY QUEUE SUMMARY" on page 237
	Function control table	contains information on a JES3 DSP.	JES3, CI FSS	"Function Control Table" on page 238
FSS	FSS table entries	contains definition and status information on functional subsystem address spaces.	JES3	"FSS Table entries" on page 191
GMS	CLASS/S	contains information specified on the CLASS initialization statement.	JES3	"CLASS/S" on page 203
	EXRESC/S	identifies and defines the resources that JES3 can allocate.	JES3	"EXRESC/S" on page 201
	GRPTBL/S	defines the characteristics of a job class and group. It also contain information specified on the GROUP initialization statement.	JES3	"GRPTBL/S" on page 200
	JSQ/S	contains information used to schedule communication with initiators via SSI routines.	JES3	"JSQ/S" on page 204
	MPC/S	describes each main in the complex. The information in the table is obtained from the MAINPROC initialization statement.	JES3, CI FSS	"MPC/S" on page 206
	RESQ/S	contains information JES3 uses to start a job. It contains an entry for each job that has been sent to, or selected by a main for execution.	JES3	"RESQ/S" on page 204

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
GST	Generalized subtask global data area	Contains information used to manage the generalized subtasks and the work associated with those tasks	JES3, CI FSS	"GST" on page 273
	Non-specific subtask GSDS	Generalized subtask directories for the non-specific subtasks	JES3, CI FSS	"GST" on page 273
	Specific subtask GSDS	Generalized subtask directories for the specific subtasks	JES3, CI FSS	"GST" on page 273
	SQDS in the free pool	Contains information that is used by a generalized subtask to process an IATXCSF request	JES3, CI FSS	"GST" on page 273
HED	Heading page	contains summary information on the failure.	JES3,CI FSS	"Heading Page" on page 176
INS	Internal reader anchor block	contains information used to schedule individual internal reader jobs	JES3	"Internal Reader Anchor Block" on page 211

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
JIO	Data management extent table	contains information on each spool data set JES3 can access	JES3, CI FSS	“Extent table” on page 228
	Data management file directory	contains information on multi-record and some single-record files.	JES3, CI FSS	“File directory” on page 233
	Data management IOSB - SRB pairs	contains information used by the STARTIO macro to write data to spool.	JES3	“IOSB - SRB pairs” on page 230
	Data management JSAM/USAM data buffers	contains information about the JSAM and USAM buffer pools.	JES3, CI FSS	“JSAM/USAM Data buffers” on page 234
	I/O parameter block	contains information used to control spool I/O and information on spool data sets.	JES3, CI FSS	“I/O Parameter Block” on page 228
	RPS sector tables	information contained in this table is used for scheduling spool I/O.	JES3	“RPS Sector tables” on page 231
	Single track table	maintains a record of the spool space allocated to the JES3 single track table.	JES3	“Single track tables” on page 233
	Spool partition control blocks	contains information on each spool partition defined to JES3.	JES3	“Spool Partition Control Blocks” on page 232
JMQ	Header and entries	JESMSG control queue.	JES3	“JESMSG Queue Control Area Header” on page 260
JQE	JES3 job queue elements	contains job-related information.	JES3	“JES3 Job Queue Elements” on page 214
JTV	Data management IATYTVT definitions	contains the entry point addresses for most JES3 data management routines and tables.	JES3, CI FSS	“IATYTVT Definitions” on page 227

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
LOC	Locate control tables	Contains information used by each Locate subtask and Locate FCT	JES3, CI FSS	"LOC" on page 276
	Locate data area	Contains information used by all locate modules under the Locate FCT	JES3, CI FSS	"LOC" on page 276
	Locate entrance tables	Contains information used by a DSP to request the services of the Locate FCT	JES3, CI FSS	"LOC" on page 276
	Locate Restart Records	Contains information about jobs active in Locate on a local processor during connect processing	JES3, CI FSS	"LOC" on page 276
	Locate subtask vector table	Contains information to map Locate subtask control table with Locate subtask TCB address	JES3, CI FSS	"LOC" on page 276
	Master locate control table	Contains information regarding Locate Master task like Master task ECB,LCT for the subtask that is being attached, parameter list, etc	JES3, CI FSS	"LOC" on page 276
MDS	Main device scheduler data area	contains information used by the main device scheduler to schedule jobs.	JES3	"Main device scheduler data area" on page 216
	MDS RESQUEUE tables	lists the jobs that are waiting to be processed by each MDS function.	JES3	"MDS RESQUEUE Tables" on page 217
MEM	Auxiliary Task Dispatching Element	used to select an FCT for dispatching under the auxiliary task TCB	JES3	"Auxiliary task dispatching element" on page 241
	JES3 memory usage	contains the addresses of modules and control blocks in the JES3 address space.	JES3, CI FSS	"JES3 Memory Usage" on page 236
MOD	JES3 module information from the JDEs	Displays information regarding JES3 directory elements	JES3, CI FSS	"MOD-JES3 module information from the JDEs" on page 283

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
MPC	DESTQ	contains a list of all the unsolicited staging areas received by JES3 according to the function.	JES3	"DESTQ" on page 193
	JESMAIN	contains information on main processors.	JES3	"JESMAIN" on page 192
	MAINSCHD	identifies the staging areas waiting to be processed by a main.	JES3	"MAINSCHD" on page 195
	MEMDATA	contains information on active address spaces for each main and the jobs within an address space.	JES3	"MEMDATA" on page 199
MVD	Multi-version data access Master control areas	Contains data that is used by JES3 to control access to data areas that have multiple versions	JES3, CI FSS	" MULTI-VERSION DATA ACCESS MASTER CONTROL AREAS" on page 200
NJE	Networking console pointers and queues	contains information on the buffers containing NMRs	JES3	"Networking Console Pointers and Queues" on page 253
	NJE active BSC node table	formats work areas used by the network.	JES3	"NJE Active BSC Node Table" on page 253
	NJE resident node table	contains information on the nodes in the network.	JES3	"NJE Resident node table" on page 250
NUC	JES3 Nucleus	contains a list of modules and their entry points within the JES3 nucleus.	JES3, CI FSS	"JES3 Nucleus" on page 177
OSS	Master OSE table	summary information of the OSEs that are placed on spool.	JES3	"Master OSE table" on page 182
	TCP/IP Master OSE table	describes the TCP/IP/NJE Master OSE Table.	JES3	"TCP/IP Master OSE Table" on page 183
	SNA/NJE Master OSE table	describes the SNA/NJE Master OSE Table.	JES3	"SNA/NJE Master OSE Table" on page 183
	Allocated OSS Pool	describes the Allocated OSS Pool.	JES3	"Allocated OSS pool" on page 187
	TCP/IP Allocated OSS Pool	describes the TCP/IP/NJE Allocated OSS Pool.	JES3	"TCP/IP Allocated OSS pool" on page 187
	SNA/NJE Allocated OSS Pool	describes the SNA/NJE Allocated OSS Pool.	JES3	"SNA/NJE Allocated OSS pool" on page 188

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
PRT	PPQ/PDQ writer control blocks	contains information on JES3 writers.	JES3	“PPQ/PDQ Writer Control Blocks” on page 181
	SUPUNITS print/ punch resources	describes the types of print and punch resources defined to JES3.	JES3	“SUPUNITS Print/Punch Resources” on page 179
RJP	Resident remote and line DCT entries	contain device control information for lines and terminals.	JES3	“Resident Remote and Line DCT Entries” on page 242
	Resident RJP line and terminal table	contains control information for each line or terminal.	JES3	“Resident RJP Line and Terminal Table” on page 244
	Resident SNA RJP Table (SRT)	contains information specified on the COMMDEFN initialization statement.	JES3	“Resident SNA RJP table (SRT)” on page 244
	Resident SNA terminal entries	contains information on started RJP lines and remote RJP workstations that are signed on.	JES3	“Resident SNA Terminal Entries” on page 245
RSQ	RESQUEUE table	contains an entry for each active job.	JES3, CI FSS	“RESQUEUE Table” on page 212
SAPI	SAPI processing control blocks	contains the following SAPI control blocks: the SFW, all of the SDEs, all of the SDWs, and all of the SWEs.	JES3	“SYSOUT Application Programming Interface Data” on page 256
SCT	SYSOUT Class Table	Contains the device characteristics of SYSOUT class	JES3	“SCT-SYSOUT Class table” on page 285
SRS	MDSSRS Data Area	Contains information needed by the MDSSRS FCT	JES3	“SRS” on page 287
	MDS Control Tables	Contains status information, addresses and work areas used by MDS subtasks, the MDS master task and MDSSRS FCT	JES3	“SRS” on page 287
	SMS Available Resource Blocks	Contains information regarding the status of an SMS managed resource	JES3	“SRS” on page 287
STN	SETNAMES table	contains information specified on the SETNAMES initialization statements.	JES3, CI FSS	“SETNAMES Table” on page 220

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
STU	SETUNITS table	contains control information for all devices attached to a main. The table contains information specified on the DEVICE initialization statement.	JES3, CI FSS	"SETUNITS Table" on page 221
SUP	SUPUNITS table	identifies the devices that are allocated to the global. These devices are used by JES3's support services (i.e. readers, printers, tape units, RJP lines and networking lines).	JES3	"SUPUNITS Table" on page 189
SYS	SYSUNITS table	contains a unique entry for each device in the complex. Each entry maintains the allocation status of the device.	JES3, CI FSS	"SYSUNITS Table" on page 223
TCP	TCP/IP/NJE information	contains information on Netservs, Sockets, and TCP/IP networking requests.	JES3, Netserv	"TCP - TCP/IP/NJE Data" on page 183
TRC	JES3 event trace table	contains diagnostic information pertinent to a JES3 system failure.	JES3, CI FSS	"Format of a JES3 trace entry" on page 58
VLM	SETDSN table	contains information on data sets that are allocated to volumes.	JES3	
	SETVOL table	contains information on all known volume requirements for jobs in the system and maintains the status of all currently mounted volumes.	JES3	"SETVOL Table/SETDSN Table" on page 224
WLM	IATYWLM	JES3 work load manager data area	JES3	"Workload Manager Data Area" on page 206
	IATYSRVC	JES3 data area for WLM service class, including the sampling statics for service class	JES3	"Workload Manager Data Area" on page 206
	IATYWJS	GMS WLM job sampling device	JES3	"Workload Manager Data Area" on page 206

Table 21. Segment of JES3 Dump (continued)				
verb_option	**Segment of JES3 Dump**	**Description**	**Address Space**	**Page**
WSB	LCB Entry	Describes all the active LCBs associated with the workstation.	JES3	"Device Entry" on page 247
	LCB Entry	describes all the active LCBs associated with the workstation.	JES3	"LCB Entry" on page 247
	Resident WSB/LUCB entries	contains information on each active work station.	JES3	
	WSB Entry	describes the contents of the workstation control block (WSB) which contains information for all the active workstations.	JES3	"WSB Entry" on page 246

Heading Page

The heading is a consolidation of the failure. The heading always appears in dumps dynamically formatted by the JES3. Similar information is concurrently recorded in the logrec data set.

```
JES3 OS290  FLNO=003 C1          FCT=052AF150   S/FB-00000008 IN IATGRJA  PSW=071C2000085133F8A 209/1403

SYSTEM ABEND CODE IS 1FB

PROGRAM ABENDED IN MODULE IATTEST, LOCATION 028678EA (REL LOC 000008EA), MODULE BASE IS 02867000

INTERRUPTING INSTRUCTION IS 0A0D

GENERAL REGISTERS AT TIME OF INTERRUPT
REGS 0- 7  04000000  041FB000  00C61244  00C0CB50  80C61000  00000000  027197F0  028687A8
REGS 8-15  02719B65  00000008  02867488  027D1FC0  00010000  02719D5C  027198EA  00000008

ACCESS REGISTERS AT TIME OF INTERRUPT
REGS 0- 7  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
REGS 8-15  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

ACTIVE FCT ENTRY IS IATTEST AT 027D1FC0
```

JES3 cccc - identifies the failing subsystem and its release level.

FLNO=ddd - is the number of failures since initialization.

Note:

1. A more extensive heading is generated through a normal abend rather than one which is generated by the *DUMP command.
2. Another line is printed when running in an FSS address space. See FSS and ASID below.

FSS cccccccc - is the FSS name, obtained from field TVTFSSNM in module IATGRVTF.

ASID=cccc - is the ASID of the FSS obtained from field TVTEASID in module IATGRVTF.

cccccccc - is the name of the DSP in control at failure.

FCTA=hhhhhhhh - is the address of the active FCT at failure.

Sccc-hhhh - is the system completion code, followed by the actual interrupt code.

IN cccccccc - is the name of the module in control at failure.

PSW=hhhhhhhhhhhhhhhh - is the PSW at failure.

D=ddd - is the Julian day of the year.

T=dddddddd - is the time in hours, minutes, seconds and tenths.

Data is formatted to assist in pinpointing the source of the termination for dumps being dynamically processed by JES3.

SYSTEM or USER ABEND CODE IS hhh - is the system or user abend code.

0C1, if the dump is the result of a FAILDSP macro or operator *FAIL command.

PROGRAM ABENDED IN MODULE cccccccc - is the name of the module that was in control at the time of the interruption.

LOCATION hhhhhhhh - is the PSW address at the time of interrupt.

REL LOC hhhhhhhh - is the relative displacement into the named module where the interrupt occurred.

MODULE BASE IS hhhhhhhh - is the address of the module in storage.

INTERRUPTING INSTRUCTION IS hhhhhhhh - can be one of the following forms:

- CALL, if the dump originated from the DC (Dump Core) DSP.
- DMxxx, if the dump is the result of a FAILDSP macro or operator *FAIL.
- hhhhhhhh, if neither of the above, the actual instruction image in hexadecimal (see below).
- *DUMP, if the user abend code is X'008' (operator *DUMP command), or when LOCATION is on a byte boundary.
- IMPRECISE (ILC=0), if the PSW instruction length code is zero. It signifies that the hardware could not determine the precise location of the interrupt.
- INACCESSIBLE, if interrupted location cannot be accessed.
- “Instruction image” is printed when none of the foregoing conditions exist (hhhhhhhh).
- (Not shown) - TVTABLE ADDRESS IS INVALID is printed if the beginning of the TVT does not contain the character constant ‘IATGRVT’ (‘IATGRVTF’ for an FSS address space) or when the end of the TVT cannot be accessed in the dump.

ACTIVE FCT ENTRY IS cccccccc - is the name of the active DSP.

AT hhhhhhhh - is the address of the active FCT.

JES3 Nucleus

MAP OF JES3 NUCLEUS is a list of all modules and their entry points within the JES3 nucleus (module IATNUC). FSS is substituted for JES3 when running in an FSS address space (module IATNUCF) and the mapping is significantly shorter.

```
     MAP OF JES3 NUCLEUS

17509000   IATGRVT
17509000   TVTABLE
1750A728   IATGRVTC
1750B048   IATGRVTX
1750B2A0   IATATCB
1750B328   IATCNCM
1750BD28   IATCNCN
1750CA88   CNCNLCMD
1750D0A8   IATCNDB
1750E8E0   IATCNDM
1750F170   IATCNDQ
1750F3C0   IATCNIA
17512D58   IATCNIC
17513768   IATCNIN
1751A980   IATCNJS
1751AED0   IATCNRN
1751C410   IATCNSV
1751D838   IATCNTC
1751E1F0   IATCNWO
1751F0F8   IATCS03
1751FC28   IATCS06
17520CC0   IATCS07
17521F80   IATCS08
17523110   IATCS09
17523F38   IATCS10
17524890   IATCS11
175253C0   IATCS12
17525C10   IATDCNC
17527700   IATDMCS
17528818   IATDMDT
1752A820   IATDMGB
1752BF98   IATDMNC
17531558   IATDMST
17531AE8   IATDMTK
17534440   IATDSI1
175355E0   IATGRCP
175362A8   IATGRCT
17536EF8   IATGRDLY
17537D18   IATGRES
1753B8F8   IATGRGM
1753BCC0   IATGRGPF
1753BFC0   IATGRGS
1753CBA0   IATGRGU
1753F208   IATGRG1
1753FD50   IATGRJA
17543678   IATGRJN
17543E68   IATGRJQS
175446E8   IATGRJR
17545208   IATGRJS
```

```
   MAP OF JES3 NUCLEUS (cont'd)

175499B8   IATGRJX
1754C188   IATGRJXS
1754C330   IATGRLD
1754D3C0   IATGRLG
1754D560   IATGROCO
17550198   IATGRPJ
17550C88   IATGRPT
17550CB0   DSPDICT
17553418   DEVREQ
175592B8   IATGRQC
1755A740   IATGRRQ
1755D558   IATGRSR
1755DC98   IATGRSV
1755E1F0   IATGRTM
1755F148   IATGRWD
1755F910   IATGRWP
17560590   IATGRWQ
17561CF8   IATINIT
175636A0   IATIQDV
17565398   IATMFDR
17567560   IATMODV
17569D90   IATMOVL
1756AF78   IATMSGC
1756B640   IATMSGCX
1756CD98   IATMSCC
1756D9C8   IATMSWLD
1756DCB0   IATMSWLS
1756DF20   IATNTSR
1756E4A0   IATOSBM
1756FF10   IATOSDA
17570510   IATOSDO
17573C70   IATOSDR
175777F0   IATOSGP
17579110   IATOSGR
1757C5F8   IATOSOR
17580CD8   IATOSPC
175852F0   IATOSSC
17586C80   IATOSSO
1758D848   IATOSSR
1758E8F0   IATOSSWB
1758F8A8   IATOSWP
17593738   IATOSWS
17596488   IATPUSC
17596688   IATRJGR
175984A0   IATRJPC
175993C0   IATSSDS
17599CD8   IATSSJS
1759A110   IATWLCLF
1759AEB0   IATWLCSM
1759B438   IATWLDRG
1759B5D0   IATWLDRV
1759BA88   IATWLFSM
1759BE20   IATWLGSM
1759D198   IATWLJCK
1759D508   IATWLRCL
1759DFE0   IATWLSRR
1759E4F8   IATWLSRV
1759EDA8   IATWLSTK
1759EEB8   IATGRJM
175A0260   IATGRLMC
175A0618   IATMSSCR
175A0C70   IATWLEVT
175A16E0   IATWLSCS
175A2870   IATWLFJR
175A2968   IATWLSTA
```

SUPUNITS Print/Punch Resources

PRINT/PUNCH RESOURCES are not formatted in an FSS dump. The information in this portion of the dump is mapped by the IATYSUP macro instruction.

```
02AD69B0     PRINT/PUNCH RESOURCE FOR PRT002

             DTYPE         DGROUP               DEVAD         FORMS        CARRIAGE       RJP          TRAIN
             3211          LOCAL                0002          1PRT         6              NO           P11

             WTRWAREA      F1 F2 F3 F4 F5       LINELIM       PAGELIM      IC             CKLNCT       FLASH      STACKER
             00000000      03 E0 20 88 00       0000000000+   000000       002            02000                   C

             WS                                           WC
             C, F, FL, U, CL, D, P

             PRMODE
             LINE
02AD6AA0     PRINT/PUNCH RESOURCE FOR PRT003

             DTYPE         DGROUP               DEVAD         FORMS        CARRIAGE        RJP         TRAIN
             3211          LOCAL                0003          1PRT         6               NO          P11

             WTRWAREA      F1 F2 F3 F4 F5       LINELIM       PAGELIM      IC              CKLNCT      FLASH      STACKER
             00000000      03 E0 20 88 00       0000000000+   000000       002             02000                   C

             WS                                           WC
             C, F, FL, U, CL, D, P

             PRMODE
             LINE
02AD6B90     PRINT/PUNCH RESOURCE FOR PRT005

             DTYPE         DGROUP               DEVAD         FORMS        CARRIAGE        RJP         TRAIN
             4248          LOCAL                0005          1PRT         6               NO          P11

             WTRWAREA      F1 F2 F3 F4 F5       LINELIM       PAGELIM      IC              CKLNCT      FLASH       STACKER
             00000000      03 E0 20 88 00       0000000000+   000000       002             02000                    C

             WS                                           WC
             C, F, FL, U, CL, D, P

             PRMODE
             LINE
02AD6C80     PRINT/PUNCH RESOURCE FOR PRT006

             DTYPE         DGROUP               DEVAD         FORMS        CARRIAGE        RJP         TRAIN
             4248          LOCAL                0006          1PRT         6               NO          P11
```

DTYPE - is the type of the device.

DGROUP - is the device group.

DEVAD - is the device number of the device.

FORMS - is the type of forms used for this device.

CARRIAGE cccccccc - is either the carriage tape of the forms control buffer (FCB) in use.

RJP (YES or NO) - indicates whether this is an RJP device.

TRAIN cccccccc - indicates either the train or universal character set (UCS) of the CHARS for this device.

WTRWAREA hhhhhhhh - is the pointer to the writer data CSECT.

F1 through F5 hh - are SUPUNIT flags bytes SUPPRFL1, SUPPRFL2, SUPPRFL3, SUPPRFL4, and SUPPRFL5 respectively.

LINELIM nnnnn - is the total number of lines for all data sets in one OSE. A“+” symbol to the right of the line limit indicates that only data sets with the number of lines indicated can be scheduled for the device.

PAGELIM - is the maximum amount of pages that can be processed per data set on this device. A“+” symbol to the right of the page limit indicates that only data sets with the number of pages indicated can be scheduled for the device.

IC hh - is the number of spool records to build and chain ahead for the device. It comes from the RECORDS parameters on the DEVICE statement.

CKLNCT ddddd - is the number of records which are processed between checkpoints.

FLASH cccc - is the name of the flash cartridge to load for the 3800 printer.

STACKER - is the stacker option for the 3800 printer. C specifies that the output is to be placed in the continuous forms stacker. S specifies that the output is to be placed in the sheet stacker.

FSSTABLE hhhhhhh - is the address of the FSS table.

FSA TABLE hhhhhhhh - is the address of the FSA table.

NPRO nnnn - is the nonprocess run-out interval for the 3800-3 printer running in FSS mode.

CKINT nnnn - is the checkpoint record value.

WS - is the work selection criteria for this writer.

WC - is the writer class selection list.

PRMODE - are the process modes in effect for this device. If NO PRMODE DATA AVAILABLE appears for a device, the device is a remote workstation that is not defined by a DEVICE statement in the JES3 initialization stream.

PPQ/PDQ Writer Control Blocks

PPQ/PDQ Writer Control Blocks - the following three segments of the JES3 dump document the PPQ/PDQ writer control blocks:

- 3800 Writer Segcomon Pageids
- Pending Data set Queue for FSS Writers
- Pending Data set Queue for 3800 Writers

```
3800 WRITER SEGCOMON PAGEIDS

    CHANNEL PAGEID      XFER PAGEID      FUSER PAGEID      STACKER PAGEID
    2572                2572             256D              2568


PENDING PAGE QUEUE FOR 3800 WRITER PRT803

    PPQ ADDRESS    PPQAPID     PPQPID     LINE POSITION    FLG1    FLG2    WTR OSE FDB    RESQUEUE
    02211374       00000000    2572       8001             8C      08      028C300C       021D0158
    02211330       00000000    2570       0004             13      00      022111DC       021CED74
    022112EC       00000000    2570       0001             80      00      022111DC       021CED74
    022112A8       0000256F    256F       0005             10      40      022111DC       021CED74
    02211264       0000256F    256F       0001             80      40      022111DC       021CED74
    02211220       0000256F    256E       0006             10      40      022111DC       021CED74
    022111DC       0000256F    256E       0001             8C      C0      028C24F8       021CF6E0


PENDING DATA SET QUEUE FOR FSS WRITER PRT803

TYPE PDQ ADDR RESQUEUE WTR OSE FDB  F1 F2 F3 F4  JNEWS     QUALIFIED  DATA SET NAME     DATA SET ID

JOB  020BA100 020750E8 7F6F880C0000 D4 00 00 20  00000000          .         .JESMSG
988C1CF6EC682A1000000000

     020BA200 020750E8 000000000000 00 00 00 00  00000000          .         .JESJCL
988C1D01DB53B01000000000

     020BA280 020750E8 000000000000 00 00 00 00  00000000          .         .JESMSG
988C1D09DCDADE1000000000

     020BA300 020750E8 000000000000 00 00 00 00  00000000          .STEP     .SYSPRINT
988C1D0B59A2CC1000000000

     020BA000 020750E8 000000000000 01 00 00 00  00000000          .STEP     .SYSUT2
988C1D0D11B1221000000000
```

3800 WRITER SEGCOMON PAGEIDS - are the most recent page numbers returned by the 3800 device in response to a “REQUEST PRINTER INFORMATION, SENSE INTERMEDIATE BUFFER” CCW sequence. These represent the position of user data within the 3800 with respect to the various synchronization points (that is, channel, transfer station, fuser, and stacker).

PENDING PAGE QUEUE FOR 3800 WRITER- is the format of the pending page queue entries currently active for the 3800 device.

TYPE - is the type of the PPQ. There are two PPQ types, ‘JOB’, or ‘OSE’.

PPQ ADDR - is the storage address of this PPQ entry.

RESQUEUE - is the storage address of the job's RESQUEUE entry.

WTR OSE FDB - is the spool address of the writer's OSE.

PPQAPID - is the adjusted pageid of this PPQ entry. This field represents the pageid if repositioning occurs within this entry.

PPQPID - is the pageid of this PPQ entry. This is the pageid returned from the 3800 device when the entry was created.

LINE POSITION - is the FCB line position returned from the 3800 device when the entry was created.

PENDING DATA SET QUEUE FOR FSS WRITER- is the format of the pending data set queue entries currently active for the FSS device.

TYPE - is the type of the PDQ. There are two PDQ types, 'JOB', or 'OSE'.

PDQ ADDR - is the virtual storage address of this PPQ entry.

RESQUEUE - is the storage address of the job's RESQUEUE entry.

WTR OSE FDB - is the spool address of the writer's OSE.

F1 hh to F4 hh - are the values (in hexadecimal) of the flag fields PDQFLG1 to PDQFLG4.

JNEWS hhhhhhhh - is the address of JESNEWS control block PDQJNEWS.

DATA SET ID - is the name of the data set.

Master OSE table

MASTER OSE TABLE (MOSE) is not formatted in the FSS dump. The MOSE table contains a summary of the information in the OSE that is out on spool. The MOSE is kept in main storage and is a system-related control block in that every output data set in the system is associated with an MOSE. The MOSE is mapped by the IATYOSE macro.

```
                                            MASTER OSE TABLE

LOC       GROUP     DEST      TYPE  FORMS  CARRIAGE  UCS FLASH MOD-RC CHARS CL PTY TOTLINES F1 F2 M1 OSS

02200010  ANYLOCAL  ANYLOCAL  PRT   1PRT   6         PN  NONE  NONE-0 GS10  A  00  00000437 00 10 00
022010CC
```

LOC hhhhhhhh - is the address of the MOSE entry.

GROUP cccccccc - is the name of the output device group.

DEST cccccccc - is the output destination.

TYPE cccccc - is the output device type.

FORMS cccccc - is the forms identifier.

CARRIAGE c - is the printer carriage tape or FCB identifier.

UCS cc - is the printer chain or train image (UCS) identifier.

FLASH cccccc - is the flash-ID, if printer on a 3800, or NONE.

MOD-RC cccc-s - is the copy modification and table reference character, if printed on a 3800, or NONE-0.

CHARS cccc [,+] - are the character arrangements, if printed on a 3800. The first arrangement is identified. If more than one arrangement is specified in the MOSE, a "+" sign follows the first arrangement name.

CL c - is the output class.

PTY hh - is the output priority.

TOTLINES dddddddd - specifies the total number of records reflected by this MOSE.

F1 hh F2 hh - is FLAG1 and FLAG2 fields, respectively.

M1 hh - specifies the value of OSEMFLG1.

OSS hhhhhhhh - specifies the OSS pointer.

TCP/IP Master OSE Table

TCP/IP Master OSE Table is not formatted in the FSS dump. The TCP/IP MOSE contains a summary of the TCP/IP OSEs that exist on spool. Related groups of TCP/IP data sets are associated with a unique TCP/IP MOSE. JES3 macro IATYOSE maps the TCP/IP MOSE.

```
                                   TCP/IP MASTER OSE TABLE
LOC      DEST     PTY   TPTY   FLAG  BFLG1  BFLG2  OSS
04CA9100 NODE3    02     02     00   20     08     04CAA05C
```

LOC hhhhhhhh - is the address of the TCP/IP/NJE MOSE entry.

DEST cccccccc - is the final destination of the network stream.

PTY hh - is the output priority.

TPTY hh - is the TCP/IP/NJE transmission priority.

FLAG hh - indicates the status of the network job.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT).

BFLG2 hh - indicates the state of the network job.

OSS hhhhhhhh - is the address of the OSS entry in the LOC field of the TCP/IP Allocated OSS Pool dump listing.

SNA/NJE Master OSE Table

SNA/NJE MASTER OSE TABLE is not formatted in the FSS dump. The SNA/NJE MOSE contains a summary of the SNA/NJE OSE that exist on spool. Related groups of SNA/NJE data sets are associated with a unique SNA/NJE MOSE. JES3 macro IATYOSE maps the SNA/NJE MOSE.

```
                                   SNA/NJE MASTER OSE TABLE
LOC      DEST     PTY   TPTY   FLAG  BFLG1  OSS
04CA92E0 NODE6    02     02     00   A0    04CAA2E0
04CA9100 NODE5    02     02     00   A0    04CAA0B8
```

LOC hhhhhhhh - is the address of the SNA/NJE MOSE entry.

DEST cccccccc -is the final destination of the network stream.

PTY hh - is the output priority.

TPTY hh - is the SNA/NJE transmission priority.

FLAG hh - indicates the status of the network job.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT).

BFLG2 hh - indicates the state of the network job.

OSS hhhhhhhh - is the address of the OSS entry in the LOC field of the SNA/NJE ALLOCATED OSS POOL dump listing.

TCP - TCP/IP/NJE Data

Various tables are formatted when you enter the "VERBX JES3" IPCS command, the "VERBX JES3 'OPTION=TCP'" dump formatting command (with or without the ASID or NSVNAME parameter), or the *START,DC,OPTION=TCP operator command. What table is formatted depends on the following conditions:

- Global Netserv and socket tables if the JES3 Global address space is available.
- Netserv control tables (NSCT) if CSA is available.
- Netserv socket control tables (NSST) under the associated NSCT, for each Netserv address space that is available. NSSTs are not formatted if the *START,DC,OPTION=TCP command is used.
- TCP/IP request (TCRQ) chains under the associated NSCT if CSA is available.

```
                                          JES3 GLOBAL NETSERV SUPUNITS

ADDRESS        DD
170C9818   JES3S1
```

```
                                            NETSERV WITHIN SUPUNIT

ADDRESS       NAME     FLG1    FLG2     STAK     SYSN     MAIN     ASID     FCT      TCPA        JBNO      RQ
170C98D0      JES3S1   40      00                SY1      16940000 001B     17E58050 170CD398    000002B8
174FA87

ADDRESS       PORT     HST
170C98D0      0000
```

```
                                          JES3 GLOBAL SOCKET TABLES

ADDRESS     NAME    FLG1  FLG2    NODE      NVNM    JTRN  OTRN  JRCV  ORCV  SPDX
170CF038  S313A      04    00   NODE3     JES3S1     02    02    02    02   0000
170D4E90  S313B      04    00   NODE4     JES3S1     02    02    02    02   0000
170CB8A0  S313C      04    00   NODE5     JES3S1     02    02    02    02   0000
172389F8  @0000001   06    00   NODE4     JES3S1     00    00    00    00   0000
17243AA8  @0000002   06    00   WSC       JES3S1     00    00    00    00   0000
17330138  @0000003   06    00   NODE6     JES3S1     00    00    00    00   0000

ADDRESS       PORT      ACTP         HST
170CF038      0000      00AF         9.57.1.158
170D4E90      0000      00AF         9.57.1.158
170CB8A0      0000      00AF         9.57.1.158
172389F8      0000      0404
17243AA8      0000      0405
17330138      0000      0406
```

```
                                             NETSERV CONTROL TABLES

ADDRESS       NNAM    STAK      TCT         EECB      WECB       MEM        FLG1   FLG2
16A71358      JES3S1            16A39648    00000000  804FF298   16A71218   00     80
                                        NETSERV SOCKET CONTROL TABLES

ADDRESS     NAME      NODE      TSCT       JTRN  OTRN  JRCV  ORCV    FEAT      SPDX   FLG1    DDNM
17418820    S3        NODE3     17582460   01    01    01    01      04000000  0000   04
176F1820    @0000001  NODE4     176EA058   01    01    01    01      04000000  0000   06

TCRQ WORK CHAIN

TCRQ JOB REQUEST CHAIN

TCRQ PENDING REQUEST CHAIN

TCRQ FREE CHAIN

ADDRESS       NNAM    NEXT     PREV     LEN         FUNC
16A394B8      JES3S1  00000000 00000000 00000190    01

ADDRESS       DATX
16A394B8
E2D6C3D2C5E3016C01000000E2F3404040404040D5D6C4C5F3404040D1C5E2F3E2F14040170CA3E8170CA3E800000000170
              C981817E2B8D4

ADDRESS                                      DATA
16A394B8       SOCKET %     S3        NODE3    JES3S1       Y    Y            S M
```

In the formatted Netservs:

FLG1
The flag byte NTSVFLG1.

FLG2
The flag byte NTSVFLG2.

STAK
The TCP/IP stack name.

SYSN
The system name on which the Netserv runs.

MAIN
The MPC corresponding to the above system name.

ASID
The address space of the Netserv.

FCT
The pointer to the TCP FCT corresponding to this Netserv.

TCPA
The a pointer to IATYTCP (data CSECT) for the above FCT.

JBNO
The JES3 job number of the Netserv.

RQ
The RESQUEUE address of the Netserv.

In the formatted Sockets:

FLG1
The flag byte SOCKFLG1.

FLG2
The flag byte SOCKFLG2.

NODE
The node name that this socket communicates with.

NVNM
The name of the Netserv under which this socket runs.

JTRN
The number of job transmitters (from the above node).

OTRN
The number of output transmitters (from the above node).

JRCV
The number of job receivers (from the above node).

ORCV
The number of output receivers (from the above node).

SPDX
The index of the spool partition where jobs received over this socket are assigned (from the a node).

In the formatted NSCTs:

NNAM
The name of the Netserv.

STAK
The TCP/IP stack name.

TCT
A pointer to the NJE/TCP Control Table in IAZNJTCP.

EECB
The task end ECB.

WECB
The work ECB.

MEM
The pointer to IATYMEM for the Netserv.

FLG1
The flag byte NSCTFLG1 (copy of NTSVFLG1).

FLG2
The flag byte NSCTFLG2 (copy of NTSVFLG2).

In the formatted NSSTs:

NODE
The name of the node that is connected to this socket.

TSCT
A pointer to the NJE/TCP socket control table in IAZNJTCP.

JTRN
The number of job transmitters (from the above node).

OTRN
The number of output transmitters (from the above node).

JRCV
The number of job receivers (from the above node).

ORCV
The number of output receivers (from the above node).

FEAT
The feature flags.

SPDX
The spool partition index (from the above node).

FLG1
Flag byte NSSTFLG1 (copy of SOCKFLG1).

DDNM
The current DD name for the dummy data set in the job/SYSOUT receiver.

In the formatted TCRQs:

NNAM
The name of the Netserv that the TCRQ is sent to.

NEXT
The address of the next TCRQ in the chain.

PREV
The address of the previous TCRQ in the chain.

LEN
The length of the TCRQ and associated data.

FUNC
The function code assigned to the TCRQ.

DATX
The first 60 bytes of the data contained in the TCRQ printed in hexadecimal form.

DATA
The same 60 bytes in DATX printed in character form.

Allocated OSS pool

ALLOCATED OSS POOL is not formatted in the FSS dump. Only allocated OSS entries are formatted; the entire OSS pool is not formatted. This control block is mapped by the IATYOSS macro.

```
                                         ALLOCATED OSS POOL
  LOC       RQCHAIN  JPTY   NEXT    PRTY MOSE     FLAG1 BUFF  RESQUEUE MAXLINES  MINLINES  TOTLINES  AVAIL SCHD OUTBIN
FLAG2
  17C682D8  00000000  02  00000000  02  17C673D0  04   00000005  179C9820 00000006  00000004  0000002A  0008  0000 00000000 00
```

LOC hhhhhhhh - is the address of the OSS.

RQCHAIN hhhhhhhh - is the RESQUEUE chain field. If more than one OSS is required to represent a job's output, this field points to the next OSS.

JPTY dd - is the job's priority.

NEXT hhhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the output priority.

MOSE hhhhhhhh - is the master OSE pointer.

FLG1 hh - is the OSSFLAG1 field.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQ for which the OSS represents output.

MAXLINES dddddddd - is the maximum record count.

MINLINES dddddddd - is the minimum record count.

TOTLINES dddddddd - is the total record count.

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

OUTBIN hhhhhhhh - is the printer output bin ID in hexadecimal.

FLAG2 hh - is the OSSFLAG2 field.

TCP/IP Allocated OSS pool

TCP/IP Allocated OSS Pool is not formatted in the FSS dump. JES3 formats only allocated OSS entries; the entire TCP/IP OSS pool is not formatted. JES3 macro IATYOSS maps this control block.

```
                                         TCP/IP ALLOCATED OSS
POOL
LOC      RQCHAIN  JPTY NEXT     PRTY MOSE     FLAG1 BUFF RESQUEUE AVAIL SCHD BFLG1 BFLG2 OUTBIN
GROUPID  LINES
04CAA05C 00000000 02   04CAA0B8 02   04CA9100 04    0001 047E3F00 0004  0000 20    08    00000000
TCP00001 00000018
04CAA0B8 00000000 02   00000000 02   04CA9100 04    0001 047E2000 0004  0000 20    08    00000000
TCP00001 00000018
```

LOC hhhhhhhh -is the address of the TCP/IP/NJE OSS.

RQCHAIN hhhhhhhh - is the RESQUEUE chain field. If more than one TCP/IP/NJE OSS is required to represent a job's output, this field points to the next TCP/IP/NJE OSS.

JPTY hh - is the job's priority.

NEXT hhhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the network job/SYSOUT stream priority.

MOSE hhhhhhhh - points to the MOSE for this OSS.

FLAG1 hh - is the status indicator (HOLD or NOHOLD) of the OSS.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQUEUE for which the OSS represents output.

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT) and indicates whether the data set is a job header, a data set header, a data set, or a job trailer.

BFLG2 hh - status flag, OSEBFLG2, of the network job. This flag indicates whether the job has been sent to a Netserv.

OUTBIN hhhhhhhh - is the printer output bin ID in hexadecimal.

GROUPID cccccccc - identifies a related group of network data sets.

LINES hhhhh - identifies the number of lines of the transmission stream represented by the OSS.

SNA/NJE Allocated OSS pool

SNA/NJE ALLOCATED OSS POOL is not formatted in the FSS dump. JES3 formats only allocated OSS entries; the entire SNA/NJE OSS pool is not formatted. JES3 macro IATYOSS maps this control block.

```
                                       SNA/NJE ALLOCATED OSS POOL
LOC       RQCHAIN  JPTY    NEXT     PRTY   MOSE     FLAG1 BUFF RESQUEUE  AVAIL   SCHD   BFLG1 BFLG2   OUTBIN
GROUPID  LINES
04CAA05C  00000000  02  04CAA1CC  02  04CA9100  04    0001 047E3F00  0004    0000    A0     00   00000000
BDT00001 00000
04CAA0B8  00000000  02  04CAA170  02  04CA9100  04    0001 048121A0  0006    0000    A0     00   00000000
BDT00000 00000
04CAA170  04CAA05C  02  04CAA05C  02  04CA9100  04    0001 047E3F00  0004    0000    A0     00   00000000
BDT00000 00000
04CAA1CC  04CAA228  02  04CAA228  02  04CA9100  04    0001 047E4400  0004    0000    A0     00   00000000
BDT00000 00000
04CAA228  00000000  02  04CAA284  02  04CA9100  04    0001 047E4400  0004    0000    A0     00   00000000
BDT00001 00000
04CAA284  00000000  02  00000000  02  04CA9100  04    0001 04812680  0006    0000    A0     00   00000000
BDT00000 00000
04CAA2E0  04CAA33C  02  04CAA33C  02  04CA92E0  04    0001 047E4900  0004    0000    A0     00   00000000
BDT00000 00000
04CAA33C  00000000  02  04CAA398  02  04CA92E0  04    0001 047E4900  0004    0000    A0     00   00000000
BDT00001 00000
04CAA398  00000000  02  00000000  02  04CA92E0  04    0001 048124E0  0006    0000    A0     00   00000000
BDT00000 000000
```

LOC hhhhhhhh -is the address of the SNA/NJE OSS.

RQCHAIN hhhhhhhh - is the RESQUEUE chain field. If more than one SNA/NJE OSS is required to represent a job's output, this field points to the next SNA/NJE OSS.

JPTY hh - is the job's priority.

NEXT hhhhhhhh - is the pointer to the next OSS chained to the MOSE.

PRTY hh - is the network job/SYSOUT stream priority.

MOSE hhhhhhhh - points to the MOSE for this OSS.

FLAG1 hh - is the status indicator (HOLD or NOHOLD) of the OSS.

BUFF hhhh - is the buffer number of the 1st OSE in the OSE chain represented by this OSS.

RESQUEUE hhhhhhhh - is the pointer to the RESQUEUE for which the OSS represents output.

AVAIL dddd - is the number of OSEs that are available for scheduling.

SCHD dddd - is the number of OSEs that are scheduled or in operator hold.

BFLG1 hh - indicates the type of the network stream (job or SYSOUT) and indicates whether the data set is a job header, a data set header, a data set, or a job trailer.

BFLG2 hh - status flag, OSEBFLG2, of the network job. This flag indicates the job has been sent to MVS/BDT or queued in the MVS/BDT work queue.

OUTBIN hhhhhhhh - is the printer output bin ID in hexadecimal.

GROUPID cccccccc - identifies a related group of network data sets.

LINES hhhhh - identifies the line number of the transmission stream represented by the OSS.

SUPUNITS Table

SUPUNITS TABLE is not formatted in the FSS dump but for JES3 represents devices belonging to the global main for JES3 support services (consoles, readers, printers, punches, main processors, tape units, RJP lines and networking lines).

```
                                            SUPUNITS TABLE
   LOC       TYPE     DDNAME    GROUP     UNIT1 UNIT2 FLAG1 FLAG2  SYSUNIT     DCTADD     UCB1
UCB2
 183653DC  NJELINE   LINE3     LOCAL      0505        80    00    16D6E8C8               00F12A30
 18365494  NJELINE   LINE4     LOCAL      0506        80    00    16D6E980               00F12A80
 1836554C  NJELINE   LINE2     LOCAL      0907        80    00    16D6EA38               00F219E0
 1836F704  NJESNDR   A00002SN  NODE2                  00    00    16D6EAF0               00000000
 1834BD88  PRT3203   PRT650    LOCAL      0650        A0    00    16D23FA8               00F19800
 1834BEE8  PRT3203   PRT658    LOCAL      0658        A0    00    16D24060               00F19870
 1834C048  PRT3203   PRT880    LOCAL      0880        A0    00    16D24118               00F1F620
 1834C1A8  PRT3211   PRT0002   LOCAL      0002        20    00    16D241D0               00F04190
 1834C308  PRT3211   PRT0003   LOCAL      0003        20    00    16D24288               00F04200
 1834C468  PRT3211   PRT0004   LOCAL      0004        20    00    16D24340               00F04270
 1834C5C8  PRT3211   PRT005    DGRP1      0005        A0    00    16D243F8               00F042E0
 1834C728  PRT3211   PRT1005   DGRP1      1005        A0    00    16D244B0               00F3ECF8
 1834D228  PRT38003  PRT1B03   LOCAL      1B03        A0    00    16D24A70               00F3F368
 1834D388  PRT3820   VPRT047   LOCAL                  00    00    16D6E6A0               00000000
 1834FE3C  PRTAFP1   PRT0006   LOCAL      0006        A0    00    16D24B28               00F04350
 18350C78  PRTAFP1   PRT0007   LOCAL      0007        A0    00    16D24BE0               00F043C0
 18363764  PRTAFP1   PRT0B08   LOCAL      0B08        A0    00    16D25AF8               00F292F8
 183645A0  PRTAFP1   PRT0B09   LOCAL      0B09        A0    00    16D25BB0               00F29368
 1836F7BC  PRTNJE    NJEPRT03  NETWORK                00    00    16D6EBA8               00000000
 1836F91C  PRTNJE    NJEPRT02  NETWORK                00    00    16D6EC60               00000000
 1836FA7C  PRTNJE    NJEPRT01  NETWORK                00    00    16D6ED18               00000000
 1834B548  PUN3525   PUN001B   LOCAL      001B        A0    00    16D23B58               00F04A00
 1836FBDC  PUNNJE    NJEPUN03  NETWORK                00    00    16D6EDD0               00000000
 1836FD3C  PUNNJE    NJEPUN02  NETWORK                00    00    16D6EE88               00000000
 1836FE9C  PUNNJE    NJEPUN01  NETWORK                00    00    16D6EF40               00000000
 1834B1B0  RDR3505   RDR0011   LOCAL      0011        A0    00    16D237C0               00F046C0
 1834B268  RDR3505   RDR0012   LOCAL      0012        A0    00    16D23878               00F04700
 1834B320  RDR3505   RDR0013   LOCAL      0013        A0    00    16D23930               00F04740
 1834B3D8  RDR3505   RDR1011   DGRP1      1011        A0    00    16D239E8               00F3F228
 1834B490  RDR3505   RDR1012   DGRP1      1012        A0    00    16D23AA0               00F3F268
 1834ABF0  SYSMAIN   SY1                              00    00    16D6E0E0               00000000
 1834ACA8  SYSMAIN   SY2                              00    00    16D6E198               00000000
 1834AD60  SYSMAIN   SY3                              00    00    16D6E250               00000000
 1834AE18  SYSMAIN   SY4                              00    00    16D6E308               00000000
 1834AED0  SYSMAIN   SY5                              00    00    16D6E3C0               00000000
 1834AF88  SYSMAIN   SY6                              00    00    16D6E478               00000000
 1834B040  SYSMAIN   SY7                              00    00    16D6E530               00000000
 1834B0F8  SYSMAIN   SYLOCAL8                         00    00    16D6E5E8               00000000
 18365604  TA03480   T0560     LOCAL      0560        A0    00    16D25C68               00F143F8
 183656BC  TA03480   T0561     LOCAL      0561        A0    00    16D25D20               00F144D8
 18365774  TA03480   T0562     LOCAL      0562        A0    00    16D25DD8               00F145B8
 1836582C  TA03480   T0563     LOCAL      0563        A0    00    16D25E90               00F14698
 183658E4  TA03480   T0564     LOCAL      0564        A0    00    16D25F48               00F14778
 1836599C  TA03480   T0565     LOCAL      0565        A0    00    16D26000               00F14858
 18365A54  TA03480   T0566     LOCAL      0566        A0    00    16D260B8               00F14938
 18365B0C  TA03480   T0567     LOCAL      0567        A0    00    16D26170               00F14A18
 18365BC4  TA03480   T0568     LOCAL      0568        A0    00    16D26228               00F14AF8
 1836B204  TA33490   T05B0     LOCAL      05B0        A0    00    16D2B868               02178500
 1836B2BC  TA33490   T05B1     LOCAL      05B1        A0    00    16D2B920               021785E0
 1836B374  TA33490   T05B2     LOCAL      05B2        A0    00    16D2B9D8               021786C0
 1836B42C  TA33490   T05B3     LOCAL      05B3        A0    00    16D2BA90               021787A0
 1836B4E4  TA33490   T05B4     LOCAL      05B4        A0    00    16D2BB48               02178880
 1836B59C  TA33490   T05B5     LOCAL      05B5        A0    00    16D2BC00               02178960
 1836B654  TA33490   T05B6     LOCAL      05B6        A0    00    16D2BCB8               02178A40
 1836B70C  TA33490   T05B7     LOCAL      05B7        A0    00    16D2BD70               02178B20
 1836B7C4  TA33490   T05B8     LOCAL      05B8        A0    00    16D2BE28               00F176B8
 175C65F8  NETSERV   JES3S4                           00    00    00000000               00000000
 185018A0  RMTCONSL  T0001CON  T0001                  00    4C              18501958   00000000
 185019F4  RDR       T0001RD1  T0001                  00    40              18501AAC   00000000
 18501B48  PRT       T0001PR1  T0001                  00    40              18501CA8   00000000
 18501D44  PRT       T0001PR2  T0001                  00    40              18501EA4   00000000
```

LOC hhhhhhhh - is the address of the table entry.

TYPE - is the device type as defined by the DTYPE parameter on the DEVICE initialization statement.

DDNAME - is the ddname as defined by the JNAME parameter on the DEVICE initialization statement.

GROUP - is the group name as defined by the DGROUP parameter on the DEVICE initialization statement.

UNIT1 - is the device number as defined by the JUNIT parameter on the DEVICE initialization statement.

UNIT2 - is the device number of the alternate path CTC.

FLAG1 hh and FLAG2 hh - are, respectively, SUPFLAG1 and SUPFLAG2 in IATYSUP.

SYSUNIT hhhhhhhh - is the address of the system unit table for the device, except when it is an RJP device.

DCTADD hhhhhhhh - is the address of the DCT if the device is an RJP device.

UCB1 hhhhhhhh - is the address of the primary UCB in storage.

UCB2 hhhhhhhh - is the address of the alternate path CTC UCB in storage.

FSS Table entries

```
                                                         FSS TABLE ENTRIES
FSSNAME    ---FSID---    ENTRY      FCT          CNDB        STATUS-FLAGS:   SYSTEM     JOB     ASID  FSS   -----ECF---- -FLAGS
           FSSID FSAID   ADDRESS    ADDRESS      ADDRESS     ST1   ST2  M/W   /JNAME    NUMBER        TYPE  ADDRESS MASK REQ OPT
CIFSS1     0001          00017CA8   00000000     00017D70     00    00   00   SY1       0000000  0000  02   00000000  00  00  08
CIFSS2     0002          00017A38   00000000     00017B00     00    00   00   SY1       0000000  0000  02   00000000  00  00  08
CIFSS3     0003          0001AA58   00000000     0001AB20     00    00   00   **NONE** 0000000  0000  02   00000000  00  00  40
CIFSS4     0004          0001A7E8   00000000     0001A8B0     00    00   00   SY2       0000000  0000  02   00000000  00  00  40
CIFSS5     0005          0001A578   00000000     0001A640     00    00   00   SY2       0000000  0000  02   00000000  00  00  40
CIFSS6     0006          0001A308   00000000     0001A3D0     00    00   00   SY6       0000000  0000  02   00000000  00  00  00
CIFSS7     0007          0001A098   00000000     0001A160     00    00   00   SY7       0000000  0000  02   00000000  00  00  40
CIFSS8     0008          0003A0A8   00000000     0003A170     00    00   00   SY3       0000000  0000  02   00000000  00  00  40
MF1        0009          0003DB98   00000000     0003DC60     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AC150   00000000     040AC19C     00    00   00   PRT008                          00000000  00  00
                 0002    040AC030   00000000     040AC07C     00    00   00   PRT00A                          00000000  00  00
                 0003    040B01E8   00000000     040B0234     00    00   00   PRTC03                          00000000  00  00
PRT804     000A          0003D928   00000000     0003D9F0     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040B0428   00000000     040B0474     00    00   00   PRT804                          00000000  00  00
PRTB03     000B          0003D6B8   00000000     0003D780     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040B0308   00000000     040B0354     00    00   00   PRTB03                          00000000  00  00
PRTB08     000C          0003D448   00000000     0003D510     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040B2E08   00000000     040B2E54     00    00   00   PRTB08                          00000000  00  00
PRTB09     000D          0003D1D8   00000000     0003D2A0     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040B2CE8   00000000     040B2D34     00    00   00   PRTB09                          00000000  00  00
VPRT047    000E          0001ED90   00000000     0001EE58     00    00   00   SY1       0000000  0000  01   00000000  00  00  7C
                 0001    03C95018   00000000     03C95064     00    00   00   VPRT047                         00000000  00  00
VPRT048    000F          0001EB20   00000000     0001EBE8     00    00   00   SY1       0000000  0000  01   00000000  00  00  7C
                 0001    040A1820   00000000     040A186C     00    00   00   VPRT048                         00000000  00  00
PRT006     0010          0001E8B0   00000000     0001E978     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AA050   00000000     040AA09C     00    00   00   PRT006                          00000000  00  00
PRT007     0011          0001E640   00000000     0001E708     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AC270   00000000     040AC2BC     00    00   00   PRT007                          00000000  00  00
PRT00B     0012          0001E3D0   00000000     0001E498     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AE388   00000000     040AE3D4     00    00   00   PRT00B                          00000000  00  00
PRT203     0013          0001E160   00000000     0001E228     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AE268   00000000     040AE2B4     00    00   00   PRT203                          00000000  00  00
PRT204     0014          0001FD90   00000000     0001FE58     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AE148   00000000     040AE194     00    00   00   PRT204                          00000000  00  00
PRT303     0015          0001FB20   00000000     0001FBE8     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AE028   00000000     040AE074     00    00   00   PRT303                          00000000  00  00
PRT304     0016          0001F8B0   00000000     0001F978     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AEE78   00000000     040AEEC4     00    00   00   PRT304                          00000000  00  00
PRT403     0017          0001F640   00000000     0001F708     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AED58   00000000     040AEDA4     00    00   00   PRT403                          00000000  00  00
PRT404     0018          0001F3D0   00000000     0001F498     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AEC38   00000000     040AEC84     00    00   00   PRT404                          00000000  00  00
PRT803     0019          0001F160   00000000     0001F228     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040AEB18   00000000     040AEB64     00    00   00   PRT803                          00000000  00  00
PRTC04     001A          00020D90   00000000     00020E58     00    00   00   SY1       0000000  0000  01   00000000  00  00  3C
                 0001    040B00C8   00000000     040B0114     00    00   00   PRTC04                          00000000  00  00
```

FSS TABLE ENTRIES contains:

FSSNAME - is the name of the FSS as supplied on an FSSDEF or DEVICE initialization statement.

FSSID - is the numeric id that uniquely identifies this FSS (assigned during initialization.)

FSAID - is the numeric id that, in combination with the FSSID, uniquely identifies this FSA. It is assigned during initialization.

Note: C/I FSS address spaces do not have FSAIDs.

ENTRY'S ADDRESS - is the address of the FSS table entry or FSA table entry.

FCT ADDRESS - is the address of the FCT that controls this FSS or FSA. This field is zero if the FSS or FSA is inactive.

CNDB ADDRESS - is the address of the CNDB containing message delivery information for the device.

STATUS-FLAGS - is the FSSSTAT1 field (startup status), FSSSTAT2 field (shutdown status) and the FSSMSTAT field (*MODIFY command status) for FSS and the FSASTAT1 field (startup status), FSASTAT2 field (shutdown status) and the FSAWSTAT field (FSS writer status) for FSA.

SYSTEM/JNAME - is the name of the system (specified either by a FSSDEF statement or a *MODIFY,F command) where the FSS and FSA are assigned to run. JNAME is the name of the device assigned to the FSA.

JOB NUMBER nnnnn - is the number of the job that is running as the FSS address space.

ASID nnnn - is the address space id of the FSS address space.

FSS TYPE - is the type of FSS address space. 01 indicates a writer FSS and 02 indicates a C/I FSS.

ECF - is the address and mask of the status change ECF.

FLAGS - is the request flags (FSSREQ) for use with the IATXFSS macro and the option flags (FSSOPT) representing the options on the FSSDEF initialization statement.

JESMAIN

```
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046FD000  SY1       046FA778  20000000  04C00350  10   HJS6608    00000000   00000000   0097111F
15534647  0B  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046FC000  SY2       046F97D0  20002000  04C00240  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046FB000  SY3       046F9750  20002000  04C04490  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046FA000  SY4       046F87D0  20002000  04C04B40  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046F9000  SY5       046F8750  20002000  04C92050  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046F8000  SY6       046F7CC0  20002000  04CA5120  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046F7000  SY7       046F7C40  20002000  04CA6500  20   HJS6606    00000000   00000000   00000000
00000000  00  00
********  JESMAIN   ********
********  JESMAIN   ********
********  JESMAIN   ********
   MPC     MPNAME   CTCIXIF   CTCFLAGS  CTCMSWA   MF   RELEASE    H/R DATE   H/R TIME   CFG DATE   CFG
TIME  PL  SL
046F6000 SYSLOCAL8  046F7BC0  20002000  04CA6200  20   HJS6606    00000000   00000000   00000000
00000000  00  00
```

CTCIXIF - address of JESXEF information; mapped by IXZYIXIF.

CTCFLAGS hhhhhhhh - are flag bytes CTCFLG1, CTCFLG2, CTCFLG3, and CTCFLG4.

CTCMSWA - address of IATMSDR work area.

MF hh - is the MPLFLG status byte. The MF field contains flag bytes that indicate the status of the main represented by the MPC.

RELEASE - the JES3 release that the system is running.

H/R DATE - hot start with refresh date associated with this main (MPCHRDAT).

H/R TIME - hot start with refresh time associated with this main (MPCHRTIM).

CFG DATE - *MODIFY,CONFIG date associated with this main (MPCCFDAT).

CFG TIME - *MODIFY,CONFIG time associated with this main (MPCCFTIM).

PL - the JES3 product level associated with the JES3 release running on this main (MPCPLEVL) as defined in macro IATYGLOB.

SL - the JES3 service level associated with significant JES3 maintenance running on this main (MPCSLEVL) as defined in macro IATYGLOB.

DESTQ

DESTQ is the destination routing table. It is used to queue all unsolicited staging areas received by JES3 to the appropriate JES3 function routine for processing. The table is mapped by macro IATYDSQ.

There is a unique table for every DESTQ that has staging areas associated with it.

Note: The addresses under staging addresses for the MAINSCHD DESTQ are not staging addresses, they are MPC addresses.

```
   ********  DESTQ     ********
   ********  DESTQ     ********
   ********  DESTQ     ********
   FUNCTION  FSSID  FSAID   QUEUE    FL  MK  ECF-ADR   EC
   MAINSERV                843D78C0  44  80  04801BCF  00  04D49890
   MAINSCHD                843D78E4  C4  00  00000000      04375000  04374000  04373000  04372000
04371000  04370000
   VERIFY                  843D7908  44  01  04801BD7  F8
   LOCATE                  843D792C  44  40  04C9C97C  00
   JESIO                   843D7950  00  00  00000000
   USERTKAL                843D7974  44  40  04801BD4  00
   SVC34                   843D7998  44  40  00BE8EF0  00
   WTO                     843D79BC  44  80  00BE8ED4  00
   RESERVED                843D79E0  00  00  00000000
   DYNALLOC                843D7A04  54  80  04CD8CB5  00
   COMALLOC                843D7A28  54  08  04CD8CB5  00
   COMUALOC                843D7A4C  54  40  04CD8CB5  00
   VERRESP                 843D7A70  54  10  04CD8CB5  00  04D49090  04DB1890  04DB1090  04DB2890
04DB2090  04DB3890
   CHGDDNME                843D7A94  54  20  04CD8CB5  00
   WTDDRVR                 843D7AB8  44  40  04801BE3  00
   SSIQ1                   843D7ADC  00  00  00000000
   SSIQ2                   843D7B00  00  00  00000000
   MODDRVR                 843D7B24  44  10  0484E780  00
   INQDRVR                 843D7B48  44  10  0484A83C  00
   CHUSEATR                843D7B6C  54  04  04CD8CB5  00
   PROCSYSO                843D7B90  44  20  04801227  01
   TAPE DDR                843D7BB4  44  04  04801BD4  00
   RESERVED                843D7BD8  00  00  00000000
   VARYPATH                843D7BFC  44  10  04801BCF  00
   ALLDYNAL                843D7C20  44  80  04801BC1  00
   UNADYNAL                843D7C44  44  40  04801BC1  00
   CDDDYNAL                843D7C68  44  20  04801BC1  00
   DASD DDR                843D7C8C  44  02  04801BD4  00
   FSS                     843D7CB0  08  00  0000001A      DYNAMIC DESTQ ANCHOR
             0001          04443590      00  00000000      FSS-LEVEL ENTRY
             0002          044435A0      00  00000000      FSS-LEVEL ENTRY
             0003          044435B0      00  00000000      FSS-LEVEL ENTRY
             0004          044435C0      00  00000000      FSS-LEVEL ENTRY
             0005          044435D0      00  00000000      FSS-LEVEL ENTRY
             0006          044435E0      00  00000000      FSS-LEVEL ENTRY
             0007          044435F0      00  00000000      FSS-LEVEL ENTRY
             0008          04443600      00  00000000      FSS-LEVEL ENTRY
             0009          04443610      00  00000000      FSS-LEVEL ENTRY
             000A          04443620      00  00000000      FSS-LEVEL ENTRY
             000B          04443630      00  00000000      FSS-LEVEL ENTRY
             000C          04443640      00  00000000      FSS-LEVEL ENTRY
             000D          04443650      00  00000000      FSS-LEVEL ENTRY
             000E          04443660      00  00000000      FSS-LEVEL ENTRY
             000F          04443670      00  00000000      FSS-LEVEL ENTRY
             0010          04443680      00  00000000      FSS-LEVEL ENTRY
             0011          04443690      00  00000000      FSS-LEVEL ENTRY
             0012          044436A0      00  00000000      FSS-LEVEL ENTRY
             0013          044436B0      00  00000000      FSS-LEVEL ENTRY
             0014          044436C0      00  00000000      FSS-LEVEL ENTRY
             0015          044436D0      00  00000000      FSS-LEVEL ENTRY
             0016          044436E0      00  00000000      FSS-LEVEL ENTRY
             0017          044436F0      00  00000000      FSS-LEVEL ENTRY
             0018          04443700      00  00000000      FSS-LEVEL ENTRY
             0019          04443710      00  00000000      FSS-LEVEL ENTRY
             001A          04443720      00  00000000      FSS-LEVEL ENTRY
   CI DRVR                 843D7CD4  44  40  04801BF0  00
   IO ERROR                843D7CF8  44  01  04801BD4  00
   BDT                     843D7D1C  44  40  04801D9A  00
   SNA NJE                 843D7D40  44  80  04801D9A  00
   ARM PJCL                843D7D64  44  80  048018AC  00
   SAPI                    843D7D88  44  04  04801227  01
   ENSTATUS                843D7DAC  44  20  04801BE3  00
   RESERVED                843D7DD0  00  00  00000000
   RESERVED                843D7DF4  00  00  00000000
   RESERVED                843D7E18  00  00  00000000
   RESERVED                843D7E3C  00  00  00000000
   RESERVED                843D7E60  00  00  00000000
   RESERVED                843D7E84  00  00  00000000
   RESERVED                843D7EA8  00  00  00000000
```

FUNCTION - is the internal name of the destination queue.

FSSID - is the numeric id that uniquely identifies this FSS (assigned during initialization.)

FSAID - is the numeric id that, in combination with the FSSID, uniquely identifies this FSA. It is assigned during initialization.

QUEUE hhhhhhhh - is the address of the queue entry.

FL hh - is flag byte DSQFLG.

MK hh - is the ECF mask.

ECF-ADDR hhhhhhhh - is the ECF address. The ECF is posted when a staging area is added to the queue.

EC hh - is the contents of the ECF whose address is in MSK-ADDR.

DYNAMIC DESTQ ANCHOR - indicates that this is the primary DESTQ entry for a dynamic destination queue. The ECF-ADDR field contains the number of FSS-level entries.

FSS-LEVEL ENTRY - indicates that this is the FSS-level dynamic destination queue entry. The ECF-ADDR field contains the number of FSA-level destination queues.

MAINSCHD

MAINSCHD shows the staging areas on the DESTQ. BRAVO is the queue of staging areas chained from MPSTAGE in the MPC for the main named BRAVO in the initialization stream. SVC34 is the queue of staging areas chained from the SVC34 entry on the DESTQ. Queues for other MPC entries and other entries on the DESTQ are shown if the staging areas exist. The formatted areas are mapped by the macro IATYSTA.

```
********   MAINSCHD   ********
********   BRAVO      ********

   SA          MESSAGE TOKEN      FLAGS     SAID     FSID      TP    FU    MD    SD    RD    UF    RECL      MPC
0264C428     00042090005A018   80000008   0014   00000000    80    05    00    07    06    00    0164
0268A000
02662AF0     0000420E0009741   80000008   0016   00000000    80    05    00    07    06    00    0164
0268A000
02654C70     0000421000096C2   80000008   0017   00000000    80    05    00    07    06    00    0164
0268A000
02660F20     000459C81990000   80000008   0018   00000000    80    05    00    07    06    00    0164
0268A000
02664130                       80000008   0019   00000000    80    05    00    07    06    00    0164
0268A000
02652B10                       80000008   001A   00000000    80    05    00    07    06    00    0164
0268A000
02656578                       80000008   001B   00000000    80    05    00    07    06    00    0164
0268A000
0265E830                       80000008   00EB   00000000    80    05    00    07    06    00    0164
0268A000
02658C68                       80000008   0024   00000000    80    05    00    07    06    00    0164
0268A000
```

STAGING AREA ADDRESSES - is a list of the addresses of the first six staging areas for the staging areas on the destination routing table.

Note: For the MAINSCHD queue, it is not the staging area address, but the MPC addresses of the main service functions. The MPSTAGE field in IATYMPC points to the staging areas. The MPCs are already formatted under the heading MPC/S.

SA hhhhhhhh - is the address of the staging area.

MESSAGE TOKEN - is the value for the JESXCF message token for the JESXCF message corresponding to this staging area.

FLAGS hhhhhhhh - are flag bytes STAFLAG1, STAFLAG2, STAFLAG3, and STAFLAG4.

SAID hhhh - is the address space identification (ASID) of the address space associated with the staging area.

FSID hhhhhhhh - is the functional subsystem identifier of the address space and application from which the staging area came or to which the staging area is going.

TP hh - is the type of SSISERV request.

FU hh - is the function code of an SSISERV macro (SSOB function code of requester or JES3 destination code).

Code
: **Destination Queue**

01
: TSO output

02
: TSO cancel

03
: TSO status

04
: end-of-task

05
: job select

06
: allocate

07
: unallocate

08
: end-of-memory

09
: write-to-operator (WTO)

0A
: SVC34

0B
: validate id

0C
: job termination

0D
: job requeue

10
: OPEN

11
: CLOSE

12
: CHECKPOINT

13
: RESTART

14
: request job id

15
: return job id

16
: beginning of step

17
: dynamic allocation

18
: common allocation

19
common unallocation

1A
change ddname

1B
change ENQ

1C
DDR candidate select

1D
DDR candidate verify

1E
DDR DASD swap request

1F
DDR swap complete

20
SVC34 command failure

22
write-to-log

28
early volume release

35
FSS/FAA connect/disconnect

36
subsystem version information

3E
BDT subsystem

3F
BDT staging area shuttle

40
transaction processing

48
Vary path

4B
Notify user

4D
Persistent JCL

4F
SAPI (SSOB function code)

50
Extended Status (SSOB function code)

80
main service

81
generalized main scheduling

82
verify

83
locate

84
JES3 data management

85
user track allocation

86
consoles SVC34

87
consoles WTO

89
verify response

8A
work to do driver

8B
SSICS

8C
SSICS

8D
ENDREQ

8E
modify driver

8F
inquiry driver

90
SYSOUT interface

91
system connect

92
alternate CTC retry

93
main service

94
staging area shortage

95
DYNAL allocation

96
DYNAL unallocation

97
DYNAL change DDNAME

98
communication from an FSS

99
CI Driver

9A
IOERR

9B
FSS start failure

9D
SAPI (JES3 destination code)

9E
Extended Status (JES3 destination code)

9F
Workload Manager

A0
JESMSG

A1
Local Module Load/Call

A2
TCP/IP Server Request

A3
JES Properties - Class Information

A4
JES Properties - Initiator Information

A5
JES Properties - Node Information

A6
JES Properties - Spool Partition

A7
JES Properties - JESplex Information

A8
Scheduler JCL Facilities

MD hh - is the MOD parameter of the SSISERV macro to further identify requests within function code.

SD hh - is the number of the main sending a request.

RD hh - is the number of the main receiving a request.

UF hh - is the user-defined staging area flags (STAUFLG field).

RECL hhhh - is the record length of the staging area data for the request.

MPC hhhhhhhh - is the address of the main processor control table associated with the staging area.

MEMDATA

MEMDATA (memory data control block) represents information about active address spaces within a given main and jobs within an address space. There is one MEMDATA per address space. They are used by SSI routines for job information. MEMDATA is mapped by macro IATYMEM.

```
*******  MEMDATA   *******
*******  MEMDATA   *******
*******  MEMDATA   *******

MEMDATA   ASID    ASCB     WSELS    GROUPNM    ENTRY1    JOB1     ENTRY2   JOB2

0238A448  00B4  00F24A00  00000000           00000000           00000000
0238A230  00B3  00F24C00  00000000  SYSLOG   00000000           00000000
023A1580  00B2  00F25300  00000000  SYSLOG   00000000           00000000
026D0020  00B1  00F24E00  00000000  SYSLOG   00000000           00000000
02395C80  0093  00F25A80  00000000  SYSLOG   023995C8  LOG90CA1  00000000
0239C218  009A  00F25500  00000000  SYSLOG   02399EA0  LOG90CA1  00000000
0239CBD0  008E  00F25700  00000000  SYSLOG   0238ADE0  LOG90CA1  00000000
0239C5A8  009E  00F1F600  00000000  SYSLOG   00AE24F8  LOG90CA1  00000000
026CEE20  00A2  00F1F800  00000000  SYSLOG   00B3A748  LOG90CA1  00000000
0239E310  0052  00F1FA00  00000000  SYSLOG   02396548  LOG90CA1  00000000
0239C478  00A0  00F1FC00  00000000  SYSLOG   0238A728  LOG90CA1  00000000
```

MEMDATA hhhhhhhh - is the address of the MEMDATA control block in CSA.

ASID hhhh - is the ASID of the user address space represented by this MEMDATA control block.

ASCB hhhhhhhh - is the address of the address space control block of the user address space represented by this MEMDATA.

WISEQ hhhhhhhh - for WLM managed initiators, this is the unique sequence number assigned to the initiator. For JES managed initiators or demand select jobs this is always zero.

WSELS hhhhhhhh - is a queue of SEL control blocks. This queue is the result of requests that had to be postponed because the barrier count for ACTSAS was reached.

GRP/SRVC cccccccc - For JES managed initiators, this is the name of the group that belongs to the initiator for the the job associated with this MEMDATA. For WLM managed initiators, this is the name of the service class that belongs to the initiator for the the job associated with this MEMDATA. For demand select jobs this is an 8-character identifier that was used when the address space was created.

ENTRY1 hhhhhhhh - is the address of a MEMDATA entry containing control data for the initiator (or the job, if demand select).

JOB1 cccccccc - is the name of the initiator (or the job, if demand select) for the associated address space.

ENTRY2 hhhhhhhh - is the address of a MEMDATA entry containing control data for the job started by the initiator and identified in JOB2.

Note: JES3's own entry contains the job name in ENTRY2, even though it is a demand select job.

JOB2 cccccccc - is the name of the job started by the initiator in the associated address space.

MULTI-VERSION DATA ACCESS MASTER CONTROL AREAS

The Multi-Version Data Access Master Control areas are control blocks in CSA that control serialized access to the JES3 tables SETUNITS, SETNAMES, and DYNALDSN tables, which are also in CSA. The control areas are used by JES3 to determine if there are any address spaces still using an old version of a table when a new version of the table is built upon a JES3 restart (including additions, deletions, and changes during a hot start with refresh). When an old version of a table is no longer being used, its storage is freed. Each table has one master control area and each master control area has zero or more version control areas. Each version control area points to and controls one version of the table.

A sample output of the multi-version data access master control areas is shown below:

```
                    MULTI-VERSION DATA ACCESS MASTER CONTROL AREAS
ADDRESS           TABLE             CVCT      OVCT      BVCT     TTYP    CUSE      OUSE      BTKN
04C7A930  SETUNITS TABLE          04CDB140  00000000  00000000   01    00000000  00000000  00000000
   VERS  04CDB140  TYPE=CURRENT  VNXT=00000000  VTAB=04BB6B60  TSIZ=0000C49C  VUSE=00000000  MCTL=04C7A930  TMFL=04BB90C8

04C7A978  SETNAMES TABLE          04CDFF58  00000000  00000000   02    00000000  00000000  00000000
   VERS  04CDFF58  TYPE=CURRENT  VNXT=00000000  VTAB=04BC5430  TSIZ=00000BCC  VUSE=00000000  MCTL=04C7A978  TMFL=00000000

04C7A9C0  DYNALDSN TABLE          04CE3E28  00000000  00000000   03    00000000  00000000  00000000
   VERS  04CE3E28  TYPE=CURRENT  VNXT=00000000  VTAB=04D5D1C8  TSIZ=00000014  VUSE=00000000  MCTL=04C7A9C0  TMFL=00000000

04C7AA08  RESERVED                00000000  00000000  00000000   04    00000000  00000000  00000000
04C7AA50  RESERVED                00000000  00000000  00000000   05    00000000  00000000  00000000
04C7AA98  RESERVED                00000000  00000000  00000000   06    00000000  00000000  00000000
04C7AAE0  RESERVED                00000000  00000000  00000000   07    00000000  00000000  00000000
04C7AB28  RESERVED                00000000  00000000  00000000   08    00000000  00000000  00000000
04C7AB70  RESERVED                00000000  00000000  00000000   09    00000000  00000000  00000000
04C7ABB8  RESERVED                00000000  00000000  00000000   0A    00000000  00000000  00000000
```

GRPTBL/S

GRPTBL/S define characteristics of a job class group defined by a GROUP initialization statement.

```
*******  GRPTBL/S  *******

 GRPTBL      GRPNAM    MODE   GS   FL     RESQ       EXRESC    BR   JSP  ENABLED   DFCB

02AC81A0   JES3TEST   JES    01   40   02BC0358   02AD52F8   NO   ALL  FFFFFFFF  00000000
02AC81D0   JES3HOLD   JES    02   40   00000000   02AD5340   NO   ALL  FFFFFFFF  00000000
02AC8200   EF         WLM    03   40   02A88738   02AD5388   NO   ALL  FFFFFFFF  00000000
02AC8230   GH         JES    04   40   02AA2BE8   02AD53D0   NO   ALL  FFFFFFFF  00000000
02AC8260   IJ         JES    05   40   02AA2548   02AD5418   NO   ALL  FFFFFFFF  00000000
02AC8290   JS3BATCH   JES    06   80   00000000   02AD5460   NO   ALL  FFFFFFFF  00000000
```

GRPTBL hhhhhhhh - is the address of the group table.

GRPNAM cccccccc - is the name of the job class group, as defined by the NAME parameter of a GROUP initialization statement.

MODE - is WLM if the group is WLM managed, JES if the group is JES managed.

GS dd - is a unique sequence number assigned to the group.

FL hh - is flag byte MGFLAG.

RESQ hhhhhhhh - is the address of the first RESQUEUE entry in a chain of RESQUEUE entries that belong to this group.

EXRESC hhhhhhhh - is the address of the execution resources table that defines the resources to allocate.

BR hh - is the priority level at which jobs must be scheduled before any jobs below the barrier priority can schedule for execution. NO is inserted if BAR was not specified.

JSP hhhh - is the number of jobs to examine in the group for scheduling at any one time. ALL is inserted if JSPAN=ALL was specified or invoked as a default.

ENABLED hhhhhhhh - is a main mask of systems where the group has been enabled.

DFCB hhhhhhhh - is a pointer to the device fence control block for the group (zero if none).

EXRESC/S

EXRESC/S is the execution resources table. It is the result of EXRESC parameters on the GROUP initialization statement. These parameters define the execution resources to be assigned to a job class group. EXRESC is mapped by macro IATYMGP.

```
*******  EXRESC/S  *******

 EXRESC   MS  GS  PS   DI    AI    PI    UI   ST  AL  JL  TI    RI    DFCB

02AD52F8  01  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5340  01  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5388  01  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD53D0  01  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5418  01  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5460  01  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD54A8  02  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD54F0  02  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5538  02  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5580  02  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD55C8  02  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5610  02  06  86  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5658  03  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD56A0  03  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD56E8  03  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5730  03  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5778  03  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD57C0  03  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5808  04  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5850  04  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5898  04  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD58E0  04  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5928  04  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5970  04  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD59B8  05  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5A00  05  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5A48  05  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5A90  05  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5AD8  05  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5B20  05  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5B68  06  01  86  0003  0003  0000  0001  00  48  00  0000  0000  00000000
02AD54F0  02  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5538  02  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5580  02  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD55C8  02  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5610  02  06  86  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5658  03  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD56A0  03  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD56E8  03  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5730  03  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5778  03  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD57C0  03  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5808  04  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5850  04  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5898  04  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD58E0  04  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5928  04  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5970  04  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD59B8  05  01  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5A00  05  02  80  0005  0000  0000  0000  00  30  00  0000  0000  00000000
02AD5A48  05  03  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5A90  05  04  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5AD8  05  05  86  0003  0000  0000  0000  00  48  00  0000  0000  00000000
02AD5B20  05  06  82  0002  0000  0000  0000  02  91  C0  0000  0000  00000000
02AD5B68  06  01  86  0003  0003  0000  0001  00  48  00  0000  0000  00000000
```

EXRESC hhhhhhhh - is the address of the execution resources table.

MS dd - is the unique sequence number of the main for this entry.

GS hh - is a unique group sequence number.

PS hh - is flag byte MGXPOST.

DI hhhh - is the number of initiators exclusively assigned (dedicated initiators) to the job class group.

AI hhhh - is the number of dedicated initiators that have been started (activated initiators).

PI hhhh - is the number of dedicated initiators for which the S INIT command has been issued, but for which no INIT STARTED message have been received (pending initiators).

UI hhhh - is the number of initiators in use (that is, jobs active).

ST hh - is flag byte MGXSTAT.

AL hh - is flag byte MGXALLOC.

JL hh - is flag byte MGXJAL.

TI hhhh - is the number of initiators ended by the system.

RI hhhh - is the number of ended initiators that can be restarted.

CLASS/S

CLASS/S are the class tables generated from the CLASS initialization statement. It is used to define characteristics of a JES3 job class as it appears on the JOB statement, MAIN statement, or by default. The class table is mapped by macro IATYMCL.

```
*******  CLASS/S  *******

 CLSTBL    CLSNAM    CONSTR   SD  SM  TD  TM  IO  PR  GS  CS  FL  IN  ENABLED   ELIGIBLE

02AC82C0  A         00000000  00  FF  00  FF  04  FF  01  01  00  7F000000  00  7F000000
02AC8300  A1        00000000  00  FF  00  FF  04  FF  01  02  00  7F000000  00  7F000000
02AC8340  B         00000000  00  FF  00  FF  04  FF  03  03  00  7F000000  00  7F000000
02AC8380  C         00000000  00  FF  00  FF  04  FF  04  04  00  7F000000  00  7F000000
02AC83C0  D         00000000  00  FF  00  FF  04  FF  02  05  00  7F000000  00  7F000000
02AC8400  E         00000000  00  FF  00  FF  01  FF  03  06  00  7F000000  00  7F000000
02AC8440  EDIEAKLL  00000000  00  FF  00  FF  04  FF  01  07  00  7F000000  00  7F000000
02AC8480  F         00000000  00  FF  00  FF  01  FF  03  08  00  7F000000  00  7F000000
02AC84C0  G         00000000  00  FF  00  FF  04  FF  04  09  00  7F000000  00  7F000000
02AC8500  H         00000000  00  FF  00  FF  04  FF  04  0A  00  7F000000  00  7F000000
02AC8540  I         00000000  00  FF  00  FF  04  FF  05  0B  00  7F000000  00  7F000000
02AC8580  J         00000000  00  FF  00  FF  04  FF  05  0C  00  7F000000  00  7F000000
02AC85C0  R         00000000  00  FF  00  FF  04  FF  01  0D  00  7F000000  00  7F000000
02AC8600  S         00000000  00  FF  00  FF  04  FF  02  0E  00  7F000000  00  7F000000
02AC8640  SD        00000000  00  FF  00  FF  04  FF  01  0F  00  7F000000  00  7F000000
02AC8680  T         00000000  00  FF  00  FF  04  FF  02  10  00  7F000000  00  7F000000
02AC86C0  1         00000000  00  FF  00  FF  04  FF  01  11  00  7F000000  00  7F000000
02AC8700  1A        00000000  00  FF  00  FF  04  FF  01  12  00  7F000000  00  7F000000
02AC8740  12        00000000  00  FF  00  FF  04  FF  01  13  00  7F000000  00  7F000000
02AC8780  12345678  00000000  00  FF  00  FF  04  FF  01  14  00  7F000000  00  7F000000
02AC87C0  2         00000000  00  FF  00  FF  04  FF  02  15  00  7F000000  00  7F000000
02AC8800  3         00000000  00  FF  00  FF  04  FF  03  16  00  7F000000  00  7F000000
02AC8840  4         00000000  00  FF  00  FF  04  FF  01  17  00  7F000000  00  7F000000
02AC8880  5         00000000  00  FF  00  FF  04  FF  04  18  00  7F000000  00  7F000000
02AC88C0  6         00000000  00  FF  00  FF  04  FF  05  19  00  7F000000  00  7F000000
02AC8900  7         00000000  00  FF  00  FF  04  FF  02  1A  00  7F000000  00  7F000000
02AC8940  8         00000000  00  FF  00  FF  04  FF  03  1B  00  7F000000  00  7F000000
02AC8980  9         00000000  00  FF  00  FF  04  FF  05  1C  00  7F000000  00  7F000000
```

CLSTBL hhhhhhhh - is the address of the table.

CLSNAM cccccccc - is the name of the job class for this entry.

CONSTR hhhhhhhh - is the address of a class constraints entry.

SD hh - is the current total setup depth accumulated.

SM hh - is the maximum number of jobs in this job class that can concurrently be in setup. This is derived from the SDEPTH parameter on the CLASS statement.) ‘FF’ means no limit.

TD hh - is the number of jobs active in this job class in the complex.

TM hh - is the maximum number of jobs in this job class than can be currently in execution. This is derived from the TDEPTH parameter on the CLASS statement.) ‘FF’ means no limit.

IO hh - is the I/O rate specified in the IORATE parameter of the CLASS initialization statement or MAIN statement. A value of 01 indicates a low I/O rate, a value of 02 indicates a high I/O rate, and a value of 04 indicates a medium I/O rate.

PR hh - is the JES3 job priority to be assigned to each job in this class.

GS hh - is the unique sequence number of the group for this job class.

CS hh - is the unique sequence number of this job class.

FL hh - is flag byte MCSCHFG.

IN hh - is flag bye MCINFLG

ENABLED hhhhhhhh - is a bit pattern representing the enable-disable mask (1=enabled) for mains that can execute this job class and are varied online. The high-order byte corresponds to the main mask.

ELIGIBLE hhhhhhhh - is a bit pattern representing the enable-disable mask (1=enabled) for mains eligible to execute jobs in this class but not necessarily online. If a bit in ENABLED is on with its corresponding ELIGIBLE bit off, a condition of exceeded constraints exists. The high order byte corresponds to the mask.

RESQ/S

RESQ/S is the resident job queue for JES3. It is formatted for all jobs that have been sent to, or selected for, a main for execution. It contains information used to start a job. It is mapped by macro IATYRSQ.

```
RESQ         INDEX       GRPCHN     JOBID       JOBNAME  ASID    CS   GS   MS   M1   M2    SRVCLASS  WLMCLSTK
WISEQ

03B6C000   ONMAIN      03B6C500   JOB00001  SYSLOG    0001     01   01   01   00   00              00000000
00000000

03B6C500   ONMAIN      03B6C280   JOB00004  VTAMJ3    001B     01   01   01   00   00              00000000
00000000

003B6280   ONMAIN      00000000   JOB00007  TCAS      001D     01   01   01   00   00              00000000
00000000
```

RESQ hhhhhhhh - is the address of the RESQ.

INDEX cccccc - is a job status corresponding to the field RQINDEX.

GRPCHN hhhhhhhh - is the address of the next RESQ in the group chain or MPC chain.

JOBID cccccccc - is the job identifier associated with the job.

JOBNAME cccccccc - is the job name.

CS hh - is the unique sequence number of this job class.

GS hh - is the unique sequence number of the group for this job class.

MS nn - is the MPC (IATYMPC) sequence number.

M1 hh - is the flag byte RQMSFL1.

M2 hh - is the flag byte RQMSFL2.

SRVCLASS cccccccc - is the WLM service class for the job.

WLMCLSTK hhhhhhhh - is the WLM classification token for the job.

WISEQ hhhhhhhh - is the sequence number of the WLM managed initiator that selected the job, zero if the job is running in a JES managed group.

JSQ/S

JSQ/S represents the job select queue (JSQ) elements. They are used by generalized main scheduling (GMS) for communication with initiators through SSI routines. The area is mapped by macro IATYJSQ.

```
*******  JSQ/S   *******

 JSQTBL    MPNAME      FI   F2   F3   F4   F5   F6   F8 TYPE    GRP/SRVC    WISEQ      JOBNAME
JOBID        ASID

0267074E  CHARLIE      40   00   00   00   00   00   00  JES    IJ
INT00028      0029
0266397E  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000001
INT04062      0301
02685246  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000002
INT04058      012F
02684CB6  CHARLIE      40   00   00   00   00   00   00  JES    IJ
INT00027      0120
02656E76  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000003
INT04066      0202
0266606E  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000004
INT00019      0302
026568E6  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000005
INT03634      0203
0265B98E  CHARLIE      40   00   00   00   00   00   00  JES    GH
INT00032      012E
0268923E  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000006
INT04064      0405
02686E16  CHARLIE      40   00   00   00   00   00   00  JES    GH
INT00021      0142
02689D5E  CHARLIE      40   00   00   00   00   00   00  JES    IJ
INT00030      0308
02686886  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000007
INT03632      0277
02668CEE  CHARLIE      40   00   00   00   00   00   00  WLM    DISCRETN    00000008
INT04070      0406
02659DBE  CHARLIE      40   00   00   00   00   00   00  JES    GH
INT00025      022B
0265340E  CHARLIE      80   10   00   00   00   00   00  JES    SYSLOG
JOB15063      0143
02666B8E  CHARLIE      40   00   00   00   00   00   00  JES    JES3TEST
INT00017      022F
026541F6  CHARLIE      40   00   00   00   00   00   00  JES    JES3TEST
INT00020      03E0
02688456  CHARLIE      80   10   00   00   00   00   00  JES    SYSLOG
JOB15243      022D
02657996  CHARLIE      80   10   00   00   00   00   00  JES    SYSLOG
JOB15416      0204
0264C4CE  BRAVO        80   10   00   00   00   00   00  JES    STARTING
JOB00049      0307
02662B96  BRAVO        80   10   00   00   00   00   00  JES    STARTING
JOB00053      012D
02654D16  BRAVO        80   10   00   00   00   00   00         STARTING
JOB00054      0141
02660FC6  BRAVO        80   10   00   00   00   00   00         STARTING
JOB00055      0069
026641D6  BRAVO        80   10   00   00   00   00   00         STARTING
JOB00056      0321
02652BB6  BRAVO        80   10   00   00   00   00   00         STARTING
JOB00057      009A
0265661E  BRAVO        80   10   00   00   00   00   00         STARTING
JOB00058      0127
0265E8D6  BRAVO        80   10   00   00   00   00   00         STARTING
JOB01720      022E
```

JSQTBL hhhhhhhh - is the address of the JSQ.

MPNAME cccccccc - is the name of the main.

F1-F6, F8 hh - are flag bytes JSQFLG1 - JSQFLG6, JSQFLG8 respectively.

TYPE ccc - JES or WLM, indicating the type of initiator making this job selection request.

GRP/SRVC cccccccc - For JES managed initiators, this is the name associated with the initiator group. For WLM managed initiators, this is the service class associated with the initiator.

INITGRP cccccccc - is the name associated with the initiator group.

JOBNAME cccccccc- is the name of the job.

JOBID cccccccc - is the job identifier associated with the job.

MPC/S

MPC/S begins the list of the main control (MPC) tables. There is one MPC table for each main in a complex. Each main contains the MPCs of all defined mains. The source of the data is the MAINPROC initialization statement. Macro IATYMPC maps the MPC.

```
********   MPC/S   ********

 MPCDAT    MPNAME   SELECT     ACTSTA     EXRESC     MAINFCT     AI    DEEP    RQONMN    MAX1   WTOT

02690000   JULLIET    Z       00000000   02AD52F8   0275EC70   0000   0000   00000000   0000    0000
0268F000   ECHO       Z       00000000   02AD54A8   0275F158   0000   0000   00000000   0000    0000
0268E000   INDIA      Z       00000000   02AD5658   02762E30   0000   0000   00000000   0000    0000
0268D000   LIMA       Z       00000000   02AD5808   02762A78   0000   0000   00000000   0000    0000
0268C000   GOLF       Z       00000000   02AD59B8   027640C0   0000   0000   00000000   0000    0000
0268B000   CHARLIE    Z       00000000   02AD5B68   02AD4080   0013   0003   02A844F8   0000    0000
0268A000   BRAVO      Z       02689460   02AD5D18   02ADD6B0   0037   0004   02A841A8   0000    0000
```

MPCDAT hhhhhhhh - is the address of the MPC.

MPNAME hhhhhhhh - is the name of the MPC (main) as specified on the MAINPROC statement.

SELECT cccccccc - is the name of the job selection mode as defined by the SELECT parameter on the MAINPROC initialization statement, unless the default of JS3BATCH is applied.

ACTSTA - is the address of the active staging area.

EXRESC - is the address of the first execution resource entry for this main processor.

MAINFCT - is the address of the MAIN FCT that is responsible for the Generalized Main Scheduling (GMS) function for this main processor.

AI - is the number of allocated initiators for this main processor.

DEEP - is the number of jobs in execution on this main processor.

RQONMN - is the address of the first RQ on the "on main" or execution queue for this processor.

MAXI - The initiator high water mark value for this main.

WTOT - The total number of WLM managed jobs running on this main.

Workload Manager Data Area

Workload Manager Data Area represents the data used by the JES3 WLM FCT, which communicates with the Workload Manager component of z/OS. This information is formatted when the WLM formatter is invoked using the IPCS command `VERBX JES3 'OPTION=WLM'` or the Dump Core command `*S DC,OPTION=WLM`. The following data areas are formatted:

- **IATYWLM**, the JES3 WLM data area.
- **IATYSRVC**, the JES3 data area for a WLM service class, including the sampling statistics for service class.
- **IATYWJS**, the GMS WLM job sampling elements.

```
WORKLOAD MANAGER DATA AREA - 057D1BE0

 CONNTOKN                              SRVDEFID
 050DC008  8396858686A24040AF511DD85C273000C9C2D4E4E2C5D940C1E2C1D740404040

 IATWLCSM  IATWLDRG  IATWLDRV  IATWLEVT  IATWLFJR  IATWLFSM  IATWLGSM  IATWLJCK  IATWLLSM  IATWLRCL  IATWLSRR  IATWLSTA  IATWLSTK
 05589E60  0558A3C0  0558A558  0558F310  0558FD50  0558AA10  0558ADA8  0558BFA8  00000000  0558C318  0558CBA8  05590EA0  0558D970

 SRVCFRST  SRVCLAST  CLSFYWRK  TASKTCB   SAMPECB   TIMEECB   COMMECB   LOCKECB    BQSHDR    BQSSC     BQSRC    WSTBADDR  WSTBSIZE
 055A4988  055A90C8  057D2228  007D87B8  807D8700  00000000  00000000  00000000  057D2418  057D2564  057D41AC  057464D0  000000DC

 DSPALET       DSPSTOKN       DSPORIGN   DSPEND   PVPLEXRC  CRPLEXRC  DSPFREE
 0101001E  800025000000004F  00000000  7A11FFFF  00000020  00002F14  00005DE8

  WJSGMS    WJSMDS   WJSMAINW  SAMPINTV  SAMPTMID  SAMPOWNR  SAMPWAIT  ECF1  FLAG1  FLAG2  FCTFLG1  TSKFLG1
 00005E08  00000000  00000000  000000C8  00000C31  00000000  00000000   00    00     00      00       40

 PVHIGHSC  CRHIGHSC  PVHIGHRC  CRHIGHRC  MSGDATAD  MSGDATLN      MSGTOKEN       BSMPRETC  BSMPRESN
 00000031  00000031  00000001  00000001  00000000  00000000  0000000000000000  00000000  00000000
```

```
                     SERVICE CLASS TABLES

ADDRESS     NAME     INDEX     NEXT     QFIRST    QLAST    FLAG1  FLAG2  NINTMMSK  BRIPMMSK  REGRETC   REGRESN
055A4988  VEL90     00000031  055A90C8  0563B950  0563F730   80     00    00000000  00000000  00000000  00000000

   RQ  0563B950  JOBNAM=JOB5      JNUM=JOB00170  WLMCTK=310C8001  MSARIV=B5AE7E1C  GRPPRV=00000000  GRPSEQ=03  JCLASS=B3  MSFL1=08
                 JSTAT=0000000000000000000000000000000000000000000000000000000000000000

   RQ  0563BC20  JOBNAM=JOB4      JNUM=JOB00169  WLMCTK=310C8001  MSARIV=B5AE7E1C  GRPPRV=0563B950  GRPSEQ=03  JCLASS=B3  MSFL1=08
                 JSTAT=0000000000000000000000000000000000000000000000000000000000000000

   RQ  0563BEF0  JOBNAM=JOB2      JNUM=JOB00167  WLMCTK=310C8001  MSARIV=B5AE7E1C  GRPPRV=0563BC20  GRPSEQ=03  JCLASS=B3  MSFL1=08
                 JSTAT=0000000000000000000000000000000000000000000000000000000000000000

   RQ  0563C1C0  JOBNAM=JOB3      JNUM=JOB00168  WLMCTK=310C8001  MSARIV=B5AE7E1C  GRPPRV=0563BEF0  GRPSEQ=03  JCLASS=B3  MSFL1=08
                 JSTAT=0000000000000000000000000000000000000000000000000000000000000000


ADDRESS     NAME     INDEX    MSWCOUNT  MDSCOUNT  GMSCOUNT  MNCOFFCT  GRPDISCT  JOBHLDCT  CLSDISCT
055A4988  VEL90     00000031  00000000  00000000  00000013  00000000  00000000  00000000  00000000

ADDRESS     NAME     INDEX    SCHENVCT  MSPARTCT  TDEPTHCT  TLIMITCT  MDEPTHCT  MLIMITCT
055A4988  VEL90     00000031  00000000  00000000  00000000  00000000  00000000  00000000
```

```
          SAMPLING STATISTICS FOR SERVICE CLASS VEL90

              PREVIOUS INTERVAL              CURRENT INTERVAL
SCOPE       ELIG     INELIG   LIMITED     ELIG     INELIG   LIMITED
SYSPLEX   00000013  00000000  00000000  00000013  00000000  00000000
JULLIET   00000013  00000000  00000000  00000013  00000000  00000000
ECHO      00000000  00000013  00000000  00000000  00000013  00000000
INDIA     00000000  00000013  00000000  00000000  00000013  00000000
LIMA      00000000  00000013  00000000  00000000  00000013  00000000
GOLF      00000000  00000013  00000000  00000000  00000013  00000000
CHARLIE   00000000  00000013  00000000  00000000  00000013  00000000
BRAVO     00000000  00000013  00000000  00000000  00000013  00000000
```

```
                    GMS WLM JOB SAMPLING ELEMENTS

ADDRESS   GMSJOBNO  GMSMAINS  GMSSCHMM  GMSSRVCL  GMSWLMTK  GMSSPNDX  GMSGRPSQ  GMSCLSSQ  GMSFLG1  GMSBYPAS
055A7490  0000123A  01000000  01000000  VEL90     310C8001  0000      3A        21        00       33
```

In the WORKLOAD MANAGER DATA AREA formatted output:

CONNTOKN
The WLM connection token

SRVDEFID
The WLM service definition

IATWLCSM
Module IATWLCSM address (WLM subtask common sampling services)

IATWLDRG
Module IATWLDRG address (WLM deregistration processing)

IATWLDRV
Module IATWLDRV address (WLM FCT driver)

IATWLEVT
Module IATWLEVT address (WLM event processing)

IATWLFJR
Module IATWLFJR address (WLM FCT JESTAE retry routine)

IATWLFSM
Module IATWLFSM address (WLM FCT sampling services)

IATWLGSM
Module IATWLGSM address (WLM global subtask sampling services)

IATWLJCK
Module IATWLJCK address (WLM JCT delay checkpointing)

IATWLLSM
Module IATWLLSM address (WLM local subtask sampling services)

IATWLRCL
Module IATWLRCL address (WLM reclassification processing)

IATWLSRR
Module IATWLSRR address (WLM subtask recovery

IATWLSTA
Module IATWLSTA address (WLM staging area processor)

IATWLSTK
Module IATWLSTK address (WLM subtask)

SRVCFRST
Address of first Service Class Table (SRVC)

SRVCLAST
Address of last Service Class Table (SRVC)

CLSFYWRK
Address of preallocated WLM Classification Work Area (WCWA)

TASKTCB
WLM subtask TCB address

SAMPECB
Sampling ECB

TIMEECB
Timer ECB - posted when a specified time elapses.

COMMECB
Communication ECB - posted when mail is sent by the global to the WLM subtask on the local

LOCKECB
Lock ECB - posted when the sampling lock is released

BQSHDR
Address of Batch Queue Samples header

BQSSC
Service class matrix

BQSRC
Report class matrix

WSTBADDR
WLM sampling transport buffer address

WSTBSIZE
WLM sampling transport buffer size

DSPALET
Data space ALET

DSPSTOKN
Data space STOKEN

DSPORIGN
Data space origin

DSPEND
Data ending address

PVPLEXRC
Address of report class matrix that contains SYSPLEX wide information for the previous sampling interval

CRPLEXRC
Address of report class matrix that contains SYSPLEX wide information for the current sampling interval

DSPFREE
Data space free space pointer

WJSGMS
WLM job sampling element queue for jobs in GMS select

WJSMDS
WLM job sampling element queue for jobs in MDS

WJSMAINW
WLM job sampling element queue for jobs that are waiting to be scheduled for main service

SAMPINTV
Current sampling interval in 100ths of a second

SAMPTMID
Sampling timer id

SAMPOWNR
Owning TCB or FCT address of the sampling lock

SAMPWAIT
Wait indicators for the sampling lock

ECF1
CF one

FLAG1
Flag one

FLAG2
Flag two

FCTFLG1
FCT flag 1

TSKFLG1
Subtask flag 1

PVHIGHSC
High service class index during the previous sampling interval

CRHIGHSC
High service class index during the current sampling interval

PVHIGHRC
High report class index during the previous sampling interval

CRHIGHRC
High report class index during the current sampling interval

MSGDATAD
Message data address

MSGDATLN
Message data length

MSGTOKEN
Message token

BSMPRETC
IWMBSMP Return code

BSMPRESN
IWMBSMP Reason code

In the SERVICE CLASS TABLES formatted output:

NAME
Service class name

INDEX
Service matrix index

NEXT
Address of next Service Class Table

QFIRST
Address of first RQ on the service class queue

QLAST
Address of last RQ on the service class queue

FLAG1
Flag one

FLAG2
Flag two

NINTMMSK
Main mask of systems where there are no initiators started for this service class

BRIPMMSK
Main mask of systems to be included in the IWMBRIP request that will be used to start initiators

REGRETC
Return code from IWMBREG

REGRESN
Reason code from IWMBREG

RQ
The address of a Resident Queue element (IATYRSQ) for a job in the service class being formatted. The IATYRSQ fields formatted together with this RQ address are all from this RQ.

JOBNAM
Job name

JNUM
Job number in EBCDIC

WLMCTK
WLM classification token

MSARIV
Main service arrival time

GRPPRV
Previous RQ pointer on RQ subchain (RQGRPCHN points to next rq on rq subchain)

GRPSEQ
Group sequence number

JCLASS
Job class

MSFL1
GMS flag 1

JSTAT
A list of 32 bytes for each potential system in the complex, each byte representing the reason why the job has not been selected on the corresponding system (defined in IATYRQJS)

MSWCOUNT
Number of jobs waiting to be scheduled for main service

MDSCOUNT
Number of jobs in MDS

GMSCOUNT
Number of jobs in GMS select

MNCOFFCT
Number of jobs ineligible because main is not connected or is offline

GRPDISCT
Number of jobs ineligible because the group is disabled

JOBHLDCT
Number of jobs ineligible because it is in operator hold

CLSDISCT
Number of jobs ineligible because the class is disabled

SCHENVCT
Number of jobs ineligible because the scheduling environment is not available or undefined

MSPARTCT
Number of jobs ineligible because a marginal spool space condition exists

TDEPTHCT
Number of jobs ineligible because the TDEPTH has been reached

TLIMITCT
Number of jobs ineligible because the TLIMIT has been reached

MDEPTHCT
Number of jobs ineligible because the MDEPTH has been reached

MLIMITCT
Number of jobs ineligible because the MLIMIT has been reached

In the SAMPLING STATISTICS FOR SERVICE CLASS formatted output:

SCOPE
Indicates whether the sampling statistics being formatted are for the entire SYSPLEX or a particular main

ELIG
The number of jobs eligible to run

INELIG
The number of jobs ineligible to run

LIMITED
The number of jobs that cannot run because of GMS limits

GMSJOBNO
Job number being sampled

GMSMAINS
Main eligibility mask from RQMAINS

In the GMS WLM JOB SAMPLING ELEMENTS formatted output:

GMSSCHMM
Scheduling environment main mask from RQSCHEMM

GMSSRVCL
Service class name from from RQSRVCLS

GMSWLMTK
WLM Classification token from RQWLMCTK

GMSSPNDX
Spool partition index from RQSPNDX or zero

GMSGRPSQ
Group sequence number from RQGRPSEQ

GMSCLSSQ
Class sequence number from RQJCLASS

GMSFLG1
Flag one

GMSBYPAS
Bypass code (defined in IATYRQJS) if sampling determines that the job is not eligible to run

Internal Reader Anchor Block

The INTERNAL READER ANCHOR BLOCK (IRA) contains information used to control the scheduling of internal reader jobs. The information for this portion of the dump is obtained from IATYIRA. This section of a formatted dump is not formatted in an dump taken from an FSS address space.

```
                INTERNAL READER ANCHOR BLOCK

   LOC         IRE         ISCD         DICT       ACTIVE    IDLE    HI-WATER
027005B8     02C12CA0     02C200A0     02745B78     0366     0000      0687

                INTERNAL READER ELEMENT CHAIN

   LOC         RESQ         NEXT         PREV         ECFA       FLAG     INTRDR      JOBID
02C12CA0     02AC3780     02C11FD0     00000000     02D14CB2      00     JOB10530
02C11FD0     02AC2878     02C0E6A8     02C12CA0     02CC9CB2      00     JOB10514
02C0E6A8     02AC3530     02BEB628     02C11FD0     02D03CB2      00     JOB10522
02BEB628     02AC2750     02BE9028     02C0E6A8     02CC6CB2      00     JOB10513
02BE9028     02AC32E0     02BE4CB8     02BEB628     02CD9CB2      00     JOB10516
02BE4CB8     02AC1F38     02AF3008     02BE9028     02CD3CB2      00     JOB10515
02AF3008     02AC1970     02AE8008     02BE4CB8     02CFFCB2      00     JOB10525
```

LOC adr - is the address of the IRA in storage.

IRE adr - is the address of the first internal reader element (IRE) chained from the IRA.

ISCD adr - is the entry point address for module IATISCD. Module IATISCD schedules internal reader data sets that are submitted using TSO or by a batch job.

DICT adr - is the address of the internal reader dictionary.

ACTIVE nnnn - is the number of internal reader jobs on the JES3 job queue that are waiting to be scheduled or are scheduled for processing.

IDLE nnnn - is the number of internal reader DSPs that are not processing any internal reader jobs.

INTERNAL READER ELEMENT CHAIN (IRE) The IRE contains information used to schedule individual internal reader jobs. The information for this portion of the dump is obtained from IATYIRE.

LOC adr - is the address of the IRE in storage.

RESQ adr - is the address of the RESQ for the internal reader job.

NEXT adr - is the address of the next IRE in the queue.

PREV adr - is the address of the previous IRE in the queue.

ECFA adr - is the address of the work-to-do driver or the CANCEL ECF.

FLAG nn - indicates the state of the internal reader DSP that the job is running under. The possible states that an internal reader DSP can be in are:

X'80'
: the internal reader DSP is idle. The internal reader DSP is not processing any internal reader data sets.

X'40'
: the work-to-do driver is posted. JES3 has processed the internal reader data sets.

X'20'
: the internal reader DSP was canceled. The operator issued a command to cancel the internal reader DSP.

INTRDR JOBnnnnn - indicates the job number of the internal reader DSP.

JOBNO JOBnnnnn - indicates the job number of the job being processed by the internal reader DSP.

RESQUEUE Table

RESQUEUE TABLE is the table of RESQs for active jobs. This section illustrates the general usage field of the RESQ. The RESQ is mapped by macro IATYRSQ.

```
                                                                           RESQUEUE TABLE
 LOC     JOBID    JOB-NAME FUNCTION PRIORITY OWNERID  TUSERID  SECLABEL  F1 F2 F3 F4 F5 F6 F7 F8 F9 DJCF  ADDITIONAL IN
03C0B000 JOB00000 JES3     NO INDEX 30,00,15 IBMUSER                     00 00 00 00 00 00 00 02 00  00   OSS=00000000
03BDC000 JOB00001 SYSLOG   ON MAIN  15,00,15 +MASTER+          SYSHIGH   40 00 00 00 80 03 02 00 00  00   SEE GMS SECTI
03BDC280 JOB00005 VTAMJ3   ON MAIN  15,00,15 VTAMJ3                      48 20 00 88 80 00 02 00 00  00   SEE GMS SECTI
03BDC500 JOB00006 TCAS     ON MAIN  15,00,15 IBMUSER                     48 20 00 88 80 01 02 00 00  00   SEE GMS SECTI
03C34000 JOB00007 RJP      NO INDEX 15,00,15                             00 00 00 00 00 00 02 00 00  00   OSS=00000000
03C341B0 JOB00009 RJPSNPS  NO INDEX 15,00,15                             00 00 00 00 00 00 02 00 00  00   OSS=00000000
```

LOC cccccccc - is the address of the resqueue in storage.

JOBID cccccccc - is the job identifier assigned to the job that the resqueue represents.

JOB-NAME cccccccc - is the job name assigned to the job that the resqueue represents

FUNCTION cccccccc - is the functional state that currently exists for the job. A functional state of:

cccccccc
Indicates the job:

ALLOC
is waiting for one or more resources

BRKDOWN
is in MDS breakdown

DONE
has completed GMS and MDS processing

DSELECT
is a demand select job

EFBAD
encountered an error while it was in the ending function

EFFWAIT
is in the ending function but is waiting for I/O to complete

ERROR
is on the MDS error queue

FETCH
is waiting for the MDS fetch function

FSSCI
is active in a CI FSS address space

INVALID
is in a function that JES3 is unaware of

NO INDEX
does not have any scheduler elements associated with it

ON MAIN
is scheduled to execute on a main

OSCOMPLT
has completed output service processing

PSTBATCH
is a batch job and is waiting for the postscan phase

PSTDMSEL
is a demand select job is waiting for the postscan phase

RESTART
is waiting for MDS to restart

SELECT
is waiting to be selected on a main

SYSSEL
is waiting on the system select queue

SYSVER
: is waiting on the system verify queue

VERIFY
: is waiting for a volume to be mounted

VOLUAV
: is waiting for an unavailable volume

WAITOS
: is waiting for output service processing

WAITOSW
: is waiting for an writer

WAITRSVD
: has completed MAIN processing but has not completed output service processing

WAITVOL
: is waiting for setup processing

PRIORITY dd, dd, dd - is the job priority, the group priority, and the RESQUEUE priority for the job, respectively.

OWNERID cccccccc - identifies the owner of the job.

TUSERID cccccccc - is the TSO user ID expressed in EBCDIC.

SECLABEL ccccccccc - identifies the security level assigned to the job.

FLG1-FLG9 hh - are RESQ flags obtained starting at RQFLG1.

DJCF hh - is flag byte RQDJCFLG.

ADDITIONAL INFO cccc...cc - contains notes that depend on the FUNCTION active for the RESQ entry.

Note: “ADDITIONAL INFO” will read “SEE FSS SECTION” when the job is a demand select job which is running as an FSS address space.

JES3 Job Queue Elements

JES3 JOB QUEUE ELEMENTS are not formatted in the FSS dump but for JES3 are resident in main storage to facilitate quick access to information pertinent to a particular job. The JQE controls I/O scheduling and ENQ/DEQ for the job's JCT, provides a pointer to a job's RESQ entry, and contains basic information for a job.

```
                                        JES3 JOB QUEUE ELEMENTS

JQEADD    JOBNO   JOB-NAME ORIGIN        PREV     NEXT     RESQ     ENQB FCTADDR      QPREV     QNEXT     XADDR   JQEQCELA

1812DA40 0000001 MONITOR             0000000  0000026  181EE000    00 18063F00  00000000  00000000  00000000  00000000
1812DAE0 0000051 J18      ANYLOCAL  0000049  0000000  1816F500    00 18063F00  00000000  00000000  00000000  00000000
1812DB80 0000440 INTRDR              0000438  0000442  00000000    00 182A7330  1812DC20  00000000  00000000  00000000
JQEADD    JOBNO   JOB-NAME           JQEFDB                    JQEJCTX         UCT J1 J2 PR S1 S2 F1 F2 F3 CL GR TOD      ST QF SE
1812DA40 0000001 MONITOR  000100000C0404D080000000 00020000130804D080000000  000 00 00 15 21 40 80 00 00 00 00 CC254EF5 00 00 01
1812DAE0 0000051 J18      000100000C0504D080000000 0002000011DD049080000000  000 00 00 02 1B 40 84 00 00 05 03 CC291092 00 00 01
1812DB80 0000440 INTRDR   000100000C0604D080000000 000000000000000000000000  000 00 00 15 41 00 80 00 00 00 00 CC291093 80 02 01
```

JQEADD cccccccc - is the address of the JQE in storage.

JOBNO cccccccc - is the number of the job the JQE represents.

JOB-NAME cccccccc - is the name of the job the JQE represents.

ORIGIN cccccccc - is the group name of the device that originated the job.

PREV dddd - is the job number for the previous job in this priority level.

NEXT dddd - is the job number for the next job in this priority level.

RESQ hhhhhhhh - is the address of the RESQUEUE entry for the job.

ENQB hhhh - is the read/write enqueue type.

FCTADDR hhhhhhhh - is the address of the FCT that has Read/Write access to the JCT.

QPREV hhhhhhhh - is the address of the JQE that precedes the current JQE on the chain described by QF.

QNEXT hhhhhhhh - is the address of the JQE that follows the current JQE on the chain described by QF.

XADDR hhhhhhhh - is the pointer to the JQE extension.

JQEQCELA hhhhhhhh - is the pointer to a quickcell buffer containing the JCT and JCT extension.

JQEADD cccccccc - is the address of the JQE in storage. This address is used to associate the information for each JQE in each section of the JQE Job Queue Elements.

JCTFDB hhhhhhhhhhhhhhhhhhhhhhhh - is the FDB for the JCT.

JQEQJCTX hhhhhhhhhhhhhhhhhhhhhhhh - is the FDB for the JCT extension.

UCT ddd - is the number of read only users for this JCT.

J1 hh - is flag byte JCTFL1.

J2 hh - is flag byte JCTFL2.

PR dd - is the job priority level.

S1 hh - is the DSP number for the currently active scheduler element (SE) or the next SE to be scheduled.

S2 hh - is flag byte SEFLGS in the currently active SE or the next SE to be scheduled.

F1 hh - is flag byte JQEFLG1.

F2 hh - is flag byte JQEFLG2.

F3 hh - is flag byte JQEFLG3.

CL hh - is the sequence number for the GMS job class.

GR hh - is the sequence number for the GMS EXRESC group.

TOD cccccccc - is the time of day the job entered the system.

ST hh - indicates the status of the JQE.

Value
: **Meaning**

X'40'
: The job is waiting to be processed by the ending function for the last active scheduler element (SE) for the job.

X'20'
: JSS suspended processing the job after the last SE.

X'10'
: Another function was accessing the JCT that represents the job. JSS places the job on the FCT ready queue so that the job is rescheduled when the JCT is released.

X'08'
: OUTSERV should use the current RESQUEUE.

X'04'
: The DSP pending use count was incremented for the JQE.

X'02'
: JES3 encountered an error while processing the JQE.

QF hh - is used to determine why JES3 should not process the job.

Value
: **Meaning**

X'01'
: The job is waiting to be processed by the scheduling or ending function.

X'02'
The use count for the DSP has reached the maximum. The JQE was placed on the HOLD or WAIT queue.

X'03'
JSS is waiting for a RESQUEUE to become available so the job can be scheduled.

X'04'
The job is waiting for a required proclib to become available so the job can be rescheduled.

X'05'
The job is waiting for a required main, group or class to become available so the job can be rescheduled.

X'06'
The job came from the C/I DSP backlog but was not scheduled because of being rejected by a user exit.

X'07'
The job is waiting for SMS resources to become available.

X'08'
The job is waiting for a main processor to perform locates to become available.

X'09'
The job is waiting for a job with the same job name to complete execution.

SE hh - is the sequence number of the current scheduler element (SE)

Main device scheduler data area

```
                              MAIN DEVICE SCHEDULER DATA AREA - LOC 0509C000

      DEEP  RMTLM  DSNSZ  OPTN   ECF  IECF  ALECF  SSECF  DARET  DASUB  TARET  TASUB  OTRET  OTSUB
       000    01     44    C3     00   00     00     02     00     00     00     00     00     01

AFL1 AFL2 BFL1 BFL2  BFL3  DFL1  DFL2  FFL1  FFL2  SBFL1  RFL1  RFL2  SFL1  SFL2  SFL3  SFL4  VFL1  VFL2  GFL1  GFL2 GFL3 GFL4
 00   00   90   80    00    00    00    00    00    00     B8    00    00    40    00    80    00    00    00    00   40   00
```

MAIN DEVICE SCHEDULER DATA AREA - LOC hhhhhhhh

This is not formatted in the FSS dump but for JES3:

DEEP hh - is the current number of jobs that have been set up.

RMTLM hh - is the maximum number of times a job will be allowed to attempt correction of operator volume mount errors before releasing the devices and reentering MDS allocation.

DSNSZ dd - is the maximum number of characters of the data set name to be included in volume fetch, mount, and breakdown messages.

OPTN hh - is a flag byte set from the various options on the SETPARAM statement.

ECF hh - is the ECF that is posted to activate for MDSECF.

IECF hh - is a further posting definition for MDSECF.

ALECF hh - is the allocation descriptor byte and is a further description of the reason for posting MDSECF.

SSECF hh - is the subsystem descriptor and is a further description of the reason for posting MDSECF.

DARET hh - is the number of direct access devices returned to MDS.

DASUB hh - is a number for internally used algorithms.

TARET hh - is similar to DARET, except that is it for magnetic tape devices.

TASUB hh - is a number for internally used algorithms.

OTRET hh - is similar to DARET, except that it is for devices other than direct access or tape.

OTSUB hh - is a number for internally used algorithms.

AFL1 hh - is flag byte MDAFLG1.

AFL2 hh - is flag byte MDAFLG2.

BFL1 hh - is flag byte MDBFLG1.

BFL2 hh - is flag byte MDBFLG2.

BFL3 hh - is flag byte MDBFLG3.

DFL1 hh - is flag byte MDDFLG1.

DFL2 hh - is flag byte MDDFLG2.

FFL1 hh - is flag byte MDFFLG1.

FFL2 hh - is flag byte MDFFLG2.

SBFL1 hh - is flag byte MDSBFLG1.

SBFL2 hh - is flag byte MDSBFLG2.

RFL1 hh - is flag byte MDRFLG1.

RFL2 hh - is flag byte MDRFLG2.

SFL1 hh - is flag byte MDSFLG1.

SFL2 hh - is flag byte MDSFLG2.

SFL3 hh - is flag byte MDSFLG3.

SFL4 hh - is flag byte MDSFLG4.

VFL1 hh - is flag byte MDVFLG1.

VFL2 hh - is flag byte MDVFLG2.

GFL1 hh - is flag byte MDSGFLG1.

GFL2 hh - is flag byte MDSGFLG2.

GFL3 hh - is flag byte MDSGFLG3.

GFL4 hh - is flag byte MDSGFLG4.

MDS RESQUEUE Tables

MDS cccccc RESQUEUE TABLE is the queue of jobs waiting to be processed by the indicated MDS function. The MDS functions (cccccc) are:

- FETCH
- ALLOCATE
- DYNAMIC
- WAITVOL
- UNAVAILABLE
- VERIFY
- ERROR
- BREAKDOWN
- RESTART
- SYSSEL
- SYSVER

The MDS Resqueue Table contains fields that are common to all the functions and some of the MDS Resqueue tables contain additional information.

```
                                MDS ALLOCATE RESQUEUE TABLE
  LOC    JOBNAME  JOBID    H MAIN     CL GP    JSTFDB    M1 M2 M3 VFY DA TA OT TY SCHENV
038CD000 TAPEDSET JOB00078   487FDE48 01 01 000200000B75 80 00 00     01       00 2DB2A
    ARL 02F6B000  MPC = 01  BYSCAN = 0000  REFRESH = 0000
      DEVICE  TY=00  NAME=02A6B416  DEVRQ=0001  DEVFL=0001

    SY1   - RESC  SY2     - MNAV  SY3   - MNAV  SY4  - MNAV  SY5  - MNAV  SY6  - MNAV
    SY7   - MNAV  SYLOCAL8- MNAV  SY9   - MNAV  SY10 - MNAV
```

Common Information:

LOC hhhhhhhh - is the address of the RESQUEUE table.

JOBNAME hhhhhhhh - is the job name for the job the RESQUEUE represents.

JOBID hhhhhhhh - is the job identifier of the job the RESQUEUE represents.

H c - Y indicates job-held status. If the job is not held, this field is blank.

MAIN hhhhhhhh - consists of all eight bytes of RQMAINS, which shows which mains are eligible to execute the job.

CL hh - GMS class sequence number, used to index the class table.

GP hh - GMS group sequence number, used to index the group table.

JSTFDB hhhhhhhhhhhh - is the FDB.

M1-M3 hh hh hh - are flag bytes obtained consecutively starting at RQMDFLG1.

VFY ddd - is the number of volumes remaining to be mounted.

DA dd - is the number of required but unavailable DASD.

TA dd - is the number of required but unavailable tape devices.

OT dd - is the number of required but unavailable unit record or graphic devices.

TY hh - is the flag byte RQMDSREQ.

SCHENV - is the job's scheduling environment.

SY1 - CCCC, SY2 - CCCC,... - lists the processor name along with the reason (obtained from the RQJSTAT field) why allocation was not attempted on the indicated main, as follows:

- RSUP - resource update scan
- HELD - job is held
- REGN - minimum region size not available
- REST - scan for MDS restart jobs
- MNAV - main not available
- CLGP - GMS class/group not available
- RESC - required resource not available
- FNCE - device fence not available
- M DP - main setup depth exceeded
- C DP - GMS class setup depth exceeded
- RNAV - restart main has not connected
- PRSC - pre-allocation scan failed
- SMSU - SMS managed resources are unavailable
- SEUD - scheduling environment is undefined
- SENA - scheduling environment is unavailable

Additional Information for the MDS Allocation Resqueue: This portion of the MDS ALLOCATE RESQUEUE TABLE contains information that is obtained from the first header in the allocation requirements list (ARL). The ARL header is followed by a list of all the devices, data sets, and volumes that JES3 could not allocate to a job during the prescan phase of converter interpreter. The information for this portion of the dump is mapped by the IATYARL mapping macro.

ARL identifies the allocation requirements list for the job.

adr is the address of the first ARL for the job.

MPC= nn is the index for the main processor control table (MPC) where the job attempted to obtain the resources.

BYSCAN= is the number of times the job was bypassed for allocation.

REFRESH= is the number of times the ARL was refreshed because of an unsuccessful allocation attempt despite a successful preallocation ARL scan.

DEVICE identifies the device that JES3 attempted to allocate to the job. The devname can be a device, data set, or volume.

TY= is obtained from field ARLDEVTY for a **device**. Possible values for the field when the resource is a device are:

X'40'
: a specific device was requested

For a **volume** the information is obtained from field ARLVOLTY. Possible values for the field when the resource is a volume are:

X'80'
: JES3 could not allocate the volume

X'40'
: the volume could not be allocated

For a **data set** the information is obtained from field ARLDSNTY.

X'80'
: the data set could not be allocated

X'40'
: the GDG base could not be allocated

For a device:

NAME= contains the address of the SETUNIT or SETNAME entry for the device.

DEVRQ= is the number of devices requested by the job.

DEVFL= is the number of devices that were unavailable.

For a volume or data set:

FLG1= indicates the type of usage the job requires of the device. The job can request exclusive use over the volume or data set.

VOL= adr - is the address of the SETVOL entry for the volume.

DSN= adr - is the address of the SETDSN entry for the data set. If the entry is for a volume the address will be 00000000.

Additional Information for the MDS System Select Resqueue: If SMS cannot obtain a resource required by a job, SMS creates a Scheduling Services Resource List (SCHRL). The SCHRL in the MDS System Select RESQUEUE Table contains the following information:

SCHRL - indicates the beginning of a list of resources SMS was unable to allocate to the job.

LOC= adr - is the address of the SCHRL for the job.

LEN=nnnnn - is the length in bytes of the SCHRL.

NUMRESC=nn - indicates the total number of resources SMS was unable to allocate to the job.

1ST SCHPL= adr - is the address of the first Scheduling Processor Resource List (SCHPL). JES3 creates one SCHPL for each main where the job could have executed. It identifies the resources that SMS could not allocate to the job.

SCHPL - indicates the following information refers to the SCHPL.

LOC= adr - is the address of the SCHPL in storage.

LEN =nnnn - is the length of the SCHPL.

NEXT = adr - is the address of the next SCHPL in for the job.

1ST SCHRE= adr - is the address of the Scheduling Services Required Resource Element (SCHRE). Each SCHRE identifies a resource SMS was unable to obtain for the job on the main identified by the SCHPL.

LOC= adr - indicates the address of the resource.

TYPE= ccc - indicates the type of resource SMS could not obtain.

NAME= ddname - identifies the name assigned to the device. JES3 uses the name you assigned to the device on the JNAME parameter of the DEVICE statement.

REQST=c - is the status the SMS-managed resource must be in for the job to execute.

GROUP=cccccccc - indicates if the resource is the only resource required by the job. If GROUP indicates ONLY, that resource is the only resource required to execute the job. If GROUP indicates FIRST, MID, or LAST, that resource is part of a group defined to SMS and the entire group of resources is needed to execute the job.

SETNAMES Table

SETNAMES TABLE is generated from parameters on the SETNAME statements. The data is used to identify a name than can be used in the UNIT parameter of a DD statement for a device represented in a DEVICE initialization statement. The area is mapped by IATYNAM.

```
                 SETNAMES TABLE

   LOC     TYPE   NAME    ALT-TYPE    ALT-ADDR    CLASS

0479F34A    01    DASD      YES       0479F3E6    DA
0479F364    01    SYSDA     YES       0479F400    DA
0479F37E    01    SYSSQ     YES       0479F482    DA
0479F398    01    9345      NO        00000000    DA
0479F3CC    02    3380      YES       0479F434    DA
0479F3E6    02    DASD      YES       0479F44E    DA
0479F400    02    SYSDA     YES       0479F468    DA
0479F434    03    3380      YES       0479F4B6    DA
0479F44E    03    DASD      YES       0479F4D0    DA
0479F468    03    SYSDA     YES       0479F4EA    DA
0470F482    03    SYSSQ     YES       0479F504    DA
0479F4B6    04    3380      YES       0479F56C    DA
0479F4D0    04    DASD      NO        00000000    DA
0479F4EA    04    SYSDA     NO        00000000    DA
0479F504    04    SYSSQ     NO        00000000    DA
0479F51E    04    SYSVIO    NO        00000000    DA
0479F538    04    V3380     NO        00000000    DA
0479F56C    05    3380      NO        00000000    DA
0479F5A0    06    3390      NO        00000000    DA
0479F5D4    07    TAPE      YES       0479F6D8    TA
```

LOC hhhhhhhh - is the address of the SETNAME entry.

TYPE hh - is a hexadecimal code count representing the XTYPE parameter on the SETNAME initialization statement.

NAME cccccccc - is the name defined by the SETNAME statement.

ALT-TYPE cc - specifies that the name also appears for another device (TYPE B).

ALT-ADDR - address of next SETNAMES entry for the same device name.

CLASS cccccc - is one of the following:

- TA (tape)
- DA (direct access)
- UR (unit record)
- GR (graphics)
- POOL (name appeared in POOLNAME parameter)

SETUNITS Table

SETUNITS TABLE FOR ‘main name’. The SETUNITS table is generated to contain control information for all devices attached to a main that can be set up by MDS from the global main. The data for the table originates from the XUNIT and XTYPE parameters of the DEVICE initialization statement. One complete table is formatted for each main. The main is identified in the format heading for each table. The table is mapped by macro IATYSET.

```
                        SETUNITS TABLE FOR JULLIET

   LOC     TYPE  NUMBER VID VNXT     FLG1 FLG2 FLG3 MOUNT-ID RESQUEUE SYSUNIT

023CB1C0   01    0100                 00    00                        02692980
023CB1F4   01    0101                 00    00                        026929A8
023CB228   01    0102                 00    00                        026929D0
023CB25C   01    0103                 00    00                        026929F8
023CB290   01    0104                 00    00                        02692A20
023CB2C4   01    0105                 00    00                        02692A48
023CB2F8   01    0106                 00    00                        02692A70
023CB32C   01    0107                 00    00                        02692A98
023CB360   01    0110                 00    00                        02692AC0
023CB394   01    0111                 00    00                        02692AE8
023CB3C8   01    0112                 00    00                        02692B10
023CB3FC   01    0113                 00    00                        02692B38
023CB430   01    0114                 00    00                        02692B60
023CB464   01    0115                 00    00                        02692B88
023CB498   01    0116                 00    00                        02692BB0
023CB4CC   01    0117                 00    00                        02692BD8
023CB500   01    0120                 00    00                        02692C00
023CB534   01    0121                 00    00                        02692C28
023CB568   01    0122                 00    00                        02692C50
023CB59C   01    0123                 00    00                        02692C78
023CB5D0   01    0124                 00    00                        02692CA0
023CB604   01    0125                 00    00                        02692CC8
023CB638   01    0126                 00    00                        02692CF0
023CB66C   01    0127                 00    00                        02692D18
023CB6A0   01    0130                 00    00                        02692D40
023CB6D4   01    0131                 00    00                        02692D68
023CB708   01    0132                 00    00                        02692D90
023CB73C   01    0133                 00    00                        02692DB8
023CB770   01    0134                 00    00                        02692DE0
023CB7A4   01    0135                 00    00                        02692E08
023CB7D8   01    0136                 00    00                        02692E30
023CB80C   01    0137                 00    00                        02692E58
023CB840   01    0210                 00    00                        02692E80
023CB874   01    0211                 00    00                        02692EA8
023CB8A8   01    0212                 00    00                        02692ED0
023CB8DC   01    0213                 00    00                        02692EF8
023CB910   01    0214                 00    00                        02692F20
023CB944   01    0215                 00    00                        02692F48
023CB978   01    0216                 00    00                        02692F70
023CB9AC   01    0217                 00    00                        02692F98
023CB9E0   01    0230                 00    00                        02692FC0
023CBA14   01    0231                 00    00                        02693FE8
023CBA48   01    0232                 00    00                        02693010
023CBA7C   01    0233                 00    00                        02693038
023CBAB0   01    0234                 00    00                        02693060
023CBAE4   01    0235                 00    00                        02693088
023CBB18   01    0236                 00    00                        026930B0
023CBB4C   01    0237                 00    00                        026930D8
023CBB80   01    0250                 00    00                        02693100
023CBBB4   01    0251                 00    00                        02693128
023CBBE8   01    0252                 00    00                        02693150
023CBC1C   01    0253                 00    00                        02693178
023CBC50   01    0254                 00    00                        026931A0
023CBC84   01    0255                 00    00                        026931C8
023CBCB8   01    0256                 00    00                        026931F0
```

LOC hhhhhhhh - is the address of the SETUNITS table entry.

TYPE nn - is a binary sequential count representing the XTYPE parameter on the SETNAME initialization statement.

NUMBER dev - is the device number.

VID cc - is the last verify response ID character received from this device.

VNXT cc - the address of next SETUNITs on SETUNITs verify chain.

FLG1 hh - is a flag byte that contains the information in SETFLG1.

FLG2 hh - is a flag byte that contains the information in SETFLG2.

FLG3 hh - is an indicator that you can use to determine if the volume is managed by SMS or JES3.

MOUNT-ID cccccc - is the last volume serial number needed for mounting during job execution on the main.

RESQUEUE hhhhhhhh - is the address of the RESQ entry for a job that currently requires that a volume be mounted on this device.

SYSUNIT hhhhhhhh - is the address of the SYSUNITS table entry corresponding to the device.

SYSUNITS Table

SYSUNITS TABLE contains a unique entry with allocation status for each device in the complex. Separate entries exist for the same device when it is shared by two or more mains. The table is mapped by macro IATYSYS.

```
                             SYSUNITS TABLE

  LOC      MAINADR/MAIN  JADR  STATUS  RES  SETVOL   SERIAL  LBL  UCB  FL1  FL2  FL3  FL4  MDAL   UCT
RPTY  UNLD
01BD2450                 0C06  AV                                       00   00   00   00   00
01BD26F8  0002 TOPAZ     0002  AV/OFF  R/                               00   00   00   27   00
          0002 EMERALD           /OFF
          0002 OPAL              /OFF
          0002 QUARTZ            /OFF
          0002 RUBY              /OFF
01BD2720  0003 TOPAZ     0003  AV/OFF                                   00   00   00   27   00
          0003 EMERALD           /OFF
          0003 OPAL              /OFF
          0003 QUARTZ            /OFF
          0003 RUBY              /OFF
01BD2748  0004 TOPAZ     0004  AC/OFF                                   80   08   00   27   00
          0004 EMERALD
          0004 OPAL              /OFF
          0004 QUARTZ            /OFF
          0004 RUBY              /OFF
01BD2770  0005 TOPAZ     0005  AV/OFF                                  00    00   00   27   00
          0005 EMERALD           /OFF
          0005 OPAL              /OFF
          0005 QUARTZ            /OFF
          0005 RUBY              /OFF
01BD2798  0006 TOPAZ     0006  AV/OFF                                  00    00   00   27   00
          0006 EMERALD           /OFF
          0006 OPAL              /OFF
          0006 QUARTZ            /OFF
          0006 RUBY              /OFF
01BD27C0  000A TOPAZ     000A  AV                                      00    00   00   27   00
          000A EMERALD           /OFF
          000A OPAL              /OFF
          000A QUARTZ
          000A RUBY
01BD2758  0012 TOPAZ     0012  AV                                      00    00   00   27   00
          0012 EMERALD           /OFF
          0012 OPAL              /OFF
          0012 QUARTZ
          0012 RUBY
01BD2810  000B TOPAZ     000B  AV                                      00    00   00   27   00
          000B EMERALD           /OFF
01BD28C4  *** FREE ENTRY ***   NEXT=01BD28C4  PREVIOUS=00000000  INDEX=0009
01BD2978  *** FREE ENTRY ***   NEXT=01BD2978  PREVIOUS=01BD28C4  INDEX=000A
01BD2A2C  *** FREE ENTRY ***   NEXT=01BD2A2C  PREVIOUS=01BD2978  INDEX=000B
01BD2AE0  *** FREE ENTRY ***   NEXT=01BD2AE0  PREVIOUS=01BD2A2C  INDEX=000C
01BD2B94  *** FREE ENTRY ***   NEXT=01BD2B94  PREVIOUS=01BD2AE0  INDEX=000D
01BD2C48  *** FREE ENTRY ***   NEXT=01BD2C48  PREVIOUS=01BD2B94  INDEX=000E
01BD2CFC  *** FREE ENTRY ***   NEXT=01BD2CFC  PREVIOUS=01BD2C48  INDEX=000F
01BD2DB0  *** FREE ENTRY ***   NEXT=01BD2DB0  PREVIOUS=01BD2CFC  INDEX=0010
01BD2E64  *** FREE ENTRY ***   NEXT=01BD2E64  PREVIOUS=01BD2DB0  INDEX=0011
01BD2F18  *** FREE ENTRY ***   NEXT=00000000  PREVIOUS=01BD2E64  INDEX=0012
```

LOC hhhhhhhh - is the address of the entry.

MAINADR/MAIN - is the device number for the indicated main.

JADR dev - is the device number of the unit attached to the global main (JUNIT).

STATUS cc - is AC (allocated) when FLG1 is either 80 or 40. RS (reserved). OFF indicates that it is offline to the indicated main. POF indicates that it is pending offline.

RES cc - is the volume mount characteristic. The first portion identifies the JES3 mount; the second half shows the MVS mount. The JES3 portion is R for “removable” or P for “volume mounted by operator” command. The MVS portion is P for permanently resident. If either portion indicates P, the volume is treated as “not removable”.

SETVOL hhhhhhhh - is the address of the SETVOL table entry for the currently mounted volume.

SERIAL cccccc - is the volume serial number of the currently mounted volume.

LBL cccc - is the type of volume label for the currently mounted volume:

- A-ANSI (label)
- B-BLP (bypass label processing)
- N-NL (no label)
- S-SL (standard label)
- X-NSL (non standard label)

UCB hh - is the UCB status byte.

F1 hh FL2 hh FL3 hh FL4 hh MDAL hh - are obtained from SYSFLAG1 through SYSMDSAL. They are flag bytes.

UCT hh - is the current number of jobs requiring the use of the volume.

RPTY hh - is the priority of the job reserving the device.

UNLD hh - is the main processor sequence number of the processor on which an unload is pending for the device.

NEXT - Next SYSUNITS entry on the free queue.

PREVIOUS - Previous SYSUNITS entry on the free queue.

INDEX - The SYSUNITS index assigned to the SYSUNITS entry.

SETVOL Table/SETDSN Table

SETVOL TABLE is not formatted in the FSS dump but for JES3 is generated to maintain information regarding all known volumes requirements for jobs in the system and to track the status of currently mounted volumes. The source of data includes DD statements, automatic verification (by JES3 VERIFY), and operator commands. The table is mapped by macro IATYVLM.

```
SETVOL TABLE
 LOC     VOLSER UCT   ACT   RSP SYSMNTD  SYSALOC  FL1 FL2 FL3
040CB434 APPCVL                 0373560C          00  20  00
040CBEDC CICSPK                 03749D00          00  20  00
040CB74C CPLPKA                 037366EC          00  20  00
040CB6F4 CPLPKP                 03736638          00  20  00
040CBB6C CTTPAK                 03748EF0          00  20  00
040CB904 C90265                 0374424C          00  20  00
040CB594 DB2DBS                 03735990          00  20  00
040CB644 DB2PRD                 03735AF8          00  20  00
040CB48C DRV520 00001 00001     03735774 03735774 80  A0  00

    SETDSN  LOC=040F4ED8  HASH=08  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=SYS1.VTAMLIB
            NEXT=040F4F68  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
    SETDSN  LOC=040F4F68  HASH=08  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=SYS1.VTAMLST
            NEXT=00000000  PREV=040F4ED8  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
040CB854 D72CT1                 03738474          00  20  00
040CB8AC D72CT2                 03738528          00  20  00
040CB384 D75700                 037353F0          00  20  00
040CB3DC D75800                 037354A4          00  20  00
040CB2D4 D75901                 03734F04          00  20  00
040CB27C D75902 00002 00002     03734E50 03734E50 80  A0  00
    SETDSN  LOC=040F4F98  HASH=05  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=D75JES3.VTAMLST
            NEXT=00000000  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
    SETDSN  LOC=040F4E70  HASH=07  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=SYS1.V6R2M1.SIATPARM
            NEXT=00000000  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
040CB7FC FDSPKA                 03736854          00  20  00
040CB7A4 FDSPKP                 037367A0          00  20  00
040CBF34 IMSPAK                 03749DB4          00  20  00
040CB5EC IODFPK                 03735A44          00  20  00
040CBD7C IPCS01                 03749544          00  20  00
040CB1CC JESPK1                 03734C34          00  20  00
040CB32C JESPK3 00001 00001     03734FB8 03734FB8 80  A0  00
    SETDSN  LOC=040F4F08  HASH=05  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=C49FCT.VTAMLIB
            NEXT=040F4F38  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
    SETDSN  LOC=040F4F38  HASH=05  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=C49FCT.VTAMLST
            NEXT=00000000  PREV=040F4F08  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
    SETDSN  LOC=040F4EA0  HASH=07  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=SYS1.COMMON.NCPLOAD
            NEXT=00000000  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
    SETDSN  LOC=040F4FCC  HASH=09  USE=00001  RSPTY=    FL1=C0  FL2=00  DSN=SYS1.NCP1.SSPLIB
            NEXT=00000000  PREV=00000000  RSRV=00000000  SETVOL=05184224  GDGBASE=00000000
```

```
040CB06C JTOOL1                 03734310          00  20  00
040CB014 J2COM1                 0373425C          00  20  00
040CB95C J2COM2                 03748734          00  20  00
040CB9B4 J2COM3                 037487E8          00  20  00
040CBA0C J2COM4                 0374889C          00  20  00
040CBA64 J2COM5                 03748950          00  20  00
040CBABC J2LNKS                 03748A04          00  20  00
040CB0C4 J2SHR1                 037343C4          00  20  00
040CB11C J2SHR2                 03734478          00  20  00
040CB224 J2SPA1                 03734D9C          00  20  00
040CBB14 J2TEST                 03748AB8          00  20  00
040CB174 MMSPAK                 03734694          00  20  00
040CBF8C PAGEP2                 0374A4BC          00  20  00
040CBE2C PAGE13                 03749B98          00  20  00
040CB53C PPLB80                 037358DC          00  20  00
040CB4E4 PRODAL                 03735828          00  20  00
040CBD24 RDBBAR                 03749490          00  20  00
040CBE84 SPOOL1                 03749C4C          00  A0  00
040CBBC4 SPOOL2                 037491C0          00  20  00
040CBC1C SPOOL3                 03749274          00  20  00
040CBC74 SPOOL4                 03749328          00  20  00
040CBCCC SPOOL5                 037493DC          00  20  00
040CB69C SRV520                 03735C60          00  20  00
040CBDD4 TSPACE                 03749814          00  A0  00
```

LOC hhhhhhhh - is the address of the entry.

VOLSER cccccc - is the volume serial number of the entry. If an * is followed by a data set name appears as the VOLSER, the volume contains one or more SMS-managed data set.

UCT hh - is the current number of jobs requiring the use of the volume.

ACT hh - is the current number of jobs allocated to the volume.

RSP hh - is the priority of the job reserving the volume.

SYSMNTD hhhhhhhh - is the address of the SYSUNITS table entry for the device on which the volume is currently mounted.

SYSALOC hhhhhhhh - is the address of the SYSUNITS table entry for the device originally allocated to the volume.

FL1 hh FL2 hh and FL3 hh - are obtained from VLMFL1, VLMFL2, and VLMFL3, respectively. They are flag bytes. If VLMFL3 contains a X'04', the data set is managed by SMS.

SETDSN TABLE - is not formatted in the FSS dump but for JES3 is created to represent all data sets allocated to volumes. It is used in conjunction with the SETVOL table to ascertain when a volume is no longer in use. The table is mapped by macro IATYDSN.

LOC hhhhhhhh - is the address of the entry.

HASH - Is the SETDSN hash table queue number that the SETDSN entry is on.

USE hhhhh - is the number of jobs allocated to this data set.

RSPTY - is the priority of the job reserving the data set.

FL1 hh and FL2 hh - are obtained from DSNFL1 and DSNFL2, respectively. They are flag bytes.

DSN - is the data set name.

NEXT - is the address of the next SETDSN on the hash queue.

PREV - is the address of the previous SETDSN on the hash queue.

RSRV - is the address of the next SETDSN on the SETDSN reserve chain.

SETVOL - is the SETVOL.

GDGBASE - is the address of the SETDSN entry for the GDG base or zero.

DYNAL FCT data area

DYNAL FCT DATA AREA . . . IATYDYN is not formatted in the FSS dump but for JES3 is used by the DYNAL DSP to control the processing of the dynamic allocation requests to the DYNAL DSP.

```
02AF33E0                          DYNAL  FCT  DATA  AREA...IATYDYN

DYNTRK=00060002177B  DYNCHN=000000000000000000000000  DYNCKFDB=00060002177B04D080000000  DYNCNT=000  DYNCURSA=0264EDE0
02AF340C    02C1D0D0  0266CA1E  7F53A00C  02CAFFC0    02A88738  02A88738  00000000  00000000
02AF342C    00000000  00000000  00000000  00000000    00000000  00000000  00000000  00000000
02AF344C    00000000  00000000  02BE5300  02BE5362    02BE53E2  02BE5468  02BE54CE  02BE54DE
02AF346C    02BE5780  02BE5986  02BE564E  02BE74C8    02AD8028  02AF363C  02AF3544  0268A000
02AF348C    02727608  00000003  00000000  00000000    00000000  82BE78E8  02BE74C8  0264EDE0
02AF34AC    00000000  00000000  0000

DYNMSG=IAT5830
02AF3530    135CE540  4040406B  D6C6C66B  40404040    40404040
```

DYNTRK=hhhhhhhhhhhh - is the record address of this file.

DYNCHN=hhhhhhhhhhhhhhhhhhhhhhhh - is the chain FDB.

DYNCKFDB=hhhhhhhhhhhhhhhhhhhhhhhh - is the checkpoint area FDB. Location of the DYNAL DSP checkpoint record.

DYNCNT=ddd - is the user count.

DYNCURSA=hhhhhhhh - is a pointer to the current staging area being processed by the DYNAL DSP.

DYNMSG - is the message data area for the IAT5830 message.

DYNAL ECF List Control Block

THE DYNAL ECF LIST control block (IATYELB) is used by the DYNAL DSP to keep track of the completion of the I/O requests.

```
02AF3544  THE ECF LIST-          MAXIO=026  ALWIO=011  INUSE=001  RPN=000

ECFREGS=  82BE7140  02719518  00000000  02AF3544  02AF3544  ECFEFLG=80  ECFRSV=  000000

         LIST OF ECF'S AND RELATED DYQ'S

 ECF-00=02701B41  000000E0   LOC=02AF3568

 LOC         THE RELATED DYQ-
02AF363C    C4E8D840  00000000  00000000  00000000    00000000  00000000  00000000  00000000
02AF365C    00000000  00000000  00000000  00000000    00000000  00000000  00000000  00000000
02AF367C    00000000  00000000  00000000  00000000    00000000  00000000  00000000  00000000
```

MAXIO - specifies the maximum number of simultaneous I/O requests that can be processed simultaneously. This value is one greater than the value specified on the SETPARAM initialization statement.

ALWIO - specifies the current maximum (less than or equal to MAXIO) number of asynchronous I/O requests which can be processed at the same time. This value is one greater than the value specified on the SETPARAM initialization statement.

INUSE - is the number of simultaneous requests being processed by the DYNAL DSP.

RPN - is the relative position number in the ECF list, of the last I/O request processed.

ECFREGS - is the register save area.

ECFEFLG is the flag byte.

ECFRSV - is a reserved area.

IATYTVT Definitions

DATA MANAGEMENT IATYTVT ADDRESSES are the entry point addresses for most JES3 data management routines and tables. They are extracted from the TVT, which is mapped by macro IATYTVT.

```
                                        DATA MANAGEMENT IATYTVT ADDRESSES

 LABEL         DATA            LABEL         DATA            LABEL         DATA            LABEL         DATA
ABACKR        02711A3C        ABLOCK        02710AF4        ACLOSE        02713B00        ADEBLOCK      027110F0
AFDADD        02715070        AFDDELET      02715172        AFDFIND       02715006        AGETBUF       02713DC8
AIOFDADD      0275C000        AIOFDFRE      0275C6E0        AIOFDLST      0275C050        AIOFDTOP      0275CFA0
ALOCATE       02710894        ANOTE         0271167C        AOPEN         02712F8C        AOPEND        027117EE
APOINT        027116B0        APURGE        02716198        APUTBUF       02714082        ARELEASE      02714298
ATRACK        02715BCC        AWRITE        02713454        IATXIOX       0271375A        IATXRABC      027162D0
IATXRABD      02716508        IATXRELC      02711538        IATXSIO       82299730        IOERRFCT      00000000
JESREAD       02713122        MOVEDATA      02711C94        PURCHAIN      027149FE        TVTBALJ       7FFDDB88
TVTBTR        00000000        TVTDMCQ       7F71F558        TVTDISK       02714354        TVTDMDK       82299730
TVTERRQ       00000000        TVTERRWK      00000000        TVTEXREL      02700040        TVTINPUT      02713976
TVTIOPRM      01CA6A88        TVTJBTS       02717668        TVTJBTXP      02715FC0        TVTOUTPT      027138D6
TVTPBITL      02716878        TVTPTATS      02716B20        TVTPTCAD      0275B0E0        TVTPTCKP      02718B7A
TVTSPDEF      02700AD8        TVTSPINT      02700AD8        TVTSPREL      02700050        TVTSTTAL      0271567C
TVTSTTBD      02715AF0        TVTSTTBL      02715908        TVTSTTPG      02715970        TVTSTTSR      02715A8C
TVTTAWK       00000000        TVTTGBAD      00000000        TVTTGBUP      02716D20        TVTXCKPT      00008B44
WRTCHAIN      02714AD4        ZEROCORE      02715248


                                  DATA MANAGEMENT IATYTVT FULLWORD CONSTANTS

 LABEL         DATA            LABEL         DATA            LABEL         DATA            LABEL         DATA
AIONOBFN      00003791        SIZEBUF       00000FF4        TVTBSZDT      00000FCC        TVTDATSZ      00001000
TVTMUBLN      00000FC8


                                  DATA MANAGEMENT IATYTVT HALFWORD CONSTANTS

 LABEL         DATA            LABEL         DATA            LABEL         DATA            LABEL         DATA
TVTDMCSZ          0098        TVTDMCPG          001A        AIOBFUSE          01FF        AIONBUFS          0200
AIONOBFM          0200        BUFSZ             0FF4        TVTDATFS          000C        TVTGRPSZ          0014

                                           DATA MANAGEMENT IATYTVT FLAGS

 LABEL         DATA            LABEL         DATA            LABEL         DATA            LABEL         DATA
AIOBFECF            FF        AIOFDPRY            00        AIOFLAG1            40        AIOFLAG2            02
DECF                C0        IOERRECF            00        TATFLAGS            40        TVTSPFLG            81
TVTSPFL2            00        TVTTAECF            00
```

LABEL cccccccc - is the name of the JES3 data management routine or table as it appears in the TVT.

DATA hhhhhhhh - is the entry point address of the routine or table.

DATA MANAGEMENT IATYTVT FULLWORD CONSTANTS are data from the TVT used by JES3 data management to manage buffers and spool space.

LABEL cccccccc - is the field name in the TVT. Data for labels TVTERRQ, TVTERRWK, and TVTTAWK are filled in only when running in an FSS address space.

DATA hhhhhhhh - is the contents of the location.

DATA MANAGEMENT IATYTVT HALFWORD CONSTANTS are data from the TVT used by JES3 data management to manage buffers and spool space.

LABEL cccccccc - is the field name in the TVT.

DATA hhhh - is the contents of the location.

DATA MANAGEMENT IATYTVT FLAGS are flag bytes in the TVT used by JES3 I/O routines.

LABEL cccccccc - is the field name in the TVT.

DATA hh - is the contents of the location.

I/O Parameter Block

DATA MANAGEMENT I/O PARAMETER BLOCK contains parameters used to manage ISRs (IOSB/SRB block for STARTIO) and JES3 spool data sets. It is also used to validate track addresses (spool record address) referenced for I/O and for checking the DASD characteristics and extent information. The IOSB contains data essential for IOS, and the SRB is used by IOS to schedule I/O termination routines the JES3 address space. The I/O parameter block is addressed by TVTIOPRM in the TVT. The mapping macro is IATYIOP.

```
                                                      DATA MANAGEMENT I/O PARAMETER BLOCK

FRISR      ISRQ     LOISR     HIISR     FRSRB     LOSRB     HISRB      SRBQ     JASCB    FS
019C43A0  00000000  019C41E0  019C4640  0197E7EC  0197E47C  0197EEA0  00000000  00F2F200  C0
```

FRISR hhhhhhhh - is the address of the first free ISR in the ISR area.

ISRQ hhhhhhhh - is the address of the queue of extents (logical spool data sets) waiting for ISRs (that is, waiting to be initiated).

LOISR hhhhhhhh - is the address of the first ISR (lowest storage address) in the ISR area.

HIISR hhhhhhhh - is the address of the last ISR (highest storage address) in the ISR area.

FRSRB hhhhhhhh - is the address of the first free SRB in the stand-alone SRBs area. SRBs are used for USAM I/O termination.

LOSRB hhhhhhhh - is the address of the first SRB (lowest storage address) in the stand-alone SRBs area.

HISRB hhhhhhhh - is the address of the last SRB (highest storage address) in the stand-alone SRBs area.

SRBQ hhhhhhhh - is the address of the queue of data set status blocks (DSSs) waiting for SRBs.

JASCB hhhhhhhh - is the address of the JES3ASCB.

FS hh - is flag byte IOPFLAGS.

Extent table

DATA MANAGEMENT EXTENT TABLE (EXT) is the extent information for each extent defined by a DDNAME parameter on the TRACK or FORMAT statement. The EXT is used to validate spool record addresses. The EXT is mapped within macro IATYIOP.

```
                                        DATA MANAGEMENT EXTENT TABLE

02519B00   DDNM  JES3JCT    SPNM             NPEX  00000000   SPB   00000000   IOCNT 00000B9A   UCBAD 00F2A620 UCBCHAN 9818
           WAITQ 00000000   LOADR 0C590000   CTADR 0CA40000   ISRAD 00000000   CHN   02519BD0   BUFSZ 000002E0
           BUSY  00000000   HIADR 0CEE000E   CTLOG 00000000   CTHIG 00000000   LOWR  001DA9D0   HIGHR 001F1229
           NLEFT 00000000   SIZE  00000000   NXEXT 00000000   CYLCT 2721       SPNDX 0000
           DEVTP 200F       RECTK 0029       GRPSZ 0000       TKCYL 000F       NDX   0001       GRPSP 0000
           FLAGS 20         STFLG 00         FLAG2 00         FLAG3 00

02519BD0   DDNM  SPLN41     SPNM  PART1      NPEX  02519CA0   SPB   294C1640   IOCNT 00008A3C   UCBAD 00F29708 UCBCHAN 9801
           WAITQ 251523A8   LOADR 10D50000   CTADR 193B0000   ISRAD 05170590   CHN   02519CA0   BUFSZ 00000FF4
           BUSY  25156618   HIADR 21A0000E   CTLOG 00003EFD   CTHIG 00003EFE   LOWR  000BD5C5   HIGHR 0017A534
           NLEFT 00007ACE   SIZE  00007DFA   NXEXT 00000000   CYLCT 2721       SPNDX 0003
           DEVTP 200F       RECTK 000C       GRPSZ 0018       TKCYL 000F       NDX   0002       GRPSP 0014
           FLAGS 20         STFLG 00         FLAG2 00         FLAG3 00
```

hhhhhhhh - is the storage address of the extent table.

DDNM ccccc - is the ddname of the spool extent.

SPNM cccccc - is the name of the partition to which belongs to this spool data set.

NPEX hhhhhhhh - is the address of the next extent entry in the same spool partition.

SPB hhhhhhhh - is the address of the SPB for this extent.

IOCNT hhhhhhhh - is the I/O count for this extent.

UCBAD hhhhhhhh - is the address of the UCB for this extent.

UCBCHAN hhhh - contains the UCBCHAN value (that is the device number) of the UCB that the content of UCBAD points to.

WAITQ hhhhhhhh - is the address of the queue of data buffers waiting for I/O.

LOADR hhhhhhhh - is the low cylinder and head number in this extent (CCHH).

CTADR hhhhhhhh - is the center cylinder and head number in this extent (CCHH).

ISRAD hhhhhhhh - is the address of the “active” I/O ISR.

CHN hhhhhhhh - is the address of the next entry in the IOP table.

BUFSZ hhhhhhhh - is the buffer size for this extent.

BUSY hhhhhhhh - is the address of the first data buffer using this extent.

HIADR hhhhhhhh - is the high cylinder and head number in this extent (CCHH).

CTLOG hhhhhhhh - contains the ‘G’ portion of the X.G track group address. It identifies the first track group to the left of the center of the cylinder.

CTHIG hhhhhhhh - contains the ‘G’ portion of the X.G track group address. It identifies the first track group to the right of the center.

LOWR hhhhhhhh - contains the ‘R’ portion of the M.R record address. It identifies the first record in the extent.

HIGHR hhhhhhhh - contains the ‘R’ portion of the M.R record address. It is the last record in the extent.

NLEFT hhhhhhhh - is the number of available track groups.

SIZE hhhhhhhh - is the number of track groups in the extent.

NXEXT hhhhhhhh - is the address of the next extent waiting for an ISR.

CYLCT hhhh - is the number of cylinders on the volume.

SPNDX hhhh - is the spool partition index.

DEVTP devtyp - is the model number of the device. *z/OS JES3 Initialization and Tuning Reference* contains a list of the possible device types.

RECTK hhhh - is the number of records in a track.

GRPSZ hhhh - is the number of records in each track group.

TKCYL hhhh - is the number of tracks in each cylinder.

NDX hhhh - is the extent number.

GRPSP hhhh - is the size of the partition track group.

FLAGS hh - is flag byte EXTFLAGS in the EXT.

Value
    Meaning

X'80'
    Indicates the STRTIO linkup routine is using the busy queue.

X'20'
    Indicates the device is a buffered DASD.

X'10'
    Indicates at least one badtrack entry exists for the device.

STFLG hh- is flag EXTSTFLG which is used to indicate the status of the extent. The following are the possible hexadecimal values for hh and their meanings:

Value
    Meaning

X'80'
    The extent was not allocated for use.

X'40'
    The extent was moved to the DRAIN partition.

X'20'
    The extent is in a HELD state.

X'10'
    The extent contains dynamic single track tables (STT).

X'08'
    The extent was replaced.

X'04'
    The extent was deleted. A TRACK statement for the extent was not included in the initialization stream.

X'02'
    Formatting is required for the extent.

FLAG2 hh - is flag byte EXTFLAG2 in the EXT.

Value
    Meaning

X'80'
    Indicates the linkup routine is in Cross-Memory mode and is protected by a second-level Functional Recovery Routine (FRR).

X'40'
    Purge is holding extent lock.

FLAG3 hh - is flag byte EXTFLAG3 in the EXT.

Value
    Meaning

X'80'
    Extent is being added to wait for ISR queue.

IOSB - SRB pairs

DATA MANAGEMENT IOSB-SRB PAIR are used for JES3 STARTIO. The IOSB contains data essential for IOS to perform a start I/O, and the SRB is used by IOS to schedule JESIO in the JES3 address space when the I/O operation has completed. The ISR is used to locate JES3-related control blocks when JES3 data management receives control after the I/O has completed. The mapping macro is IATYISR.

```
                                             DATA MANAGEMENT IOSB-SRB PAIR

                            IOSB                                                             ISR

  START          CSW              VST       FA   FB   FC   PR   CO   OP    EXTEN      CPEND      NXISR      ERDMC     F1   F2
01CA5040   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA54A0   00000000   00   00
01CA5120   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5820   00000000   00   00
01CA5200   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5040   00000000   00   00
01CA52E0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5740   00000000   00   00
01CA53C0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5580   00000000   00   00
01CA54A0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA53C0   00000000   00   00
01CA5580   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5900   00000000   00   00
01CA5660   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5200   00000000   00   00
01CA5740   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5660   00000000   00   00
01CA5820   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA52E0   00000000   00   00
01CA5900   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA59E0   00000000   00   00
01CA59E0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5AC0   00000000   00   00
01CA5AC0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5BA0   00000000   00   00
01CA5BA0   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5C80   00000000   00   00
01CA5C80   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5D60   00000000   00   00
01CA5D60   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5E40   00000000   00   00
01CA5E40   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   01CA5F20   00000000   00   00
01CA5F20   0000000000000000   00000000   40   00   00   00   00   90   00000000   00000000   00000000   00000000   00   00
```

CSW hhhhhhhhhhhhhhhh - is the CSW from the I/O operation.

VST hhhhhhhh - is the virtual address of the channel program.

FA hh FB hh FC hh - are IOS flags for the I/O, from the IOSB.

PR hh - is an indicator for the type of special processing to be performed by IOS components that are operating asynchronously to the mainline.

CO hh - is the I/O completion code.

OP hh - is an options byte to direct IOS operations per JES3 requirements.

EXTEN hhhhhhhh - is the address of the JES3 extent table entry for this I/O request.

CPEND hhhhhhhh - is the address (+8) of the last CCW executed for the I/O request.

NXISR hhhhhhhh - is the address of the next ISR.

ERDMC hhhhhhhh - is the address of the data management control block (DMC) with an I/O error.

F1 hh - is a flag byte in the ISR (ISRFLAG1).

F2 hh - is a flag byte in the ISR (ISRFLAG2).

RPS Sector tables

RPS (rotational position sensing) SECTOR TABLES are used during spool I/O scheduling. There is one entry in the table for each unique combination of device type and record per track.

```
                                                 RPS SECTOR TABLES

01C1D208   DEVTP  200E   BUFSZ  01A0   RECTK  0033   TABLE 05090D12161A1E22262A2F33373B3F43474C5054585C6064696D7175797
01C1D241   DEVTP  200E   BUFSZ  OFF4   RECTK  000A   TABLE 051A2E42576B8094A9BD
```

DEVTP hhhh - is the device type for this table entry.

BUFSZ hhhh - is the record length (buffer size) for this table entry.

RECTK hhhh - is the number of records that will fit on one track.

TABLE hhhh.... - is the sector number for each record within a track. The number of table entries corresponds to RECTK. Each sector number is 2 hexadecimal characters long and they are formatted in a continuous string.

Spool Partition Control Blocks

SPOOL PARTITION CONTROL BLOCK describes a spool partition. The information for an SPB comes from the spool partition checkpoint record (IATYSPR) and from the I/O parameter block (IATYIOP) spool data set extent entries.

```
                                               SPOOL PARTITION CONTROL BLOCKS

027009F8   NAME    DRAINED    OVRFL            PTAT  00000000   TATSZ 00000000   SCNPT 00000000   SCNSZ
00000000
           EXT     00000000   EXREL 00000000   TALL  00000000   NTEXT 00000000   NLEFT 00000000   MINGP
00000000
           MRGGP   00000000   MSGPT 00000000   GRPSZ 0000       EXTN  0000       NDX   0001       OVNDX
0000
           MINTR   00         MRGTR 00         FLAG  28         STFLG 00         WTFLG 00         FLAG2
000

02700A68   NAME    UNAVAIL    OVRFL            PTAT  00000000   TATSZ 00000000   SCNPT 00000000   SCNSZ
00000000
           EXT     00000000   EXREL 00000000   TALL  00000000   NTEXT 00000000   NLEFT 00000000   MINGP
00000000
           MRGGP   00000000   MSGPT 00000000   GRPSZ 0000       EXTN  0000       NDX   0002       OVNDX
0000
           MINTR   00         MRGTR 00         FLAG  28         STFLG 00         WTFLG 00         FLAG2
000

02700AD8   NAME    PART1      OVRFL            PTAT  0275B154   TATSZ 00000EA8   SCNPT 0275B35C   SCNSZ
00000CA0
           EXT     01CA6C90   EXREL 02700044   TALL  00006978   NTEXT 00001770   NLEFT 000009CB   MINGP
00000546
           MRGGP   00000A8C   MSGPT 06020AF0   GRPSZ 0014       EXTN  0005       NDX   0003       OVNDX
0000
           MINTR   05         MRGTR 0A         FLAG  E0         STFLG C0         WTFLG 40         FLAG2
000
```

NAME cccccc - is the spool partition name, from the SPART initialization statement.

EXT hhhhhhhh - is the address of the first extent entry in the IOP.

MRGGP hhhhhhhh - is the marginal condition track group count.

MINTR hhhhhhhh - is the minimal track group percentage.

OVRFL hhhhhhhh - is the overflow partition name.

EXREL hhhhhhhh - is the address of the extent relative vector.

MSGPT hhhhhhhh - is the address of the pending action message.

MRGTR hhhhhhhh - is the marginal track group percentage.

PTAT hhhhhhhh - is the address of the partition TAT.

TALL hhhhhhhh - is the number of track groups in the partition.

GRPSZ hhhh - is the number of records per track group in this partition.

FLAG nn - is the flag byte (SPBFLAG).

FLAG2 nn - is the flag byte SPBFLAG2.

TATSZ hhhhhhhh - is the length (in bytes) of the PTAT bit map.

NTEXT hhhhhhhh - is the largest extent size in track groups.

EXTN hhhh - is the number of extents in this partition.

STFLG hhhhhhhh - is the allocation status flag (SPBSTFLG).

SCNPT hhhhhhhh - is the PTAT allocation scan resume address.

NLEFT hhhhhhhh - is the number of track groups available in the partition.

NDX hhhh - is the partition index.

WTFLG nn - is the flag byte (SPBWTFLG).

SCNSZ hhhhhhhh - is the scan length remaining in the PTAT bit map.

MINGP hhhhhhhh - is the minimal condition track group count.

OVNDX hhhh - is the index to the overflow partition.

Single track tables

DATA MANAGEMENT COMMON SINGLE TRACK TABLE is used to allocate and purge records that are system-related, single-record files. Its purpose is to be economical with queue space by allocating only one record at a time instead of a track group. The table is mapped by macro IATYSTT.

```
                                        DATA MANAGEMENT COMMON SINGLE TRACK TABLE

                                  MNTRKFDB  (02801ABC):     7F61800C  000006D0   00000000

           HEADER                                                      ENTRY

 START          SIZE          NSTT          SCAN          SCANL       F1     SEGMENT       RECCT       AVAIL         SPADR
02865038       0000004C       0001         02865050        0001       20     02865050      012C        0110         00020000079F

                                        DATA MANAGEMENT JCT SINGLE TRACK TABLE

                                  JCTRKFDB  (02801AF0):     02865408  00000000   00000000

           HEADER                                                      ENTRY

 START          SIZE          NSTT          SCAN          SCANL       F1     SEGMENT       RECCT       AVAIL         SPADR
0286544C       000000C4       0001         02865464        0001       A0     02865464      04EC        04E9         000100007135
```

MNTRKFDB hhhhhhhh - is the address of the STT JBTAT FDB, followed by the actual FDB.

START hhhhhhhh - is the first STT header in the chain.

SIZE hhhh - is the size of the STT.

NSTT hh - is the number of entries in the STT.

SCAN hhhhhhhh - is the address of the fixed segment in the STT that JES3 will allocate space from on the next allocation request.

SCANL hhhh - is the number of fixed segments remaining.

F1 hh - is a flag byte in the STT (STTFLG1).

SEGMENT hhhhhhhh - is the address of this segment.

RECCT hhhh - is the number of records in this segment.

AVAIL hhhh - is the number of records available in this segment.

SPADR hhhhhhhhhh - is the M.R of the first record in this STT.

DATA MANAGEMENT JCT SINGLE TRACK TABLE - is used to allocate and purge records that are maintained in the JCT data set. The formatted fields have the same explanation as those in the COMMON SINGLE TRACK TABLE above.

File directory

DATA MANAGEMENT FILE DIRECTORY accounts for all opened multi-record files and some single-record files. The directory is a prioritized queue of 24 byte entries. It is mapped by macro IATYFDD.

```
                                         DATA MANAGEMENT FILE DIRECTORY

                   ENTRY                                                                FDB

   START    JTFDB     FCTADD      VALID     FD    WF    WC     START        DATA         BPTR       RL     IO    ER    F0    FS    FL    F1    F2
 0275CFA0 02CA8AE4 02AC37E0   00000000    00    00    00   02CA8AB4  7F54B00C0000                                E0    00    00
 0275C320 0009816C 02ACE3D0   00000000    00    00    00   00098128  000000000000   7F544478  0B88  00    00    00    08    00    00    00
 0275CBB8 0008A16C 02C76650   00000000    00    00    00   0008A128  000000000000   7F5942D4  0D2C  00    00    00    08    00    00    00
 0275C168 000BD16C 02AC9498   00000000    00    00    00   000BD128  000000000000   7F5453D0  0C30  00    00    00    08    00    00    00
 0275CB40 000CA16C 02AC96A0   00000000    00    00    00   000CA128  000000000000   7F52B2D4  0D2C  00    00    00    08    00    00    00
 0275C960 00000000 02C7E278   187E14D2    00    00    00   02CFC11C  7F54300C0000   7F56DF68  0098  00    00    00    A8    00    00    00
 0275CCD0 00000000 02C9EDF8   18E31E89    00    00    00   02D1D11C  000000000000   7F5AC080  0F80  00    00    00    A8    00    00    00
 0275CEB0 00000000 02C9B200   190AF681    00    00    00   02CD611C  000000000000   7F5E5518  0AE8  00    00    00    A8    00    00    00
```

START hhhhhhhh - is the address of the file directory entry.

FD nn - is a flag byte in the FDD (FDFLAGS).

WF nn - is a WRTCHAIN flag FDWRTBYT.

WC nn - is the WRTCHAIN completion flag (FDWRTPST).

JTFDB hhhhhhhh - is the address of the JBTAT FDB (output files).

FCTADD hhhhhhhh - is the address of the FCT associated with the FDB.

VALID hhhhhhhh - is a validity check data field for input files.

START hhhhhhhh - is the address of the FDB.

DATA hhhhhhhhh - is the address of the buffer or track address for the data.

BPTR hhhhhhhh - is the address of the current buffer (multi-record files only).

RL hhhh - is the number of unused bytes remaining in the buffer.

IO hh - is the number of outstanding I/O requests.

ER hh - is the number of uncorrected I/O errors.

F0 hh FS hh FL hh F1 hh F2 hh - are flag bytes in the FDB (F1 and F2 are multi-record files only).

JSAM/USAM Data buffers

DATA MANAGEMENT JSAM DATA BUFFERS is the buffer pool that is constructed during initialization as the result of parameters specified on the BUFFER statement. The buffer allocator block (BAL) is used to allocate and de-allocate buffers from this pool. One to two buffers per block per page is possible. The page containing any buffer in use may be fixed in main storage (that is, it cannot be paged out). The data buffer is mapped by macro IATYDAT and IATYDMC, and the buffer allocator block is mapped by IATYBAL.

DATA MANAGEMENT USAM DATA BUFFERS is used by a user address space to read data from spool or write data to spool. A USAM unprotected buffer (UBUF) is allocated from a page in the user address space. USAM contains the data that the user application is writing to or has read from spool. The actual I/O to or from spool uses a USAM protected buffer (PBUF). The data is transferred from a UBUF to a PBUF before writing it to spool. When reading data from spool the data is placed in a PBUF and then transferred to a UBUF for the user application to access. The buffer allocator block (BAL) is used to allocate and de-allocate PBUFS. The protected buffer pool resides in CSA, the JES3 auxiliary address space, or both. See the PRTPAGE keyword in *z/OS JES3 Initialization and Tuning Reference*, for defining the USAM PBUF pool of buffers.

```
                                      DATA MANAGEMENT JSAM DATA BUFFERS
                 BALDMCBA     BALDMCEA     BALDATBA     BALDATEA     BALBALBY     BALTRT      BALBUFCT     BAL4KBLK

                 7F71C000     7F72FAAF     7F51C000     7F71C000     7FFDDBD4     7FFDDBAC    00000200     000001FF

   DMC      DMCNXDMC   DMCFCT    I/O-DSP OWN-DSP  F1  F2  F3  F4  FDSTART  F0  FS  F1  DMCDAT     DATTHIS       SRFID  RQ-ADR  JOBID
 7F71C000  00000000  02728870  JSS     JSS      88  00  58  00  02763898  80  6C  47  7F51C000  00020000D409
 7F71C098  00000000  02728870  JSS     JSS      88  00  58  00  02701A6C  04  F0  00  7F51D000  00030000CEC9   NCK
 7F71C130  00000000  02AC9290  WTR     WTR      88  00  58  00  02C695A0  04  B0  00  7F51E000  0003000101DF   WOSE
 7F71C1C8  7F71EAB0  02727268  CONSDM  CONSDM   88  00  58  00  7F5460E8  00  88  00  7F51F000  000300010BDD
 7F71C260  00000000  02728870  JSS     JSS      88  00  58  00  02701ACC  04  F0  00  7F520000  00020000D40E   OCK   STTTABLE JES3
 7F71C390  00000000  02ACAAF0  DMJA    JSS      00  00  00  20  00000000  00  00  00  7F522000  000000000000
 7F71C558  00000000  02AC8A70  CIDRVR  JSS      81  00  58  00  02701AD4  04  D0  00  7F525000  00030000CEC7   FCK   STTTABLE JES3
 7F71C7B8  00000000  02727098  JSAM    JSAM     88  00  58  00  7F536078  06  B0  00  7F529000  000300000F47   JBT
 7F71C850  00000000  02C9B200  INTRDR  INTRDR   00  00  00  00  00000000  00  00  00  7F52A000  000000000000
 7F71C980  00000000  02ACA2D0  DMJA    DMJA     88  00  58  00  02B34798  04  B0  00  7F52C000  000200015D7E   JDS
 7F71CA18  7F7202F8  02727098  JSAM    JSAM     88  00  58  20  02D1D13C  04  B0  00  7F52D000  000400019415   ISP
 7F71CBE0  7F71E428  02ACEBF0  CI      CI       88  00  58  00  0001BAF0  04  B0  00  7F530000  0005000046D8   JVT
```

```
                                     DATA MANAGEMENT USAM DATA BUFFERS
           BALDMCBA    BALDMCEA    BALDATBA    BALDATEA    BALBALBY     BALTRT     BALBUFCT    BAL4KBLK    BALXDTBA    BALXDTEA

           1DE66000    1DEAF240    00000000    00000000    01C64C00    01C64BD8    00000400    000003FF    7F300000    7F700000

START    DMCMULT1 DMCMULT2 DMCCREC  DMCNXDMC DMCNXDUP DMCDATPT F1 F2 F3 F4 F5 DMCDAT   DMCSRCH    DATTHIS      A/S DMCFDDSS
16C3E000 00000000 00040404 000003DC 00000000 00000000 7F60ED40 01 10 F8 20 00 16C20000 0010000B0C 000200000BD0 CSA 16BE1230
16C404C0 030A4000 96C1B0E8 00002E16 16C405F0 16C405F0 7F4FAD90 00 00 30 00 00 FFF57000 0024000103 00020000195F AUX 16BE10C8
```

BALDMCBA hhhhhhhh - is the starting address of the DMC pool.

BALDMCEA hhhhhhhh - is the ending address of the DMC pool.

BALDATBA hhhhhhhh - is the starting address of the JSAM or USAM CSA protected buffers.

BALDATEA hhhhhhhh - is the ending address of the JSAM or USAM CSA protected buffers.

BALBALBY hhhhhhhh - is the address of the buffer allocator bytes.

BALTRT hhhhhhhh - is the address of the translation tables (used during allocation).

BALBUFCT hhhhhhhh - is the number of buffers in the buffer pool.

BAL4KBLK hhhhhhhh - is the number of 4K blocks (pages) minus one.

DMC hhhhhhhh - is the pointer to the data management control block.

DMCNXDMC hhhhhhhh - is the chaining field for linking DMCs.

DMCFCT hhhhhhhh - is the address of the last FCT to issue I/O on the buffer.

I/O-DSP cccccccc - is the name of the FCT that issued the last I/O request.

OWN-DSP ccccccc - is the name of the DSP that obtained the buffer.

F1 hh F2 hh F3 hh F4 hh - are the DMC flag bytes. These come from DMCFLAG1, DMCFLAG2, DMCFLAG3, and DMCFLAG4.

FDBSTART hhhhhhhh - is the address of the FDB.

F0 hh FS hh F1 hh - are FDB FLAG0, FLAGS, and FLAG1.

DMCDAT hhhhhhhh - is the address of the DAT associated with this DMC.

DATTHIS hhhhhhhh - is the self track address of the single record file (SRF).

SRFID ccc - is the SRF ID of the record.

RQ-ADR cccccccc - is the RESQUEUE address if the JOBTAT is from the RESQUEUE. Otherwise, it is the address of the STTTABLE if the JOBTAT is from MNTRKFDB.

JOB# cccc - is the job number if the RESQUEUE is available. This field displays “JES3” if the JOBTAT is for the STT.

DATA MANAGEMENT USAM DATA BUFFERS is formatted identically to JSAM information with the following additional fields:

BALXDTBA hhhhhhhh - is the starting address of the USAM protected buffer pool in the JES3AUX address space.

BALXDTEA hhhhhhhh - is the ending address of the USAM protected buffer pool in the JES3AUX address space.

DMCMULT1 and DNCMULT2 -

- If the address of the DMC being formatted was obtained from the DSB, these 2 fields correspond to the DMCBPTR and DMCRL fields.
- If the address of the DMC being formatted was obtained from the ISR, these 2 fields correspond to the DMCDATRA and DMCWORK fields.

DMCCREC - Current record being processed

DMCNXDUP - Original DMC chain pointer

DMCDATPT hhhhhhhh - is a pointer to the associated unprotected (UBUF) DMC in the requesting address space.

F1 hh F2 hh F3 hh F4 hh F5 hh - are the DMC flag bytes. These come from DMCFLAG1, DMCFLAG2, DMCFLAG3, DMCFLAG4 and DMCFLAG5.

DMCSRCH hhhhhhhhhh - is the DASD search address for the record on spool.

A/S -

- If CSA, the DAT is in CSA
- If AUX, the DAT is in JES3AUX

DMCFDDSS -

- DSS FOR NON-JES address space I/O
- FDB FOR JES address space I/O

Note: This portion of the dump is not printed when running in an FSS address space because protected buffers are managed only from the JES3 address space.

JES3 Memory Usage

JES3 MEMORY USAGE is a map of the JES3 address space. It is developed by scanning the VS storage management blocks for contiguous free space in the region (FBQE chain), contiguous space in a subpool (DQE chain), contiguous free space in a subpool (FQE chain), and space within a subpool that is allocated to a module (CDE/XL and JDE chains). Note that space allocated by GETMAIN (except module space) is not mapped, but can be deduced.

Note: If running in an FSS address space, this header will read “FSS MEMORY USAGE”.

JES3 AUXILIARY ADDRESS SPACE MEMORY MAP is formatted identically to JES3 MEMORY USAGE.

Note: This portion will not appear in the dump when running in an FSS address space.

```
               JES3 MEMORY USAGE
START      END       LENGTH        CONTENTS
00005470  00005547  0000D8 000216  MODULE IATISCB
00005548  00005CDF  000798 001944  MODULE IATGROP
0000C000  000106CF  0046D0 018128  MODULE IATABM
000126A8  00013FFF  001958 006488  MODULE IATABN0
00014000  00017A2F  003A30 014896  MODULE IATBDC
0001AD08  0001AE27  000120 000288  MODULE IEFQBJST
0001C180  0001C58F  000410 001040  MODULE IATIICA
0001FF30  00020FFF  0010D0 004304  MODULE IATIICX
0003ADF8  0003DFFF  003208 012808  MODULE IATLVVR
0003E0D8  0003E477  0003A0 000928  MODULE IATIICTX
.
.
04700A20  04700A5F  000040 000064  MODULE IATUX19
04701000  04772907  071908 465160  MODULE IATNUC
04773798  04773FFF  000868 002152  MODULE IATSSCK
.
.
04D0B200  04D0BF5F  000D60 003424  MODULE IATISCD
04D0BF60  04D0DFFF  0020A0 008352  MODULE IATIIP1
04D0E560  04D0EF8F  000A30 002608  MODULE IATOSSD
04D0EF90  04D13FFF  005070 020592  MODULE IATIIP0
04D14FC8  04D16FFF  002038 008248  MODULE IATISDT
04D27B28  04D29FFF  0024D8 009432  MODULE IATOSWC
04D2ACA0  04D2CFFF  002360 009056  MODULE IATOSWD
.
.
```

SP ddd - subpool identifier associated with the line (or lines).

START/END hhhhhhhh - starting and ending address for the item being formatted.

LENGTH hhhhhhhh dddddd - size of the area described by the formatted item, stated first in hex, then in decimal.

CONTENTS cccccc... - a description of the area being formatted (an overview of the control blocks involved is shown in “General Information”).

- SPACE ASSIGNED TO DQE - always appears first in a block of formatted data. The DQE describes a contiguous segment of space within a subpool.
- FREE SPACE - represents unallocated space in the subpool.

FCT READY QUEUE SUMMARY

FCT Ready Queue Summary contains any FCT that has completed a JSAM I/O request. The MFM dispatches the FCTS on the queue.

```
     FCT READY QUEUE SUMMARY

        TVTRDQTP  82ACA4D8

FCT ADDRESS      FCTRDQCH      FCTPRTY
82ACA4D8         82C83230      04
82C83230         82C78158      07
82C78158         827277F0      04
827277F0         82C710A0      1E
82C710A0         82AC9EC0      07
82AC9EC0         82AC9AB0      07
82AC9AB0         82C7C180      04
82C7C180         82ACB518      1E
82ACB518         82C4C348      07
82C4C348         00000000      0E
```

TVTRDQTP hhhhhhhh - is the address of the FCT ready queue.

FCT ADDRESS cccccccc - is the address of the next FCT on the FCT Ready Queue.

PRTY cc - is the priority level of the FCT.

Auxiliary Task Control Block

AUXILIARY TASK CONTROL BLOCK (ATCB) is the primary control block used by the auxiliary task to save status and control information relating to its execution.

```
                                   AUXILIARY TASK CONTROL BLOCK


TCB           ECBA           FCT           ATDC          WAIT          WCNT          POOL          ARQ
007DD828      00B9EE2C       02BE6A60      02BFD180      02BE6A60      00001657      02BFD1C0
00000000

ECBF-ECFF
00000000 00
```

The following ATCB fields will be formatted if the auxiliary task exists at the time of the dump.

TCB=hhhhhhhh - is the address of the TCB for the auxiliary task.

ECBA=hhhhhhhh - is the address of the ECB for the auxiliary task.

FCT=hhhhhhhh - is the address of the currently dispatched FCT.

ATDC=hhhhhhhh - is the address of the auxiliary task dispatching queue.

WAIT=hhhhhhhh - is the address of the WAIT FCT.

WCNT=hhhhhhhh - is the auxiliary task wait count in decimal.

POOL=hhhhhhhh - is the address of the ATDE free pool.

ARQ=hhhhhhhh - is the address of the attach request queue.

ECBF=hhhhhhhh - is the ECB used for serialization during *MODIFY,MT processing.

ECFF=hh - is the ECF used for serialization during *MODIFY,MT processing.

Function Control Table

FUNCTION CONTROL TABLE is the JES3 control block which represents a DSP or function. The FCT is used by the multi-function monitor (MFM) to allocate processing time in the JES3 address space. When a function must wait for an event to occur, control is passed to the MFM, which selects the highest priority FCT whose function is ready to be dispatched. Control is then given to that function. This method is analogous to the VS technique of multi-programming tasks by using a TCB chain and a system dispatcher. System related functions (that is, functions not job related, such as CONSOLES, JSS and SETUP have permanent FCT entries. All others are created and deleted dynamically. The entries are defined by the IATYFCD macro. The FCT is mapped by macro IATYFCT.

```
05951608  PROGRAM NAME IS CONCMD

ECF OF X'40' AT 05B125FC IS POSTED            AWAIT RETURN IS  8593580C

          AWAIT REASON CODE IS: X'0002'
          EXPLANATION: WAITING FOR A GENERALIZED SUBTASK TO BECOME AVAILABLE OR TO FINISH PROCESSING A
REQUEST

            CDE             SAVCH           SESEQ-RQAD      PRTY-DSPDC      CSECT
TIMON           LOGIN
            00000000        0599B7E0        00 00000000     FE 0594C340     00000000
00000000        00000000

            TNEXT           TUID            TIMEI           TFLAG-TIMEX     CBPTR           JCTPY-
GLIST     GSD
            00000000        40404040        00000000        D0 00000000     00000000        00
05951868     059A3C20

            FLAGS           FSFLS                           JESTAE------------------
CONTROL-----------------BLOCK
            1  2  3  4      1  2            MFCNT           SCBLAST         SCBEXIT
SCBPARM         SCBSYMEX
            00 00 40 00     60 00           0000            00000000        05906978
00000000        00000000

            FSCOD           FSLOC           FSRTN           FCNT-PCNT       FSWA
SLEVL           CLEVL
            DM137           00000000        8590F3B0        0000 0000       8599ADB8
00000000        00000000

            NQADD           RSFLG-CNFLG     DMDSP           DMID            DMRT
EFPST           RDQCH
            00000000        00 20           0000            00000000        00000000
0000000000      00000000

            WORK                            MASK-ECFAD      ATDE-MODE       LOCK-LTYPE      RSVD2
            00000000 0000137F               40 05B125FC     00000000 00     00000000 00     00000000
00000000

            TOD             NEXT            PREV            TELPT           ASTCB
RESON           FSEA
            094319-042824   0594C530        00000000        00000000        00000000
00000000        05951870

            FCT REGISTER SAVE AREA
                REG 0- 7    05B125FC   80000240   059A3C20   00000008   00000000   0599B4E0   05B48940
05B12588
                REG 8-15    85935628   00000000   05935474   05951608   05904000   05935B48   8593580C
05930AD8
                            R10 - IATGRGS +0002C  R14 - IATGRGS +003C4  R15 - IATGRCT +00030

            ACTIVE SAVE AREA CHAIN

0599B7E0        REG 0- 7    00000000   05B1A000   05B1E000   05B1E000   05B1BF20   05B04030   00000000
85906614
                REG 8-15    7F321890   00000000   05906318   05951608   05904000   05906C38   8590670C
0590E474
                            SAVWORK----0595DD40   SAVJESCB---00000000---0590F3B0---00000000
                            R10 - IATCNCM +00000  R14 - IATCNCM +003F4  R15 - IATCNIN +0002C
:exmp.
```

ECF information - indicates the ECF mask and address the DSP last waited on, and indicates whether the ECF is posted. This information is extracted from the associated ATDE if the DSP was running under the auxiliary task at the time of the dump. Otherwise, it is obtained directly from the FCT. If the REASON= parameter was specified on the AWAIT macro, the AWAIT reason code in hex and its description is formatted. If the DATA= parameter was specified on the AWAIT macro, the AWAIT specific data is also formatted.

CDE hhhhhhhh - is the JDE (JES3 directory element) address of the driver DSECT.

SAVCH hhhhhhhh - is the address of the save area for the routine currently in control.

SESEQ-RQAD hh hhhhhh - is the sequence number of the scheduler element being processed by this function. The three low-order bytes are the address of the RESQUEUE.

PRTY-DSPDC hh hhhhhh - is the dispatching priority of the DSP. The three low-order bytes are the address of the DSP dictionary entry.

CSECT hhhhhhhh - is the address of the DSP's data CSECT (register 13).

TIMON hhhhhhhh - is time when the DSP started with a LOGIN macro.

LOGIN hhhhhhhh - is the address of a routine to be given control when console service has a message for this function. (Established by the LOGIN macro.)

TNEXT hhhhhhhh - is the address of the ATIME queue for this function so that multiple ATIME time intervals can be maintained.

TUID hhhhhhhh - is the name associated with the ATIME currently in effect.

TIMEI hhhhhhhh - is the interval (in hundredths of a second) that is to elapse before the ATIME exit routine is entered.

TFLAG-TIMEX hh hhhhhh - are obtained from FCTTFLAG and FCTTIMES, respectively. TFLAG is a flag for time control. TIMEX is the low-order three bytes, and represents the address of the routine to be given control when the time interval is exhausted.

CBPTR hhhhhhhh - is the address of the console buffer chain.

JCTPY-GLIST hhhhhhhh - is the JCT priority (for called DSPs) and the address of the GETUNIT list.

GSD hhhhhhhh - is the address of the general subtask directory.

FLAGS hh hh hh hh - are flag (IATYGSD) bytes FCTFLAG1 through FCTFLAG4.

FSFLS hh hh - are the flag bytes (FCTFSFL1, FCTFSFL2) for failsoft obtained from FCTFSFLG.

MFCNT hhhh - is the maximum number of failures which can occur before the DSP is terminated without retry.

ASTCB hhhhhhhh - is the associated subtask TCB address.

JESTAE---CONTROL---BLOCK - the first word is a chain address to the last JESTAE control block, if there are any. The second word is the address of a JESTAE exit routine. The third word is the address of the user-defined parameter list from the PARAM keyword of the JESTAE macro when it was issued for this function.

FSCOD hh - is the failure code issued from a FAILDSP macro when the function is failed.

FSLOC hhhhhhhh - is the location of the FAILDSP macro.

FSRTN hhhhhhhh - is the address in the DSP where the FAILDSP macro was issued.

FCNT-PCNT hhhh hhhh - are the FCT failure count and JESTAE percolation count, respectively.

FSWA hhhhhhhh - is the address of the failsoft work area (IATYFSWA).

SLEVL hhhhhhhh - is the address of current level of JESTAE ASAVE.

CLEVL hhhhhhhh - is the address of the current JESTAE control block.

RSCNT hhhh - is the number of resources enqueued by this function by use of AENQ.

RSFLG-CNFLG hh hh - are the specialized reschedule and console flags.

DMDSP hhhh - is the JSAM SRF chain displacement.

DMID hhhh - is the JSAM SRF ID (FCTDMIO).

DMRT hhhhhhhh - is the JSAM SRF root FDB address.

EFPST hhhhhhhh - is the EFP mask and address for post.

WORK - is the FCT work area (FCTWORK).

ECFAD=hhhhhhhh - is the ECF mask and ECF address.

ATDE=hhhhhhhh - is the address of the associated ATDE.

MODE=hh - is the FCTMODE flag byte.

LOCK=hhhhhhhh - is the address of the JES3 lock held by this FCT or zero.

LTYPE=hh - indicates the type of lock held if any.

RSVD2 - is a field reserved for the user.

TOD hhmmss-ffffff - is the time of day when an FCT was last active. The time stamp is expressed as “hours, minutes, seconds-fraction.” The fraction is a decimal fraction of a second down to one millionth of a second.

FCT REGISTER SAVE AREA - is the area used to save registers over an AWAIT macro service. R10, R14 and R15 show the name of the module and the offset whose address is in those registers. If no JES3 module could be found, the displayed text shows UNKNOWN.

Auxiliary task dispatching element

AUXILIARY TASK DISPATCHING ELEMENT (ATDE) is the JES3 control block which is used to select an FCT for dispatching under the JES3 auxiliary task. This block is created and chained to the FCT only in the case of a writer DSP and the GENSERV DSP. If an ATDE is chained to a FCT, the ATDE will follow the FCT in the formatted dump output.

```
02BFD180      NEXT       ECFAD       FCT       ACTB              PRTY-DISP            FLAGS
            02BFD0C0    02BFD1AD    02ACB928    00000000          03  00               80  00


02ACACF8  DSP NAME IS      WTR       JOB ID IS  JOB12446         JOB PRIORITY IS 12     DSP PRIORITY
IS 004
          LOAD MODULE IS IATOSWC      MODULE BASE IS 02C6D988      SE SEQUENCE IS   00
          JDAB FDB IS 00060001EC3E049080000000

          ECF OF X'20' AT 02C6559F IS NOT POSTED    AWAIT RETURN IS 82C42FB4

          ECF OF X'40' AT 02C655A2 IS NOT POSTED    AWAIT RETURN IS 82C42FB4

          CDE                 SAVCH        SESEQ-RQAD      PRTY-DSPDC       CSECT
TIMON          LOGIN
          02C11780            02C043C8     00  02AA9780    03  02745050     00000000
2130104F       02C68ACC

          TNEXT               TUID         TIMEI           TFLAG-TIMEX      CBPTR            JCTPY-
GLIST    GSD
          00000000            00000000     00000000        D0 00000000      0003DA28         00
02ACAEBC    02AD9020

          FLAGS               FSFLS                                         JESTAE---------CONTROL---------
BLOCK
          1   2   3   4       1   2        MFCNT           ASTCB            SCBLAST        SCBEXIT
SCBPARM
          A4  00  04  00      00  00       7FFF            00000000         00000000       02C6E26A
02C30160

          FSCOD               FSLOC        FSRTN           FCNT-PCNT        FSWA           SLEVL
CLEVL
                              00000000     00000000        0000 0000        00000000       00000000
00000000

          RSCNT               RSFLG-CNFLG  DMDSP           DMDID            DMRT           EFPST
RDQCH
          0000                00 80        0000            D6E2C540         00000000       00000000
00000000

          WORK                             MASK-ECFAD      ATDE-MODE        LOCK-LTYPE     RSVD2
          47F0E000  00050000               00 02C655A4     02BFD0C0   00    00000000 00    00000000
00000000

          TOD
          213010-712686
```

The ATDE fields that will be formatted are as follows:

NEXT=hhhhhhhh - is the address of the next ATDE.

ECFAD=hhhhhhhh - is the ECF mask and ECF address.

FCT=hhhhhhhh - is the address of the FCT.

ATCB=hhhhhhhh - is the address of the ATCB if the associated FCT was active under the auxiliary task at the time of the dump. Otherwise, this field is zeros.

PRTY=hh - is the priority of the FCT associated with ATDE.

DISP=hh - is the dispatching control switch.

FLAGS=hh hh - the first hh is the ATDEFLG1 byte and the second hh is a reserved flag byte.

Resident Remote and Line DCT Entries

RESIDENT REMOTE AND LINE DCT ENTRIES are not formatted in the FSS dump but for JES3 represent device control information for lines and terminals. A line is the device used by RJP to communicate with a terminal. A terminal refers to one device or a collection of terminal devices at the other end of the line (remote). A line is used exclusively by RJP. The DCT is an extension to the SUPUNITS entry for a line or terminal. These SUPUNIT entries and their DCT extensions are not part of the system SUPUNITS chain. Rather, they are maintained on the JES3 queue (direct-access spool device) until a line is started or until a terminal is signed on. The resident remote and line DCT entries are mapped by macro IATYSUP. The entries are addressed by the RJP remote/line table, which is mapped by macro IATYRLT.

```
02C6FD50  DEVICE NAME  SUPAD       BUFAD      LINE DCT   PR.WORK   COM.OWA   USERIOB   USER FCT   RES.
AD    NEXT DCT
          S0167CON     02C6FCF4    00000000   02C6FBF4   00000000  00000000  00000000  00000000
02AD3924  02C6FDEC

                       RECSIZ      MAXSIZ     NO     BUFSIZ   FCS     RCB/PUN  FL1    FL2    FL3    FL4
FL5
                       0078        0078       80D9   0000     0040      91      00     80     AE
00     00

02C6FDEC  DEVICE NAME  SUPAD       BUFAD      LINE DCT   PR.WORK   COM.OWA   USERIOB   USER FCT   RES.
AD    NEXT DCT
          S0167RD1     02C6FD90    00000000   02C6FB14   00000000  00000000  00000000  02AC96A0
02AD3924  02C6FFIC

                       RECSIZ      MAXSIZ     NO     BUFSIZ   FCS     RCB/PUN  FL1    FL2    FL3    FL4
FL5
                       0050        00FF       80D9   0000     0000      00      00     10     AE
00     00

02C6FF1C  DEVICE NAME  SUPAD       BUFAD      LINE DCT   PR.WORK   COM.OWA   USERIOB   USER FCT   RES.
AD    NEXT DCT
          S0167PR1     02C6FE2C    00000000   02C6FB84   00000000  00000000  00000000  02AC96A0
02AD3924  02C6FFIC

                       RECSIZ      MAXSIZ     NO     BUFSIZ   FCS     RCB/PUN  FL1    FL2    FL3    FL4
FL5
                       0084        0084       80D9   0000     0000      00      00     20     AE
00     00

02C6F558  DEVICE NAME  SUPAD       BUFAD      LINE DCT   PR.WORK   COM.OWA   USERIOB   USER FCT   RES.
AD    NEXT DCT
          S0168CON     02C6F4FC    00000000   02C6F3FC   00000000  00000000  00000000  02727268
02AD3970  02C6F5F4

                       RECSIZ      MAXSIZ     NO     BUFSIZ   FCS     RCB/PUN  FL1    FL2    FL3    FL4
FL5
                       0078        0078       80DA   0000     0040      91      00     80     AE
08     00

02C6F5F4  DEVICE NAME  SUPAD       BUFAD      LINE DCT   PR.WORK   COM.OWA   USERIOB   USER FCT   RES.
AD    NEXT DCT
          S0168RD1     02C6F598    00000000   02C6F31C   00000000  00000000  00000000  02ACD390
02AD3970  02C6F724

                       RECSIZ      MAXSIZ     NO     BUFSIZ   FCS     RCB/PUN  FL1    FL2    FL3    FL4
FL5
                       0050        00FF       80DA   0000     0000      00      00     10     AE
00     00
```

LINENAME cccccccc - is the name of the line.

SUPAD hhhhhhhh - is the address of the SUPUNIT entry for the line.

DCTAD hhhhhhhh - is the address of the first remote DCT.

BUFAD hhhhhhhh - is the address of the line input buffer.

CODAD hhhhhhhh - is the address of one of the two possible code tables, used for the line transparency features.

OBUFAD hhhhhhhh - is the address of the first output buffer on the output queue, and it applies only to intelligent terminals.

RES.AD hhhhhhhh - is the address of the LINE entry in the RJP line and terminal table.

BAUD dddd - is the line speed rating, as specified by the S parameter of the RJPLINE initialization statement.

FCS hhhh - is the function control sequence last received from a programmable terminal.

RSQ hhhh - is the receive block sequence count for a programmable terminal.

TSQ hhhh - is the transmit block sequence count for a programmable terminal.

OCT hhhh - is the number of OEM remote devices for the line.

ATT hh - is a flag byte.

FL1 and FL2 hh - are flag bytes from SUPLNFL1 and SUPLNFL2.

EXCPS hhhh - is the number of transmissions for the line.

ERRORS hhhh - is the number of line I/O errors.

TOTS hhhh - is the number of timeouts for the line.

LOCKWORD hhhhhhhh - is the line DCT lockword.

LOCKFCT hhhhhhhh - is the address of the FCT holding lock.

DEVICE NAME cccccccc - is the device name for a terminal.

SUPAD hhhhhhhh - is the address of the SUPUNIT entry for the terminal.

BUFAD hhhhhhhh - is the address of the output buffer.

LINE DCT hhhhhhhh - is the address of the line DCT for which the terminal has signed on.

PR. WORK hhhhhhhh - is the address of the printer work area.

COM.OWA hhhhhhhh - is the address of the work area for compress.

USER IOB hhhhhhhh - is the address of the terminal user's IOB.

USER FCT hhhhhhhh - is the address of the terminal user's FCT.

RES. AD hhhhhhhh - is the address of the terminal entry in the RJP line and terminal table.

NEXT DCT hhhhhhhh - is the address of the next remote DCT when there is more than one device associated with a terminal.

RECSIZ hhhh - is the logical record length most recently written.

MAXSIZ hhhh - is the maximum record length permitted for the device.

NO hh - is the terminal number.

BUFSIZ hhhh - is the length of the RJP buffer.

FCS hhhh - is the function control sequence last sent from a programmable terminal.

RCB/PUN hh - is the record control byte for punch select characters.

FL1 hh FL2 hh FL3 hh FL4 hh FL5 hh - are flag bytes obtained, consecutively, starting from SUPRMFL1 in IATYSUP.

Resident RJP Line and Terminal Table

RESIDENT RJP LINE AND TERMINAL TABLE is not formatted in the FSS dump but in JES3 is used to locate a line SUPUNIT or DCT entry when a line is to be started, and to locate a remote SUPUNIT or DCT entry when a terminal is being signed on. It also contains control information for each line or terminal. The table is mapped by macro IATYRLT.

```
   LOC     DDNAME   TYPE   GROUP PASSWORD  SUPUNITS FLG1 FLG2 FLG3 FLG4 XCFF       FDB
02AD4250  LINE87   LINE         TAM66701  00000000  10   00   00                000500000CE96049080000000
02AD429C  LINE88   LINE                   00000000  10   00   00                000500000CE97049080000000
02AD42E8  LINE89   LINE                   00000000  10   00   00                000500000CE98049080000000
02AD4334  LINE8A   LINE                   00000000  10   00   00                000500000CE99049080000000
02AD4380  LINE8B   LINE                   00000000  10   00   00                000500000CE9A049080000000
02AD43CC  LINE8C   LINE                   00000000  10   00   00                000500000CF13049080000000
02AD4418  LINE8D   LINE                   00000000  10   00   00                000500000CF14049080000000
02AD4464  LINE8E   LINE                   00000000  10   00   00                000500000CF15049080000000
02AD44B0  LINE8F   LINE                   00000000  10   00   00                000500000CF16049080000000
02AD44FC  LINE90   LINE                   00000000  10   00   00                000500000CF17049080000000
02AD4548  LINE91   LINE                   00000000  10   00   00                000500000CF18049080000000
02AD4594  LINE92   LINE                   00000000  10   00   00                000500000CF19049080000000
02AD45E0  LINE93   LINE                   00000000  10   00   00                000500000CF1A049080000000
02AD462C  LINE94   LINE                   00000000  10   00   00                000500000CF1B049080000000
02AD4678  LINE95   LINE                   00000000  10   00   00                000500000CF1C049080000000
02AD46C4  LINE96   LINE                   00000000  10   00   00                000500000CF1D049080000000
02AD4710  LINE97   LINE                   00000000  10   00   00                000500000CF1E049080000000
02AD475C  LINE98   LINE                   00000000  10   00   00                000500000CF1F049080000000
02AD47A8  LINE99   LINE                   00000000  10   00   00                000500000CF20049080000000
02AD47F4  LINE9A   LINE                   00000000  10   00   00                000500000CF21049080000000
02AD4840  LINE9B   LINE                   00000000  10   00   00                000500000CF22049080000000
02AD488C  LINE9C   LINE                   00000000  10   00   00                000500000CF23049080000000
02AD48D8  LINE9D   LINE                   00000000  10   00   00                000500000CF24049080000000
02AD4924  BSC87    TERM         BSC87     00000000  10   00   00                000500000CF25049080000000
02AD4970  BSC88    TERM         BSC88     00000000  10   00   00                000500000CF26049080000000
02AD49BC  BSC89    TERM         BSC89     00000000  10   00   00                00060002173D049080000000
02AD4A08  BSC8A    TERM         BSC8A     00000000  10   00   00                00060002173E049080000000
02AD4A54  BSC8B    TERM         BSC8B     00000000  10   00   00                00060002173F049080000000
02AD4AA0  WS08C    TERM         WC08C     00000000  10   00   02                000600021740049080000000
02AD4AEC  WS08D    TERM         WS08D     00000000  10   00   02                000600021741049080000000
02AD4B38  WS08E    TERM         WS08E     00000000  10   00   02                000600021742049080000000
02AD4B84  WS08F    TERM         WS08F     00000000  10   00   02                000600021743049080000000
02AD4BD0  WS090    TERM         WS090     00000000  10   00   02                000600021744049080000000
02AD4C1C  WS091    TERM         WS091     00000000  10   00   02                000600021745049080000000
02AD4C68  WS092    TERM         WS092     00000000  10   00   02                000600021746049080000000
```

GROUP cccccccc - is the group name to which the terminal belongs. Output from a job entered in the group may be routed to any terminal in the same group. The name is assigned by the G parameter of the RJPTERM initialization statement.

SUPUNITS hhhhhhhh - is the starting address of the DCT-SUPUNITS entries for the line or terminal. It is zero when a line has not started or a terminal has not signed on.

FLG1 hh FLG2 hh FLG3 hh FLG4 hh are control bytes obtained, consecutively, starting at RTTFLAG1 in IATYRLT.

XCFF is the control byte RTTXCFFG in IATYRLT used for the communications between JESXCF and RJPCONS

FDB hhhhhhhhhhhh - is the FDB for the DCT-SUPUNITS entries spooled to the queue, which occurs when a terminal is not signed on, or when a line is not started.

Resident SNA RJP table (SRT)

RESIDENT SNA RJP TABLE (SRT) is not formatted in the FSS dump but in JES3 is a multipurpose table built by IATINSNA and augmented with information from the COMMDEFN initialization statement.

```
                       RESIDENT SNA RJP TABLE (SRT)

LOC       APLID     CTE       CIDU      SRDC      OUTM      MSG       INCD      RDRS      TERM      RESET     FRCB
0275F328  JES3      00000000  0275F3A0  000273D8  FFFFFFFF  FFFFFFFF  FFFFFFFF  02D28F70  FFFFFFFF  FFFFFFFF  FFFFFFFF

          WSOPN     WSCHN     WSBWQ     CMNDQ     LPFQ      WPFQ      TRQ FLAG
          FFFFFFFF  02CE256C  FFFFFFFF  FFFFFFFF  00000000 00000000  0  0000000   00
```

APLID cccccccc - is the application name, obtained from the COMMDEFN initialization statement.

CTE hhhhhhhh - is the address of the CTE list for the compaction tables.

CIDU hhhhhhhh - is the address of the communications ID (CID)-to-session control block address (LCB) map table.

SRDC hhhhhhhh - is the address of the data CSECT for the SNA RJP DSP.

OUTM through CLRQ hhhhhhhh - are addresses of exit work queues.

MSG hhhhhhhh - is the address of the local console message queue.

INCD hhhhhhhh - is the address of the inbound console command queue.

RDRS hhhhhhhh - is the address of the reader call queue.

TERM hhhhhhhh - is the address of the terminate queue.

FRCB hhhhhhhh - is the address of the LUCB free queue.

WSOPN hhhhhhhh - is the address of the console out queue.

WSCHN hhhhhhhh - is the address of the workstation chain.

LPFQ hhhhhhhh - is the address of the LCB pending free queue.

WPFQ hhhhhhhh - is the address of the WSB pending free queue.

WPFQQ hhhhhhhh - is the address of the WSB pending free queue.

CMNDQ hhhhhhhh - is the address of the intercom command queue.

TRQ hhhhhhhh - is the address of the TR table free queue.

FLAG hh - are SRTFLG1 flag bytes.

Resident SNA Terminal Entries

RESIDENT SNA TERMINAL ENTRIES are not formatted in the FSS dump but are in a JES3 formatted dump.

```
                                    RESIDENT SNA TERMINAL ENTRIES

  LOC       DDNAME    TYPE   GROUP  PASSWORD    SUPUNITS   FLG1    FLG2  FLG3    FLG4    XCFF     FDB
02ACFF8C   S007A     TERM   S007A              00000000    04      00    08 00040000D55F04908000000
02ACFFD8   S007B     TERM   S007B              00000000    04      00    08    00040000D56104908000000
02D0024    S008A     TERM   S008A              00000000    04      00    08    00040000D56304908000000
02AD0070   S028A     TERM   S028A              00000000    04      00    08    00040000D56504908000000
02AD00BC   S028B     TERM   S028B              00000000    04      00    08    00040000D56704908000000
02AD0108   S028C     TERM   S028C              00000000    04      00    08    00040000D56904908000000
02AD0154   S008B     TERM   S008B              00000000    04      00    08    00040000D56B04908000000
02AD01A0   S009A     TERM   S009A              00000000    04      00    08    00040000D56D04908000000
02AD01EC   S009B     TERM   S009B              00000000    04      00    08    00040000D56F04908000000
02AD0238   S010A     TERM   S010A              00000000    04      00    08    00050000CEAF04908000000
02AD0284   S010B     TERM   S010B              00000000    04      00    08    00050000CEB104908000000
02AD02D0   S010C     TERM   S010C              00000000    04      00    08    00050000CEB304908000000
02AD031C   S011A     TERM   S011A              00000000    04      00    08    00050000CEB504908000000
02AD0368   S011B     TERM   S011B              00000000    04      00    08    00050000CEB704908000000
02AD0384   S011C     TERM   S011C              00000000    04      00    08    00050000CEB904908000000
02AD0400   S0061     TERM   S0061              00000000    04      00    08    00050000CEBB04908000000
02AD044C   S0062     TERM   S0062              00000000    04      00    08    00050000CEBD04908000000
02AD0498   S0063     TERM   S0063              00000000    04      00    08    00050000CEBF04908000000
02AD04E4   S0080     TERM   S0080              00000000    04      00    08    00050000CEC104908000000
02AD0530   S0081     TERM   S0081              00000000    04      00    08    00050000CECB04908000000
02AD057C   S0082     TERM   S0082              00000000    04      00    08    00050000CEED04908000000
02AD05C8   S0083     TERM   S0083              00000000    04      00    08    00050000CEEF04908000000
02AD0614   S0084     TERM   S0084              00000000    04      00    08    00050000CEF104908000000
02AD0660   S0085     TERM   S0085              00000000    04      00    08    00050000CEF304908000000
02AD06AC   S086A     TERM   S086A              00000000    04      00    08    00050000CEF504908000000
02AD06F8   S086B     TERM   S086B              00000000    04      00    08    00050000CEF704908000000
02AD0744   S087A     TERM   S087A              00000000    04      00    08    00050000CEF904908000000
02AD0790   S087B     TERM   S087B              00000000    04      00    08    00050000CEFB04908000000
02AD07DC   S088A     TERM   S088A              00000000    04      00    08    00050000CEFD04908000000
```

GROUP cccccccc - is the group name to which the terminal belongs. Output from a job entered in the group may be routed to any terminal in the same group. The name is assigned by the G parameter of the RJPTERM initialization statement.

SUPUNITS hhhhhhhh - is the starting address of the DCT-SUPUNITS entries for the line or terminal. It is zero when a line has not started or a terminal has not signed on.

FLG1 hh FLG2 hh FLG3 hh FLG4 hh - are control bytes obtained, consecutively, starting at RTTFLAG1 in IATYRLT.

XCFF - is the control byte RTTXCFFG in IATYRLT used for the communications between JESXCF and RJPCONS.

FDB hhhhhhhhhhhh - is the FDB for the DCT-SUPUNITS entries spooled to the queue, which occurs when a terminal is not signed on, or when a line is not started.

WSB Entry

RESIDENT WSB/LUCB ENTRIES are not formatted in the FSS dump but in JES3 shows the contents of the WSB for each active workstation, followed by the device entries for the workstation and all active LCBs associated with the workstation.

```
                        RESIDENT WSB/LUCB ENTRIES

         WSB ENTRY

LOC      NAME  AUTLU WSCHN    WQ       LCBA     RLTA     RDRDE    PTRDE    PUNDE    CONDE    CSFL FLG1 ALF1 FLG2
02CE256C S0189       02CE2A6C 00000000 02D35F70 02AD3FAC 02CE2614 02CE2684 00000000 02CE26F4 A0   50   00   00
```

WSB ENTRY

NAME cccccccc - is the name of this workstation.

AUTLU cccccccc - is the name of the LU for auto-logon.

WSCHN hhhhhhhh - is the next resident WSB in the system.

WQ hhhhhhhh - is the continue field for SRTWSBWQ.

LCBA hhhhhhhh - is the first session LCB for this WSB.

RLTA hhhhhhhh - is the address of the resident terminal entry for this WSB.

RDRDE hhhhhhhh - is the address of the first device entry (DVE) for the reader device type.

PRTDE hhhhhhhh - is the address of the first DVE for the printer device type.

PUNDE hhhhhhhh - is the address of the first DVE for the punch device type.

CONDE hhhhhhhh - is the address of the inbound console DVE. The outbound console DVE follows the inbound DVE.

CSFL hh FLG hh ALF1 hh (not shown) FLG2 hh (not shown) - are flag bytes obtained from WSBCSFL1, WSBFLAG1, WSBALLF1, and WSBFLAG2, respectively.

Device Entry

```
DEVICE ENTRY

LOC        LCB        NSTE       WSB        SUP        SNSD       FL1  FL2  FL3  FL4  CSFL  DVSL  EXFL  LRCL
02CE2614   02D35F70   00000000   02CE256C   02CE2890   00000000   88   00   00   20   00    20    00    0050

DEVICE ENTRY

LOC        LCB        NSTE       WSB        SUP        SNSD       FL1  FL2  FL3  FL4  CSFL  DVSL  EXFL  LRCL
02CE2614   00000000   00000000   02CE256C   02CE292C   00000000   00   00   00   00   00    30    00    0000

DEVICE ENTRY

LOC        LCB        NSTE       WSB        SUP        SNSD       FL1  FL2  FL3  FL4  CSFL  DVSL  EXFL  LRCL
02CE26F4   00000000   00000000   02CE256C   02CE27F4   00000000   20   00   00   00   00    00    00    0000

DEVICE ENTRY

LOC        LCB        NSTE       WSB        SUP        SNSD       FL1  FL2  FL3  FL4  CSFL  DVSL  EXFL  LRCL
02CE2764   02D35F70   00000000   02CE256C   02CE27F4   00000000   80   00   00   00   20    00    00    0084
```

DEVICE ENTRY

LOC hhhhhhhh - is the address of this DVE.

LCB hhhhhhhh - is the address of the LCB if the device is active for a session.

NSTE hhhhhhhh - is the address of the next DVE.

WSB hhhhhhhh - is the address of the WSB entry associated with this DVE.

SUP hhhhhhhh - is the address of the SUPUNITS entry associated with this DVE.

SNSD hhhhhhhh - are the DVE sense bytes.

FL1 hh FL2 hh FL3 hh FL4 hh CSFL hh - are flag bytes, prefixed by DVE.

DVSL hh - is the media type and subaddress used in a BDS FMH.

EXFL hh - is the DVEEXFLG which indicates whether this device is an exchange device.

LRCL hh - is the logical record length for an inbound deblock record or an outbound block record.

LCB Entry

```
         LCB ENTRY

LOC      NAME    CHN      WSB      CID      CIDSL    OUTM     INCD     RDRS     TERM     RESET
FRCB     WSOPN
02D35F70 L000029 00000000 02CE256C 01000102 0275F450 00000000 00000000 00000000 00000000 00000000
00000000 00000000

IST      OST       FRONT     REAR      FIRST     LAST      RUUSECT   FLCS1  CSFL1  CSFL2  CSFL3
02CE2614 00000000  02D366DC  02D36748  02D366DC  02D367D8  00000003  10     28     00     80


CSFL5  USCT  LUS  FL0  FL1  FL2  FL3  FL4  SRPL      RRPL      NIB       LRCL  PSST      FMWA
PSWA       TRTBL
00     0001  00   00   88   4A   00   08   02D3607C  02D360FC  02D362FC  0084  02D36344  02D36370
02D363BC   00000000
```

LCB ENTRY

LOC hhhhhhhh - is the address of this LCB.

NAME cccccccc - is the name of the logical unit.

CHN hhhhhhhh - is the address of the next LCB for this WSB.

WSB hhhhhhhh - is the address of the WSB associated with this LCB.

CID hhhhhhhh - is the communications ID for this session.

CIDSL hhhhhhhh - is the position of this LCB in the CID-to-LCB map table.

OUTM hhhhhhhh - a queue of console messages that the LCB is waiting to send

INCD hhhhhhhh - a queue of messages that the LCB is waiting to process

RDRS hhhhhhhh - a chain of LCBs that require a reader. The reader must be started before the LCB can be removed from the chain.

TERM hhhhhhhh - address of the LCBs whose destinations should be closed.

RESET hhhhhhh - address of a chain of LCBs that require resetting

FRCB hhhhhhhh - address of a chain of LCBs. The control blocks that belong to the LCBs on the FRCB chain can be returned to storage.

WSOPN hhhhhhhh - address of a chain of LCBs that are waiting for a workstation open request.

IST hhhhhhhh - is a pointer to the inbound stack.

OST hhhhhhhh - is a pointer to the outbound stack.

FRONT hhhhhhhh - is the address of the front BFE. (Used for buffer allocation.)

REAR hhhhhhhh - is the address of the rear BFE. (Used for buffer allocation.)

FIRST hhhhhhhh - is the address of the first BFE.

LAST hhhhhhhh - is the address of the last BFE. RUUSECT hhhhhhhh - is the number of RUs currently in use.

FLCS1 hh - is a flag byte. See the following list of values to determine the meaning of the field.

Value
Meaning

X'80'
indicates I/O is pending at the workstation

X'40'
indicates the LCB is on the purge chain

X'20'
indicates the LCB is waiting for a response from another workstation

X'10'
indicates the workstation received a cancel or end-of-chain request.

X'08'
indicates the workstation sent a positive response to a request

X'04'
indicates the workstation sent a negative response to a request

X'02'
indicates the workstation will not send a positive response to any request

CSFL1 hh - is a status indicator used to determine the beginning and end of a request sent to a workstation. The flag is also used to determine if the request is sent to or issued by the workstation.

CSFL2 hh - is a status indicator used to indicate the workstation should stop sending requests at the next end-of-chain.

CSFL3 hh - is a status indicator used to determine if the workstation received or sent a signal to another workstation.

CSFL5 hh - is a status indicator used during the workstation's termination processing. The following values can be used in the flag:

Value
Meaning

X'80'
indicates the session is immediately quiescing

X'40'
indicates the session is quiescing

X'20'
indicates JES3 requested VTAM issue a close destination request.

X'10'
indicates JES3 processed the close destination request.

X'08'
indicates the LCB should be returned to storage when the use count reaches zero.

USCT hhhh - is the use count of the LCB

LUS hh - is the status flag for the logical unit (LU). The LU represents the line.

FL0 hh -is a status flag that indicates the data flow control. The following are values that can be found in this field.

Value
Meaning

X'80'
indicates the indicator, the bracket, at the beginning of a RU that was rejected.

X'40'
indicates a cancel request was sent to terminate the flow of data.

X'20'
indicates a request to open the workstation's writer was issued.

X'10'
indicates a request to open the workstation's console was issued.

X'04'
indicates VTAM indicated a session should be started.

FL1 dd - indicates the mode of the session. The mode of a session can be in one of the following states:

Value
Meaning

X'40'
indicates the workstation received an RU that was empty or the caller did not properly initialize.

X'08'
indicates the session is in special mode

FL2 dd - is a status flag. The flag can have one of the following meanings:

Value
Meaning

X'80'
indicates the destination has not been selected

X'40'
A SMF type 47 record was received by the workstation.

X'20'
indicates the data stream can be sent

FL3 dd - is a status flag that indicates the status of the device currently being used.

FL4 dd - is a status flag that indicates the following:

Value
Meaning

X'80'
indicates a request to close the destination was received but the workstation has not processed the request.

X'40'
indicates the request to close the destination was processed.

X'20'
indicates an error occurred during the session

X'10'
indicates the session should be terminated

X'08'
indicates the destination is opened.

SRPL hhhhhhhh - is the address of the Send RPL.

RRPL hhhhhhhh - is the address of the Receive RPL.

NIB hhhhhhhh - is the address of the node initialization block (NIB) for this session.

LRCL hhhh - is the logical record length used for this session.

PSST hhhhhhhh - is the address of the beginning of the presentation services work area.

FMWA hhhhhhhh - is the address of the function management work area.

PSWA hhhhhhhh - is the address of the presentation services buffer area.

TRBL hhhhhhhh - is the address of the trace table.

NJE Resident node table

NJE RESIDENT NODE TABLE - contains information on each node that is defined to your installation. Each node is defined to your installation by the NJERMT initialization statement. The information for the table is obtained from mapping macro IATYNJY.

```
                                      NJE RESIDENT NODE TABLE. HOMENODE = NODE1
                                                NJEFLAG1 DESCRIPTION
      NJECTC 80   NJEAUTO 40       NJEMULTI 20 NJEHOME 10       NJEWPENC 08 NJEPWLOC 04      NJEHOLD 02 NJETYPSN 01
                                                NJEFLAG2  DESCRIPTION
      NJEALIAS 80 NJENTHLD 40      NJEXNMNR 20 NJENODEF 10     NJETCPIP 08 NJESCSGN 04  NJEACTIV 02 NJETLS 01

                                                NJEFLAG3  DESCRIPTION
      NJENOPRE 40 NJENOVFY 20
ADDRESS  NJENAME   NJEPATH  NJELINE NJEBDTID NJECSACT     2         3       NJEBFSIZ  FLAG1  FLAG2   FLAG3  JT OT JR OR NJEFSOCK

04BC72AC NODE1     NODE1            SYSA1    00000000  00000000  00000000    0190      10        00      00

04BC7314 NODE2     NODE2                     04BF4258  00000000  00000000    0780      A0        00      00

04BC737C NODE3     NODE3                                                              A0        08      00  1  1  1  1  171C58A0

04BC73E4 NODE4     NODE4                                                              A0        08      00  1  1  1  1  171C95E8

04BC744C NODE5     NODE5                     00000000  00000000  00000000    0780      A0        00      00

04BC74B4 POKUTCJ8  POKUTCJ8                  00000000  00000000  00000000    0190      01        00      00

04BC751C POKUTCJ9  POKUTCJ9                  00000000  00000000  00000000    0190      01        00      00

04BC7584 POKUTCJA  POKUTCJA                  00000000  00000000  00000000    0190      01        00      00
                         NJE ACTIVE BSC NODE DATA CSECTS/RECEIVER WORK AREA

       LMSTAT1                     LMSTAT2                    LMSTAT3                     LMSTAT4
NORCV    80 NAKRCVD  08     LMCTC    80 LMIOERR  08     CANXMIT  80 OPRCV    08     XMITSW   80 OPPRMRQD  08
LOGGING  40 CANCRQST 04     LMAUTO   40 RSETNRCV 04     TRANS    40 OPTRANS  04     PENDG    40 JBPRMRQD  04
DUMMYRD  20 LNSTRTD  02     LMMULTI  20 CANRQIM  02     JBRCV    20 NMRRCV   02     JBPENDG  20 PERMREFP  02
LNBUSY   10 LNRSTNG  01     LNTERM   10 LNIOTERM 01     JBTRANS  10 CANXMITJ 01     OPPENDG  10 NOTUSED   01

       LMSTAT5
NDTQUIES  80 NDTRSTLN  08
NDTSSWT   40 NOTUSED   04
NDTJBXAP  20 NOTUSED   02
NDTOPXAP  10 NOTUSED   01

                                        GENERAL-JOB-SYSOUT SENDER FLAGS DESCRIPTION


     XMITRDY  80 XMITCMP  40       XMITEOF  20  RESCHED   10       ALLOCED   08  XMITCAN  04      XMITABRT 02  XABRTSNT 01
     RCVEOFOK 80 RCVEOFRJ 40       NOTUSED  20  NOTUSED   10       NOTUSED   08  NOTUSED  04      NOTUSED  02  NOTUSED  01


ADDRESS  NAME      LINE      BUFSIZ   RDBFR      WRBFR      LASTCP     INFCS  OUTFCS  CALLCNID  FRSTCNSB
04BF4258 NODE2     992       0780     04CC9738   04CBF4C8   04BF4378   8FCF   8FCF    0005      00000000

LNIOSB   LNSRB     RCVWRKPT  LMSTAT1  LMSTAT2   LMSTAT3   LMSTAT4  LMSTAT5   LMECF     LMECFS     LNECB
01B18130 04BF49F4  0218B8A8  02       A0        08        80       00        00000000  00         00000000

SNDRPRM                        JBSNPRM                        OPSNPRM
00000000 00000000 00000000    00980009 04D92AA28 00000000   00990009 04DFFA31 00000000
```

HOMENODE cccccccc - is the home node name.

NJECTC hh through NJETYPSN hh - are the entry flag bit names for the values displayed in the FLAG1 field.

ADDRESS hhhhhhhh - is the node table entry address.

NJENAME cccccccc - is the node name of the entry.

NJEPATH cccccccc - is the path name of the entry.

NJELINE cccc - is the BSC line name associated with the node entry.

NJEBDTID cccccccc - is the sysid of the MVS/BDT subsystem at the home node that processes SNA/NJE work.

NJECSACT hhhhhhhh - are the BSC line manager data csect pointers for the entry.

NJEBFSIZ hhhh - is the defined transmission buffer size for the entry.

FLAG1 hh - are the entry flag settings.

FLAG2 hh - are the second entry flag settings.

FLAG3 hh - are the third entry flag settings.

JT (NJEJTRN) h - is the number of job transmitters. This value applies to TCP/IP nodes only.

OT (NJEOTRN) h - is the number of output transmitters. This value applies to TCP/IP nodes only.

JR (NJEJRCV) h - is the number of job receivers. This value applies to TCP/IP nodes only.

OR (NJEORCV) h - is the number of output receivers. This value applies to TCP/IP nodes only.

NJEFSOCK hhhhhhhh - is the address of the first socket for this node. This value applies to TCP/IP nodes only.

NJE ACTIVE NODE DATA CSECTS

LMSTAT1 through LMSTAT5 cccccccc hh - are the line data area flag bit descriptions.

GENERAL-JOB-SYSOUT SENDER FLAGS DESCRIPTION

XMITRDY through XABRTSNT hh - are the bit descriptions for the first sender flag.

RCVEOFOK through NOTUSED hh - are the bit descriptions for the second sender flag.

ADDRESS hhhhhhhh - is the BSC line manager data csect pointer.

NAME cccccccc - is the node name.

LINE cccc - is the line name.

BUFSIZ hhhh - is the defined transmission buffer size.

RDBFR hhhhhhhh - is the address of the read buffer.

WRBFR hhhhhhhh - is the address of the write buffer.

LASTCP hhhhhhhh - is the address of the last channel program which was issued.

INFCS hhhh - are the received function control sequence (FCS) characters.

OUTFCS hhhh - are the FCS characters to be sent.

CALLCNID hhhh - is the calling console number.

FRSTCNSB hhhhhhhh - is the address of the first nodal message record (NMR) to be transmitted.

LNIOSB hhhhhhhh - is the address of the line input output supervisor block.

LNSRB hhhhhhhh - is the address of the line SRB.

JBRPLIST hhhhhhhh - is the address of the job parameter list for the network receiver.

OPRPLIST hhhhhhhh - is the address of the SYSOUT parameter list for the network receiver.

LMSTAT1 through LMSTAT5 hh - are the flag LMSTATn settings.

LMECF hhhhhhhh - is the line manager ECF setting.

LMECFS hh - is the line manager ECF setting serialized for a multitasking environment.

LNECB hhhhhhhh - is the line ECB setting.

SNDRPRM hhhhhhhh hhhhhhhh hhhhhhhh - is the general sender flag and parameter list.

JBSNPRM hhhhhhhh hhhhhhhh hhhhhhhh - is the job sender flag and parameter list.

OPSNPRM hhhhhhhh hhhhhhhh hhhhhhhh - is the SYSOUT sender flag and parameter list.

Networking Console Pointers and Queues

```
                                            NETWORKING CONSOLE POINTERS

                          CONSOLE QUEUE

                          040DD9D0


                                            NETWORKING CONSOLE QUEUE

               RESPONSE OCOMMAND OMESSAGE ICOMMAND IMESSAGE TSO       OSNANMR REJECTED PENDING  NJECNSFL

        FIRST  00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 03B6FFD8    10

        LAST   00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 03B6FFD8
```

NETWORKING CONSOLE POINTERS

CONSOLE QUEUE hhhhhhhh - is the address of the networking console queue (NCQ).

NETWORKING CONSOLE QUEUE

FIRST, LAST hhhhhhhh - are the address of the first and last NCQ entries.

NJECNSFL hhhhhhhh - is the NJE console flag.

NJE Active BSC Node Table

```
                          NJE ACTIVE BSC NODE DATA CSECTS/RECEIVER WORK AREA

       LMSTAT1                       LMSTAT2                    LMSTAT3                       LMSTAT4
NORCV     80 NAKRCVD  08     LMCTC    80 LMIOERR  08     CANXMIT  80 OPRCV    08     XMITSW    80
OPPRMRQD  08
LOGGING   40 CANCRQST 04     LMAUTO   40 RSETNRCV 04     TRANS    40 OPTRANS  04     PENDG     40
JBPRMRQD  04
DUMMYRD   20 LNSTRTD  02     LMMULTI  20 CANRQIM  02     JBRCV    20 NMRRCV   02     JBPENDG   20
PERMREFP  02
LNBUSY    10 LNRSTNG  01     LNTERM   10 LNIOTERM 01     JBTRANS  10 NOTUSED  01     OPPENDG   10
NOTUSED   01

       LMSTAT5
NDTQUIES  80 NDTRSTLN  08
NDTSSWT   40 NOTUSED   04
NDTJXAP   20 NOTUSED   02
NDTOPXAP  10 NOTUSED   01

                                            GENERAL-JOB-SYSOUT SENDER FLAG DESCRIPTION

     XMITRDY   80 XMITCMP  40       RCVDEOF   20 RESCHED  10     ALLOCED  08 XMITCAN  04      XMITABRT 02
XABRTSNT  01

RECEIVER WORK AREA POINTER INVALID

ADDRESS   NAME      LINE    BUFSIZ   RBDFR     WRBFR     LASTCP    INFCS  OUTFCS  CALLCNID  FRSTCNSB
04BF4258  NODE2     992     0780     04CC9738  04CBF4C8  04BF4378  8FCF   8FCF    0005      00000000

LNIOSB    LNSRB     RCVWRKPT  LMSTAT1  LMSTAT2  LMSTAT3  LMSTAT4  LMSTAT5  LMECF     LNECB
01B18130  04BF49F4            02       A0       08       00       00       00000000  00000000

SNDRPRM             JBSNPRM            OPSNPRM
00000000  00000000  00980009  04D92A28  00990009  04DFFA31
```

NJE ACTIVE BSC NODE DATA CSECTS/RECEIVER WORK AREA

LMSTAT1 through LMSTAT5 cccccccc hh - are the line data area flag bit descriptions.

GENERAL-JOB-SYSOUT SENDER FLAG DESCRIPTION

XMITRDY through NOTUSED hh - are the logical sender flag bit descriptions.

ADDRESS hhhhhhhh - is the BSC line manager data csect pointer.

NAME cccccccc - is the node name.

LINE cccc - is the line name.

BUFSIZ hhhh - is the defined transmission buffer size.

RDBFR hhhhhhhh - is the address of the read buffer.

WRBFR hhhhhhhh - is the address of the write buffer.

LASTCP hhhhhhhh - is the address of the last channel program which was issued.

INFCS hhhh - are the received function control sequence (FCS) characters.

OUTFCS hhhh - are the FCS control characters to be sent.

CALLCNID hhhh - is the calling console number.

FRSTCNSB hhhhhhhh - is the address of the first nodal message record (NMR) to be transmitted.

LNIOSB hhhhhhhh - is the address of the line input/output supervisor block.

LNSRB hhhhhhhh - is the address of the line SRB.

RCVWRKPT hhhhhhhh - is the address of the associated network receiver data area (NRD).

LMSTAT1 through LMSTAT5 hh - are the flag LMSTATn settings.

LMECF hhhhhhhh - is the line manager ECF setting.

LNECB hhhhhhhh - is the line ECB setting.

SNDRPRM hhhhhhhh hhhhhhhh - is the general sender parameter list.

JBSNPRM hhhhhhhh hhhhhhhh - is the job sender parameter list.

OPSNPRM hhhhhhhh hhhhhhhh - is the SYSOUT sender parameter list.

ADDRESS hhhhhhhh - is the address of the NRD.

NRDJPARM hhhhhhhh - is the address of the job reception parameter list.

NRDJRVF1 hh - is a flag in the NRDJPARM parameter list that indicates the status of the job being received.

NRDJRVF2 hh - is a NRDJPARM flag byte.

NRDOPARM hhhhhhhh - is the address of the SYSOUT reception parameter list.

NRDORVF1 hh - is a flag in the NRDOPARM parameter list that indicates the status of the SYSOUT data set being received.

NRDORVF2 hh - is a NRDOPARM flag byte.

NRDORVF3 hh - is a NRDOPARM flag byte.

NRDFLAG1 hh - is a flag byte for the receiver.

DJC JOBNET Control Blocks

DJC JOBNET CONTROL BLOCKS (JNCBs) contain the information reflecting the total network of jobs in DJC. There is one JNCB for each unique job network identified by NET control statements submitted with the jobs. The JNCB chain, resident in storage, is the major control block that allows DJC management.

```
  LOC      NET-ID    NCBFDBADR     TOTAL   CURR  F1   F2   F3    NEXT      JSEBUFF   JSEALLOC  JSEFREE
NFTBUFF
01C71298  J3II80A  000600029214  00006   00001   00   00   00   01C73D68  02E99BA0  02E99C0C  02E99C24
02E99FA0
01C73D68  J3XAFC01 000300011665  00004   00000   00   00   00   01C73CF8  02E995E0  02E9964C  02E99664
02E99B40
```

TOTAL dddd - is the number of jobs currently entered in the network regardless of completion status.

CURR dddd - is the number of jobs in the network that have completed all processing.

F1 hh F2 hh F3 hh - are flag bytes obtained, consecutively, starting at JNFLAG1.

JSEBUFF hhhhhhhh - is formatted from the JNJSEBUF field of the JNCB. It is the address of the first job summary element (JSE) for this job net.

JSEALLOC hhhhhhhh - is formatted from the JNJSEALC field of the JNCB. It is the address of the first allocated JSE for this job net.

JSEFREE hhhhhhhh - is formatted from the JNJSEFRE field of the JNCB. It is the address of the first free JSE buffer.

NFTBUFF hhhhhhhh - is formatted from the JNNFTBUF field of the JNCB. It is the address of the first NCB FDB table (NFT) buffer.

Address range

```
***** ADDRESS RANGE 00B9EB68 TO 00B9EFF0 IS SSVT              IN  JES3/CSA SP=228 (DUPLICATE LINES SUPPRESSED) ****

00B9EB60                     00000027 01020304    05060708 090A0B0C 0D0E000F 10111213         ------------------------
00B9EB80    14151617 18191A1B 1C1D1E1F 20210000    00000025 00000000 00000000 00000000 --------------------------------
00B9EBA0    26000000 00000000 00270000 00000000    00000000 00000000 00000000 00000000 --------------------------------
00B9EBC0    00000000 00000000 00000000 00000000    00000000 00000000 00000000 00000000 --------------------------------
********    00B9EBE0 TO 00B9EC5F SUPPRESSED - SAME AS ABOVE   ********
00B9EC60    00000000 00000000 00000000 822DE220    822D9720 822E00E0 822DD440 822DB6E0 --------------S-----------M-----
00B9EC80    822D44DC 822D4BF8 822DA5B0 822E0750    822E3350 822E04E0 822DCC2A 822DCDCE -------8------------------------
00B9ECA0    822D9A50 822DEAD0 80BDEE04 80BDED28    822DEA14 822DD734 822DD6A8 822D5D28 ----------------------P---O-----
00B9ECC0    822D6610 822D5EF8 822D62CA 822D6F6C    822D713A 822D9E38 822D9F20 822D9F80 -------8------------------------
00B9ECE0    822D9F84 822D95F8 822E0750 822DDBA8    822DDBA8 822DDCB0 822DDD2A 822D7200 -------8------------------------
00B9ED00    822D7C60 822D5B30 00000000 00000000    00000000 00000000 00000000 00000000 --------------------------------
00B9ED20    00000000 00000000 00000000 82299730    80BE93A8 82295D00 80BE6FD8 8229AFA8 ---------------------------Q----
00B9ED40    82298EA0 80BE1E38 80BDF7E0 822E3DF8    822E6920 822E6A68 822E6B08 822E78A4 ----------7----8----------------
00B9ED60    82295000 822E99A0 0229FD18 8229C3C0    822DCC80 822DCE16 82297000 00000000 --------------C-----------------
00B9ED80    00000000 00000000 00000000 C9C1E3E2    E2E5E340 C8D1E2F3 F3F1F140 F0F261F0 ------------IATSSVT-HJS3311-02-0
00B9EDA0    F261F8F8 F2F14BF1 F0400000 00B9EFF0    011C0488 000D07D1 80000000 D1C5E2F3 2-8821-10------0-------J----JES3
00B9EDC0    00000000 00F1F400 01CA6438 026BABE0    023A7E70 0229A5A0 0229AA38 02299870 -----14-------------------------
00B9EDE0    02296162 0229693E 00BE8C50 00BE7B5E    00BE7BAC 00000000 826D0C60 00B9EF7C --------------------------------
00B9EE00    00000000 00000000 01CA6A88 007FF190    026D0A20 02649BF0 0268B000 02690000 --------------1--------0--------
00B9EE20    02395908 026D0720 023A85B8 807DD728    00000000 022D4EC8 822DF674 026B91E0 --------------P--------H--6-----
00B9EE40    02691030 02701000 026B9000 02697338    00000000 00000000 026BACB8 026D09F8 -------------------------------8
00B9EE60    00000000 00000000 00000000 000000FF    000000FF 00000000 00000182 00000013 --------------------------------
00B9EE80    00000000 026F4698 023E1000 025DD000    001A0098 08000600 822A3C08 82297DA0 --------------------------------
00B9EEA0    00000000 00000000 IFACBC00 00000000    00000000 00000000 00000000 00000000 --------------------------------
00B9EEC0    00000000 000210EB 026D03C0 026D0420    026D0520 01CD5BD8 00000000 00000000 ----------------------Q--------
00B9EEE0    00000000 01C02E20 026D0530 C0C00000    00000000 00000000 00000000 00000000 --------------------------------
00B9EF00    00000000 00000000 00000000 00000000    00000000 00000000 00000000 00000000 --------------------------------
00B9EF20    00000000 00000000 00000000 00000000    00000000 00000600 00000000 00000000 --------------------------------
00B9EF40    00000FF4 00000FC8 00007FFF 0000FFFF    00001000 00FFFFFF 11110000 00000000 ---4---H------------------------
00B9EF60    00000000 00000000 00000000 00000020    0006273C 0000B701 00021F17 40000000 --------------------------------
00B9EF80    2AB12852 014B0020 40404040 40404040    40000000 00000000 00D3013A 00000000 ------------------------L------
00B9EFA0    00000000 00000000 00000000 00000000    00000012 02000FCC 00010600 00C80BB8 --------------------------------
00B9EFC0    03010008 00000000 00000000 00000000    00000000 00000000 04000000 00000000 --------------------------------
00B9EFE0    00441880 00000000 00000000 00000000                                        ----------------
```

***** ADDRESS RANGE hhhhhhhh TO hhhhhhhh IS... This portion of the dump contains JES3 control blocks and data from the common service area (CSA), the system queue area (SQA), the JES3 address space private area, and the JES3 auxiliary address space private area. Each block is identified by address range and name.

Note: “JES3/CSA SP=228” will read “FSS/CSA SP=228” when running in an FSS address space. Data printed here is obtained form the storage trace table. This table, in CSA for the JES3 address space and in private for C/I FSS address spaces, reflects storage “logged in” or deliberately traced by the DSP managing the storage using the IATXSQE macro instruction.

SYSOUT Application Programming Interface Data

```
****************************************
********** SAPI FCT Work Area **********
****************************************
 SFW: 04C9C300
  +0000  SFWID.... SFW       SFWECF... 04801227  SFWMASK.. 04        SFWSDSOR. 00000000  SFWSDSEN. 7FFFF000  SFWSDSTK. 80002500
  +0018            00000047  SFWCWSVA. 04D65000  SFWCWHT.. 04D69000  SFWCWHBK. 000003FD  SFWCWPA.. 048005A8  SFWCWAL.. 0101001D
  +0044  SFWCWSVD. 04D63000  SFWDSCWA. 00000000  SFWREGSV. 00000000  00000000  00000000  00000000  00000000  00000000  00000000
  +0068            00000000
  +009C  SFWFLAG1. 00
           Bits set in flag SFWFLAG1
           -------------------------
             None
  +009D  SFWFLAG2. 80        SFWXCOCP. 00000000  SFWXCOCA. 00000000  SFWXCRTN. 00000000  SFWXCRSN. 00000000  SFWXCTOK. ........
           Bits set in flag SFWFLAG2
           -------------------------
             SFWSALOK - SAPI dataspace access OK
  +00B8  SFWXCWSV. 00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  +00E4            00000000  00000000  00000000
**************************************
********** SAPI DSP Entries **********
**************************************
**********************
****** Base SDE ******
**********************
 SDE: 04800630
  +0000  SDEID.... SDEB      SDEFIRST. 04CC3008  SDELAST.. 04CC3008  SDEIDLEQ. 00000000  SDESFWAD. 04C9C300  SDESDWAD. 00000000
  +0018  SDETRACE. 00000000  00000000  00000000  00000000            SDEFCTAD. 00000000  SDEDSPAD. 00000000  SDESTAR.. 00000000
  +0034  SDERQADR. 00000000
  +0050  SDEBFLAG. 80
           Bits set in flag SDEBFLAG
           -------------------------
             SDEBASE  - Indicate this is the base entry
  +0051  SDEPOST.. 00
          Bits set in flag SDEPOST
          ------------------------
             None
  +0052  SDEFLAG1. 00
           Bits set in flag SDEFLAG1
           -------------------------
             None
```

```
************************
****** Active SDEs ******
************************
               ************************************
               ******** SAPI DSP Entry 0001 ********
               ************************************
 SDE: 04CC3008
  +0000  SDEID.... SDE       SDENEXT.. 00000000  SDEPREV.. 00000000  SDEPENSA. 00000000  SDELPNSA. 00000000  SDESDWAD. 04DDC020
  +0018  SDETRACE. 00000000  00000000  00000000  00000000            SDEFCTAD. 04CA0E08  SDEDSPAD. 0483AEA0  SDESTAR.. 00000000
  +0034  SDERQADR. 00000000
  +0050  SDEBFLAG. 00
           Bits set in flag SDEBFLAG
           -------------------------
             None
  +0051  SDEPOST.. 00
           Bits set in flag SDEPOST
           ------------------------
             None
  +0052  SDEFLAG1. 00
           Bits set in flag SDEFLAG1
           -------------------------
             None
 SDW: 04DDC020
  +0000  SDWID.... SDW       SDWSDEAD. 04CC3008  SDWWSP... 04DDCAC0  SDWSECPT. 04DDC268  SDWPSCPT. 04DDCA30  SDWSTA... 00000000
  +0018  SDWCOW... 04D66710  SDWSSOB.. 04D66BB8  SDWAPPRQ. 00000000  SDWOSSAD. 00000000  SDWPSOTM. 00000000  00000000
  +0038  SDWSYSRQ. 00000000  SDWCRJOB. 0000      SDWSTOKN. 00000000  00000000            SDWENTIT. 00000000  00000000  00000000
  +0054            00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00
  +0080  SDWOSSOB. 04864048  SDWSUBCB. 00000000  SDWSUBRT. 00000000  SDWSUBSV. 00000000  00000000  00000000  00000000  00000000
  +00A0            00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  SDWDSVE.. 00000000
  +00C8  SDWDSVE2. 00000000  SDWOSVE.. 00000000  SDWOSVE2. 00000000  SDWOSVE3. 00000000  SDWPRTAD. 00000000  SDWPRTRG. 00000000
  +00E0            00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
  +010C            00000000  00000000            SDWNRTAD. 00000000  SDWNRTRG. 00000000  00000000  00000000  00000000  00000000
  +012C            00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  SDWDJRET. 00000000
  +0154  SDWOJRET. 00000000  SDWFDBT.. 00000000  00000000  00000000  0000                SDWFDBSV. 00000000  00000000  00000000
  +0174  SDWFDBL.. 00000000  00000000  00000000  SDWRQFDB. 00000000  00000000  00000000  0000                SDWOSEID. ....
  +0192  SDWWKFDB. 00000000  00000000  00000000  SDWNXFDB. 00000000  00000000  00000000  SDWSLINE. 00000000  SDWSPAGE. 00000000
  +01C0  SDWSBYTE. 00000000  SDWSREC.. 00000000
  +01E8  SDWSTYPE. 80
         Bits set in flag SDWSTYPE
         -------------------------
               SDWGETRQ - SAPI Get request
  +01E9  SDWDFLG1. 00
         Bits set in flag SDWDFLG1
         -------------------------
               None
  +01EA  SDWOFLG1. 00
         Bits set in flag SDWOFLG1
         -------------------------
               None
  +01EB  SDWOFLG2. 00
         Bits set in flag SDWOFLG2
         -------------------------
               None
  +01EC  SDWOFLG3. 00
         Bits set in flag SDWOFLG3
         -------------------------
               None
  +01ED  SDWOARV1. 40
         Bits set in flag SDWOARV1
         -------------------------
               SDWSTGOB - COW storage obtained
  +01F0  SDWCOWTR. 04D66710
  +01F4  SDWOFLG4. 00
         Bits set in flag SDWOFLG4
         -------------------------
               None
  +01F5  SDWRTNIN. 00        SDWXCOCP. 00059000  SDWXCOCA. 0101001D  SDWXCRTN. 00000000  SDWXCRSN. 00000000  SDWXCTOK. ........
  +0210  SDWXCWSV. 01E8C3E6  E2E54020  00A00000  04DDC228  00000000  04DDC218  04DDC21C  00000000  00000000  00000000  00000000
    +023C            00000000  00000000  00000000
***********************
****** Idle SDEs ******
***********************
  There are no SDEs on this queue
```

```
*************************************************
********** SAPI Wait for Work Elements **********
*************************************************
**********************
****** Base SWE ******
**********************
 SWE: 04876FD0
  +0000  SWEID.... SWEB      SWEFIRST. 00000000  SWELAST.. 00000000  SWEECFAD. 00000000  SWEMASK.. 00        SWEHWCNT. 00
  +0012  SWEPOST.. 00
         Bits set in flag SWEPOST
         ------------------------
           None
  +0013  SWEFLG1.. 80
         Bits set in flag SWEFLG1
         ------------------------
           SWEBASE  - Indicate this is the base entry chained off of field
                          TVTSAPWQ

***********************
****** SWE Queue ******
***********************
  There are no SWEs on the queue
```

COW - Client output work area

```
COW: 00052000
    +0000  COWREQLN. 09B8      COWID.... COW       COWVER... 02
    +0008  COWNEXT.. 00000000  COWPREV.. 00000000  COWAPJBN. TOMN
    +0018  COWAPJBI. 00000015  COWTRDCT. 00000001  COWAASCB. 00F4B600
    +0024  COWAPTCB. 007F9B08  COWTCBTK. 00000068  00000002  0000000E
    +0034            007F9B08  COWAPSTT. B2291398  5F8EC343
    +0040  COWAPRQT. B2291398  92824584            COWPRIV.. 00000000
    +004C            00000000  COWSLJBI. 00000000  COWSHJBI. 00000000
    +0058  COWSDST.. 00000000  00000000            COWS2DST. 00000000
    +0064            00000000  COWUDST.. 00000000  00000000
    +0070  COWU2DST. 00000000  00000000            COWLEN... 00000570
    +008C  COWCKJBI. 00000000  COWOSEBF. 0000      COWVOFST. 0000
    +0094  COWDOFST. 0000      COWOSEFB. 00000000  00000000  00000000  0000
    +00A4  COWBRTKN. 006E      COWTKENT. 0007      COWTKPL1. 0004
    +00AA  COWTKID.. BTOK      COWTKPL2. 0002      COWTKTYP. 02
    +00B1  COWTKVRS. 02        COWTKPL3. 0004      COWTKPTR. 7F6DF648
    +00B8  COWTKPL4. 0004      COWTKPL5. 0002      COWTKPL6. 0008
    +00CC  COWTKPL7. 00FF
    +00D0  COWFLAG1. 00        COWSWBST. 00000000  COWBUFAD. 00000000
             Bits set in flag COWFLAG1
             -------------------------
               None
```

```
    +0108  COWAUXAD. 00000000  COWKMERT. 00000000  COWKERAT. 00000000
    +0114  COWADMPT. 00000000  COWADPPT. 00000000  COWADDPT. 00000000
    +0120  COWGDBK.. 00000000  COWADMKT. 00000000
    +0128  COWACCNT. 00        COWACTXT. 00000000  00000000  00000000
    +0135            00000000  00000000  00000000  00000000  00000000
    +0149            00000000  00000000  00000000  00000000  00000000
    +015D            00000000  00000000  00000000  00000000  00000000
    +0171            00000000  00000000  00000000  00000000  00000000
    +0185            00000000  00000000  00000000  00000000  00000000
    +0199            00000000  00000000  00000000  00000000  00000000
    +01AD            00000000  00000000  000000    COWTRACE. 00000000
    +01BC            00000000  00000000  00000000  00000000  00000000
    +01D0            00000000  00000000  00000000  00000000  00000000
    +01E4            00000000  00000000  00000000  00000000  00000000
    +01F8            00000000  00000000  00000000  00000000  00000000
    +020C            00000000  00000000  00000000  00000000  00000000
    +0220            00000000  00000000  00000000  00000000  00000000
    +0234            00000000  00000000  00000000  00000000  00000000
    +0248            00000000  00000000  00000000  00000000  00000000
    +025C            00000000  00000000  00000000  00000000  00000000
    +0270            00000000  00000000  00000000  00000000  00000000
    +0284            00000000  00000000  00000000  00000000  00000000
    +0298            00000000  00010214  151E2829  2A96A0D7  D8DCDD3C
    +02AC            46491063  COWJDSFB. 00000000  0000
    +02B6  COWOTSWB. 00000000  0000                COWUCSID. ....
    +02C0  COWFCBID. ....      COWCKPL.. 0000      COWCKPP.. 0000
    +02C8  COWCKPS.. 0000      COWCTABN. ........  COWMRECD. 00000000
    +02D8  COWFFDBV. 00000000  COWTOKEN. 50018053  55549555  55555555
    +02E8            55555555  55555555  55555555  55555555  55555555
    +02FC            55555555  55555555  55555555  55555555  86839694
    +0310            8691A4A5  55555555  55555555  B6838180  15151515
    +0324            91A2A015  15151515            COWCCNTL. 00
    +032D  COWFLAG2. 00
             Bits set in flag COWFLAG2
             -------------------------
               None
```

```
    +032E  COWFLAG3. 80        COWPENSA. 00000000  COWSAPTR. 0532D5E4
             Bits set in flag COWFLAG3
             -------------------------
               COWCPOSE - Checkpoint OSE FDB used
    +0338  COWTOD... 00000000
    +0364  COWFLAG4. 40
```

```
           Bits set in flag COWFLAG4
           -------------------------
             COWSAPRO - S.A. being processed
    +0368  COWCLPTR. 0532DCE2  COWSAVEA. 7F4BD32C  00000000  00000000
    +0378            00000000  00000000  00000000  00000000  00000000
    +038C            00000000  00000000  00000000  00000000  00000000
    +03A0            00000000  00000000  00000000  00000000  00000000
    +03B4  COWRETAD. 00000000  COWSBR13. 00000000  COWUSPLN. 00000000
    +03C0  COWDATCC. 00000000  COWUPPTR. 00000000  COWUSWBP. 00000000
    +03CC  COWSWBC.. 00000000  COWSWBMA. 00000000  COWBUFLN. 0000
    +03D6  COWUSBSZ. 0000      COWUSWBN. 0000      COWMDTLN. 0000
    +03DC  COWSWBMS. 0000      COWERTLN. 0000      COWUMSBZ. 0000
    +0404  WCMXPRML. 00000000  WCJ3PRMA. 00000000  WCJ3PRML. 00000000
    +0410  WCS2PRMA. 00000000  WCS2PRML. 00000000  WCRETCD.. 00000000
    +041C  ONECHAR.. ?         ZRORMOR.. *         WCWORK... 00000000
    +0422            00000000  00000000  00000000  00000000  00000000
    +0436            00000000  00000000  00000000  00000000  00000000
    +044A            00000000  00000000  00000000  00000000  00000000
    +045E            00000000  00000000  00000000  00000000  00000000
    +0472            00000000  00000000  00000000  00000000  00000000
    +0486            00000000  00000000  00000000  00000000  00000000
    +049A            00000000  00000000  00000000  00000000  00000000
    +04AE            00000000  00000000  00000000  00000000  00000000
    +04C2            00000000  00000000  00000000  00000000  00000000
    +04D6            00000000  00000000  00000000  00000000  00000000
    +04EA            00000000  00000000  00000000  00000000  00000000
    +04FE            00000000  00000000  00000000  00000000  00000000
    +0512            00000000  00000000  00000000  COWCTOKN. 00000000
    +0524            00000000  00000000  00000000  00000000  00000000
    +0538            00000000  00000000  00000000  00000000  00000000
    +054C            00000000  00000000  00000000  00000000  00000000
    +0560            00000000  00000000  00000000  00000000
    +0570  COWSSOB.. E2E2D6C2  001C004F  007FD2AC  00000004  05101AF0
    +0584            00000000  00000000  00000000
    +0590  COWSSS2.. 04280200  E2E2E2F2  00000000  00000000  00000000
```

```
    +05A4            00000000  00000000  00000000  00000000  01000000
    +05B8            00000000  00000000  00000000  00000004  00000000
    +05CC            00000000  0000C4E4  D4D4E8D1  D6C20000  00000000
    +05E0            00000000  00000000  00000000  00000000  00000000
    +05F4            00000000  00000000  00000000  00000000  00000000
    +0608            00000000  00000000  00000000  00000000  00000000
    +061C            00000000  00000000  00000000  00000000  00000000
    +0630            00000000  00000000  00000000  00000000  00000000
    +0644            00000000  00000000  00000000  00000000  00000000
    +0658            00000000  00000000  00000000  00000000  00000000
    +066C            00000000  00000000  00000000  00000000  00000000
    +0680            00000000  00000000  00000000  00000000  00000000
    +0694            00000000  00000000  00000000  00000000  00000000
    +06A8            00000000  00000000  00000000  00000000  00000000
    +06BC            00000000  00000000  00000000  00000000  00000000
    +06D0            00000000  00000000  00000000  00000000  00000000
    +06E4            00000000  00000000  00000000  00000000  00000000
    +06F8            00000000  00000000  00000000  00000000  00000000
    +070C            00000000  00000000  00000000  00000000  00000000
    +0720            00000000  00000000  00000000  00000000  00000000
    +0734            00000000  00000000  00000000  00000000  00000000
    +0748            00000000  00000000  00000000  00000000  00000000
    +075C            00000000  00000000  00000000  00000000  00000000
    +0770            00000000  00000000  00000000  00000000  00000000
    +0784            00000000  00000000  00000000  00000000  00000000
    +0798            00000000  00000000  00000000  00000000  00000000
    +07AC            7F6DF648  00000001  00000000  00000000  00000000
    +07C0            00000000  00000000  00000000  00000000  00000000
    +07D4            00000000  00000000  00000000  00000000  00000000
    +07E8            00000000  00000000  00000000  00000000  00000000
    +07FC            00000000  00000000  00000000  00000000  00000000
    +0810            00000000  00000000  00000000  00000000  00000000
    +0824            00000000  00000000  00000000  00000000  00000000
    +0838            00000000  00000000  00000000  00000000  00000000
    +084C            00000000  00000000  00000000  00000000  00000000
    +0860            00000000  00000000  00000000  00000000  00000000
```

```
+0874            00000000  00000000  00000000  00000000  00000000
    +0888            00000000  00000000  00000000  00000000  00000000
    +089C            00000000  00000000  00000000  00000000  00000000
    +08B0            00000000  00000000  00000000  00000000  00000000
    +08C4            00000000  00000000  00000000  00000000  00000000
    +08D8            00000000  00000000  00000000  00000000  00000000
    +08EC            00000000  00000000  00000000  00000000  00000000
    +0900            00000000  00000000  00000000  00000000  00000000
    +0914            00000000  00000000  00000000  00000000  00000000
    +0928            00000000  00000000  00000000  00000000  00000000
    +093C            00000000  00000000  40404040  40404040  40404040
    +0950            40404040  00000000  00000040  00000000  D5D6C4C5
    +0964            F1404040
```

JESMSG Queue Control Area Header

The JMQ header and entry(ies) are not formatted in the FSS dump. The JMQ header and entry(ies) represent messages originating in the JES3 global that are to be included in the job's JESMSGLG data set. The JESMSG Queue Control Area Header points to the JESMSG Queue Entries.

```
             JESMSG QUEUE CONTROL AREA HEADER


ADDRESS       AFL1      FIRST      MSCPB       RETRY
056813F8       00      0570E00    05703D88     05509958


            JESMSG QUEUE ENTRIES

ADDRESS       EJNAM      EJID     EJTIME       EMNAM       ELEN      EJNXT      EJPRV
0570E000      DYNAL0T2 JOB00010  16:24:58     SY1           00C0     00000000   00000000
   IAT5110 JOB DYNAL0T2 (JOB00010) USES         D D75902 KANIA.LINKLPA
0570E0C0      DYNAL0T2 JOB00010  16:24:59     SY1           00C0     00000000   00000000
   IAT5110 JOB DYNAL0T2 (JOB00010) USES         D D75902 MARIO.LINKLPA
0570E180      DYNAL0T2 JOB00010  16:32:53     SY1           00C0     00000000   00000000
   IAT5110 JOB DYNAL0T2 (JOB00010) USES         D D75902 JDESIGN.HJS7705.LI
```

JESMSG QUEUE ENTRY

- ADDRESS hhhhhhhh - is the address of the JESMSG QUEUE ENTRY.
- EJNAM cccccccc - is the job name associated with this entry.
- EJID cccccccc - is the job id associated with this entry.
- EJTIME cccccccc - is the time of spin off for this entry.
- EMNAM cccccccc - is the name of the system doing the spin off for this entry.
- ELEN hhhh - is the length of this JESMSG QUEUE ENTRY.
- EJNXT hhhhhhhh - is the address of the next JESMSG QUEUE ENTRY.
- EJPRV hhhhhhhh - is the address of the previous JESMSG QUEUE ENTRY.

C/I

CIDRVR ECF identifier entries

The C/I Driver ECF Identifier Entry identifies the type of ECF / Event that an FCT is AWAITing on. It is mapped by the JES3 macro IATYEIE. It is not formatted in an FSS dump.

```
 ---------------------------------------------------------
                    CIDRVR ECF IDENTIFIER ENTRIES

                    ADDRESS     PARM    TYPE
                    05878CF8  05604BFC   01
                    05878D00  00000000   00
                    05878D08  00000000   00
                    05878D10  00000000   00
                    05878D18  00000000   00
                    05878D20  00000000   00
                    05878D28  00000000   00
                    05878D30  00000000   00
                    05878D38  00000000   00
---------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the ECF Identifier Entry (EIE).
PARM hhhhhhhh -  is the type dependent parameter.
TYPE hh -  is the type of ECF for a particular EIE.
X'01'  indicates  PARM is ECF address.
X'02'  indicates  PARM is FSS table address.
```

CIDRVR ECF list control block

The C/I Driver ECF List Control Block shows the ECF list, required by the ECF list management routines. It is mapped by the JES3 macro IATYELB. It is not formatted in an FSS dump.

```
 --------------------------------------------------------------
                    CIDRVR ECF LIST CONTROL BLOCK - 05878C88

                   USE   RPN   ALOC  ALOW  EFLG
                   0001  0000  0009  0009   80
---------------------------------------------------------------

USE hhhh -  is the in-use ECF count.

RPN hhhh -  is the relative position number.

ALOC hhhh - is the pre allocated ECF count.

ALOW hhhh - is the allowed ECF count. For dynamic allocation,
this field is checkpointed in DYNCKAL.

EFLG hh -  is the flag byte of  ECF List Control Block.
The following bits can be set in this flag.

Value      Meaning
X'80'    ECF list is initialized.
X'40'    ECF is unavailable.
X'20'    AWAIT specified.
X'10'    Single entry check.
```

C/I FSS tables

The C/I FSS Table is used (in the JES3 Global) to keep track of the status and the work being processed by a C/I FSS. The C/I FSS PROCLIB status entries are used to keep track of PROCLIB orders, status etc. There is one PROCLIB status entry for each PROCLIB table entry. They are pointed to by, and located at the end of the C/I FSS Table. It is mapped by the macro IATYCFT. It is not formatted in an FSS dump.

```

-----------------------------------------------------------------------------------------------------------
---------
                   C/I FSS
TABLES


ADDRESS     NEXT     FSSPT      FSID      MPC      JOBCH     PRCST    SPE       BATUS  DSLUS  FORID
RSSEQ     FLAG1
05878D40  05878D98  05840168  00010000  00000000  00000000  05878D90  00000000  0000   0000   00000000
00000000  00
05878D98  05878DF0  058456D0  00020000  00000000  00000000  05878DE8  00000000  0000   0000   00000000
00000000  0A
05878DF0  05878E48  05845460  00030000  00000000  00000000  05878E40  00000000  0000   0000   00000000
00000000  0A
05878E48  05878EA0  058451F0  00040000  00000000  00000000  05878E98  00000000  0000   0000   00000000
00000000  0A
05878EA0  05878EF8  05857358  00050000  00000000  00000000  05878EF0  00000000  0000   0000   00000000
00000000  0A
05878EF8  05878F50  058570E8  00060000  00000000  00000000  05878F48  00000000  0000   0000   00000000
00000000  0A
05878F50  05878FA8  05862A80  00070000  00000000  00000000  05878FA0  00000000  0000   0000   00000000
00000000  0A
05878FA8  00000000  05862810  00080000  00000000  00000000  05878FF8  00000000  0000   0000   00000000
00000000  0A

-----------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the C/I FSS entry.

NEXT hhhhhhhh -  is the address of the next C/I FSS entry.

FSSPT hhhhhhhh - is the address of the FSS table.

FSID hhhhhhhh -  is the ID of the functional subsystem.

MPC hhhhhhhh - is the address of MPC  for the FSS set at FSS connect
time or when FSS is found to be active over a JES3 restart.
```

```
JOBCH hhhhhhhh - is the RQ chain  for jobs being processed by the FSS.

PRCST hhhhhhhh - is the address of PROCLIB status entries,
located at the end of the FSS table.

SPE hhhhhhhh - is the address of the RQ sub chain priority entries for
jobs being processed by the FSS. This is used (by IATGRRQ) to maintain
pointers to the RQs of different priorities within JOBCH.

BATUS hhhh - is the number of batch C/I DSPs in use.

DSLUS hhhh - is the number of  demand select C/I DSPs in use.

FORID hhhhhhhh - is the FSS portion of order /order-response identifier number.
It is set when FSS connects or  is restarted during the current JES3 start.

RSSEQ hhhhhhhh - is the response sequence number of  last modify count (TYPE=NORM)
or process job (TYPE=NAVAIL) response.

FLAG1 hh - is the flag byte of C/I FSS table.
The following bits can be set in this flag.

Value      Meaning
X'80'     FSS has completed PROCLIB initialization.
X'40'    FSS has completed Subtask initialization.
X'20'    FSS START command ECF is added to the ELB.
X'10'    FSS runs on global processor.
X'08'    Bypass FSS for C/I scheduling.
X'04'    FSS has a modify count response outstanding.
X'02'    Bypass FSS for C/I scheduling, if we are for a C/I FSS on
            a main processor that is eligible to run the job.
```

C/I parameter tables

The C/I Parameter Table contains the converter parameter list and region size for a particular PARMID. It is mapped by the macro IATYPAR. It is formatted in both JES3 and FSS dumps.

```
 -----------------------------------------------------------------------------------------------
C/I PARAMETER TABLES

ADDRESS   ID    CHN     ACPN  PRTY   STTM   JSRG  CMDS  BLP  MCSA  JMSL  AMSL  MSGC  RGTP  RGSZ
058190B8  01  058190E4   4     00   003500  512    3     1   E000   1     1     A     K    0512
058190E4  I1  05819110   4     00   003500  512    3     1   E000   1     1     T     K    0512
05819110  S1  0581913C   4     00   003500  512    3     1   E000   1     1     D     K    0512
0581913C  T1  00000000   4     00   003500  512    3     1   E000   1     1     I     K    0512
-----------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the C/I parameter table entry.

ID cc - is the C/I parameter identifier.

CHN hhhhhhhh - is the address of the next C/I parameter table entry.

ACPN c - is the parameter options:
'1'     - Programmer name required.
'2'    - Account number required.
'4'    - User SWA above indicator.

PRTY cc - is the default job priority.

STTM cccccc - is the maximum step execution time.

JSRG ccc - is the job/step region size.

CMDS c - is the command disposition.

BLP c - is the label processor indicator.
'0'    - BLP will be treated as NL.
'1'    - BLP will be treated as bypass label.

MCSA cccc - is the MCS command authority.

JMSL c - is the JCL MSGLEVEL default.

AMSL c - is the allocation MSGLEVEL default.

MSGC c - is the default system output class (MSGCLASS).

RGTP c - is the unit of measure of the region size (K or M).
```

```
RGSZ cccc - is the region size.
```

C/I related TVT information

The C/I Related TVT Information gives the data related to C/I control blocks in TVT. It is formatted in both JES3 and FSS dumps.

```
--------------------------------------------------------------------------------------------------------
---------
                    C/I RELATED TVT INFORMATION -
05604000


 IDAAD     IFCAD      XIWT     CISCH     DSSCH     PSSCH     CONVI     PSTSC     ENABL     DISBL
CITCB
0587D108  00000000  05904C28  0587B0D8  058791D8  058192B0  0564A508  0564A568  0564A688  0564A6E8
007CFE88


 ICTCH      DSNT      HWST     PARMS     PROCT     CIECB     FSECB     MXDCI     ATDCI    CICNT
PSDMX     PSDUS
05908388  05819168  058191A4  058190B8  00044528  807D00E0  00000000  00000005  00000001  0006
00000007  00000000


CIECF  CDECF  JLFLG  TSOPM  STCPM  INTPM  TSOPR  STCPR  INTPR   ADSLM     SYCNT
JOBLM
 80     00     00     T1     S1     I1     T1     S1     I1    00000000  00000000
00000000
--------------------------------------------------------------------------------------------------------
---------

IDAAD hhhhhhhh - is the address of the interpreter data area.

IFCAD hhhhhhhh - is the address of the C/I FSS data area.

XIWT hhhhhhhh - is the address of the interpreter message routine.

CISCH hhhhhhhh - is the address of the C/I scheduler entry point.

DSSCH hhhhhhhh - is the address of the disable processing and scheduling entry point.

PSSCH hhhhhhhh - is the address of the POSTSCAN scheduler entry point.

CONVI hhhhhhhh - is the DSP dictionary entry for C/I.

PSTSC hhhhhhhh - is the DSP dictionary entry for POSTSCAN.

ENABL hhhhhhhh - is the DSP dictionary entry for ENABLE.

DISBL hhhhhhhh - is the DSP dictionary entry for DISABLE.

CITCB hhhhhhhh - is the address of the C/I subtask TCB.

ICTCH hhhhhhhh - is the address of the interpreter control table chain.

DSNT hhhhhhhh - is the address of the RESDSN table.

HWST hhhhhhhh -  is the address of the high watermark setup name table.

PARMS hhhhhhhh - is the address of the C/I parameter table.

PROCT hhhhhhhh - is the address of the C/I PROCLIB table.

CIECB hhhhhhhh - is the address of the ECB for C/I subtask.

FSECB hhhhhhhh - is the address of ECB for FSS main.

MXDCI hhhhhhhh - is the maximum number of C/I DSPs  for demand/select jobs in the address space.

ATDCI hhhhhhhh - is the number of demand/select C/I subtasks attached.

CICNT hhhh - is the number of C/I subtasks.

PSDMX hhhhhhhh - is the maximum number of demand/select POSTSCAN DSPs.

PSDUS hhhhhhhh - is the number of demand/select POSTSCAN DSPs in use.
```

```
CIECF hh - is the ECF of C/I subtask.

CDECF hh - is the ECF of C/I driver.

JLFLG hh -  is the JCL statement flag.
X'80' means JCL statement quiesce.

TSOPM cc - is the TSO PARM ID for C/I.

STCPM cc - is the STC PARM ID for C/I.

INTPM cc - is  INT RDR PARM ID for C/I.

TSOPR cc - is the TSO PROC ID for C/I.

STCPR cc - is the STC PROC ID for C/I.

INTPR cc - is  INT RDR PROC ID for C/I.

ADSLM hhhhhhhh - is the address space JCL limit.

SYCNT hhhhhhhh - is the JCL statement address space count.

JOBLM hhhhhhhh - is the job JCL statement limit.
```

Interpreter Data Area

The Interpreter Data Area contains data related to the C/I FSS's which is used by the C/I Driver and other functions. It is mapped by the JES3 macro IATYIDA. It is not formatted in an FSS dump.

```
---------------------------------------------------------------------------------------------------------
---
                     INTERPRETER DATA AREA -
0587D108


  ELBST    EIEST    CFTST    CDFCT    JORID    FORID    PRCDS    PRCEN    PRCUP   PSCDS    PSCBT
FSSRC
 05878C88 05878CF8 05878D40 058020A0 00000001 00000001 00000000 00000000  0000   00000000 00000000
058DF770


   XCIO    RETRY    CICLN    CAPST    PSSCH    FSTCK    FSSST    FSSDS    FSSEN    PRCCL    FLG1 FLG2
FLG3
 058E0870 058E0028 0585B07C 0585B37E 0585B6C8 0585B7F0 0585B898 585BCA6  0585BD86 0585BEFA   00   00   00
---------------------------------------------------------------------------------------------------------
---

ELBST hhhhhhhh - is the address of ECF list control block.

EIEST  hhhhhhhh - is the address of ECF identifier entries.

CFTST hhhhhhhh - is the address of the C/I FSS table.

CDFCT hhhhhhhh - is the address of the C/I driver FCT.

JORID hhhhhhhh - is the JES3 portion of  order/response identification number.

FORID hhhhhhhh - is the last FSS order/response identification number assigned.
                                It is assigned when an FSS connects or is found to be active over a JES3
restart.

PRCDS hhhhhhhh - is the address of the PROCLIB disable chain.

PRCEN hhhhhhhh - is the address of the PROCLIB enable chain.

PRCUP hhhh - is the number of PROCLIBs being updated.

PSCDS hhhhhhhh - is the address of demand select POSTSCAN scheduling chain.

PSCBT hhhhhhhh - is the address of the batch POSTSCAN scheduling chain.

FSSRC hhhhhhhh - is the entry point of C/I driver 'FSS Receive' routine (IATIIFR).

XCIO hhhhhhhh - is the entry point of C/I issue order (IATXCIO) routine (IATIIOR).

RETRY hhhhhhhh - is the entry point of C/I driver JESTAE retry routine (IATIICJ).
```

```
CICLN hhhhhhhh - is the entry point of C/I job cleanup routine in IATIIFS.

CAPST hhhhhhhh - is the entry point of console appendage post routine in IATIIFS.

PSSCH hhhhhhhh - is the entry point of POSTSCAN scheduling routine in IATIIFS.

FSTCK hhhhhhhh - is the entry point of  FSS start check routine in IATIIFS.

FSSST hhhhhhhh - is the entry point of FSS status change routine in IATIIFS.

FSSDS hhhhhhhh - is the entry point of  FSS PROCLIB disable routine in IATIIFS.

FSSEN hhhhhhhh - is the entry point of FSS PROCLIB enable routine in IATIIFS.

PRCCL hhhhhhhh - is the entry point of PROCLIB cleanup routine in IATIIFS.

FLG1 hh - is the flag byte of Interpreter Data Area.
The following bits can be set in this flag.

Value      Meaning
X'80'    POSTSCAN scheduling routine processing batch jobs.
X'40'    Current job being processed still in FSS address space.
X'20'    Fail job with dump.

FLG2 hh - is the flag byte of Interpreter Data Area (JESTAE / Recovery flag)
The following bits can be set in this flag.

Value    Meaning
X'80'    IDACENT1 is console message buffer.
X'40'    IDACENT1 is PROCLIB table.
X'20'    Staging area being processed. STAUFLG=STACTIVE for the active staging area.
X'10'    C/I driver initialization phase.
X'08'    JESTAE retry routine in control.
X'04'    Job cleanup routine is active.
X'02'    PROCLIB use count has been decremented (Only if job cleanup routine is active).

FLG3 hh - is the flag byte of Interpreter Data Area (Job cleanup routine options flag).
The following bits can be set in this flag.

Value    Meaning
X'80'    Schedule job for POSTSCAN request.
X'40'    Return the job to JSS for C/I rescheduling.
X'20'    Return the job to JSS for specialized rescheduling.
X'10'    Cleanup the job's control blocks.
X'08'    Update JCT FDBs from RSQ FDBs.
```

Interpreter control tables

The Interpreter Control Table contains Converter/Interpreter work area and status information. JES3 macro IATYICT maps this control block. It is formatted in both JES3 and FSS dumps.

```
-----------------------------------------------------------------------------------------------------------
---------
                    INTERPRETER CONTROL
TABLES


ADDRESS   ACMOD    IIST     IDD     EXTPT     TCB      JSCB     TVT      JDE      PRCAD     ECB
RES     HDECB
05908388 IATIIST 8590A6C0 0001F580 00040C60 007CFCF0 007D0240 05604000 0569D3E8 00044528 807D0058
00000000 00000000
05907388 IATIIST 8590C6C0 00000000 0003F180 007CFAC0 007D0300 05604000 0569D320 00000000 807CF9A0
00000000 00000000
05906388 IATIIST 8590E6C0 00000000 0003F520 007CF808 007D03C0 05604000 0569D258 00000000 807CF6E8
00000000 00000000
058F42C8 IATIIST 859106C0 00000000 0003F8C0 007CF550 007D0480 05604000 0569D190 00000000 807CF430
00000000 00000000
058EF2C8 IATIIST 859126C0 00000000 0003FC60 007CF298 007D0540 05604000 0569D0C8 00000000 807CF178
00000000 00000000
058EA2C8 IATIIST 859146C0 0001F580 00044C08 007CEE88 007D0600 05604000 0569D000 00044718 807CF0F0
00000000 00000000
058E52C8 IATIIST 859166C0 00000000 00044188 007CEC58 007D06C0 05604000 0569CE74 00000000 807CF068
00000000 00000000


ADDRESS    INCNT   PARID   JCDSS     JCDSS     JEDSS     JEDEB     SYDSS     SYDEB    FLAG1  FLAG2
FLAG3  FLAG4
```

```
05908388  00000001  01    04FD93E8  04FD93E8  04FD9280  00013828  04FD9118  00013808   00     48
00     20
05907388  00000000        04F683D8  04F683D8  04F68270  000137C8  04F68108  000137A8   00     40
00     20
05906388  00000000        04F67E98  04F67E98  04F67D30  00013768  04F67BC8  00013748   00     40
00     20
058F42C8  00000000        04F67A60  04F67A60  04F678F8  00013708  04F67790  000136E8   00     40
00     20
058EF2C8  00000000        04F66E98  04F66E98  04F66D30  000136A8  04F66BC8  00013688   00     40
00     20
058EA2C8  00000005  S1    04F66A60  04F66A60  04F668F8  00013648  04F66790  00013628   00     48
20     40
058E52C8  00000000        04F65E98  04F65E98  04F65D30  000135E8  04F65BC8  000135C8   00     40
00     10
------------------------------------------------------------------------------------------------------
---------

ADDRESS hhhhhhhh - is the address of the interpreter control table entry.

ACMOD cccccccc - is the name of the subtask active module.

IIST hhhhhhhh - is the address of  subtask IATIIST using this interpreter control table.
                            This is used for trapping the right subtask.

IDD hhhhhhhh - is the address of the current interpreter DSP data area.

EXTPT hhhhhhhh - is the address of the ICT extension.

TCB hhhhhhhh - is the TCB address of the subtask.

JSCB hhhhhhhh - is the JSCB address for subtask.

TVT hhhhhhhh -  is the TVT address.

JDE hhhhhhhh - is the JDE address for the ICT.

PRCAD hhhhhhhh - is the address of the PROCLIB table.

ECB hhhhhhhh - is the ECB for subtask communication.

RES hhhhhhhh - is the ECB for subtask attach post.

HDECB hhhhhhhh - is the address space JCL limit  quiesce ECB.

INCNT  hhhhhhhh - is  the subtask interpretation count.

PARID cc - is the current PARM ID.

JCDSS  hhhhhhhh - is the JCLIN DSS pointer.

JEDSS hhhhhhhh - is the JESJCL DSS pointer.

JEDEB hhhhhhhh - is the JESJCL DEB pointer.

SYDSS hhhhhhhh - is the SYSMSG DSS pointer.

SYDEB hhhhhhhh - is the SYSMSG DEB pointer.

FLAG1 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value    Meaning
X'80'    Perform SJF termination processing.
X'20'    Invoke SWA processing routine.
X'10'    Free SWA subpool (when zero subpool has been freed).
X'08'    IATIIST's ESTAE (STESTAEX) has been previously entered.
X'04'    Subtask is detached.
X'02'    Perform SWA spooling.
X'01'    Close the current PROCLIB.

FLAG2 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value    Meaning
X'80'    C/I subtask abended.
X'40'    Subtask is active.
X'20'    Output SWB processing is required for a job.
X'10'    Subtask active in MVS C/I . If it is set, ESTAE exit closes JCLIN, JESJCL, SYSMSG
    and JCBLOCK data sets.
X'08'    Interpreter finished with job.
X'04'    Conversion/Interpretation is required for a job.
X'02'    Subtask is allocated (in use).
```

```
X'01'    Force subtask abend. It is set to cause the subtask to return to the control program.

FLAG3 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value    Meaning
X'40'    User exit IATUX02 is a dummy JES3 exit.
X'20'    User exit IATUX03 is a dummy JES3 exit.

FLAG4 hh - is the flag byte of Interpreter Control Table.
The following bits can be set in this flag.

Value    Meaning
X'80'    No SDUMP from ESTAE.
X'40'    ICT for demand select job.
X'20'    ICT for batch job.
X'10'    ICT for subtask which is used to start a C/I FSS address space.
X'08'    ACEE created during C/I subtask processing.
```

PROCLIB tables

The procedure library tables contains a header and an entry for every data set within the concatenation. It is mapped by the JES3 macro IATYPRO. It is formatted in both JES3 and FSS dumps.

```
----------------------------------------------------------------------------------------------
                    PROCLIB TABLES

ADDRESS     NAME      CHN       EDCH    UUSE  SEQN    CUSE    DSCT  EDCT  FLG1  MBSI    MSID
00044528  IATPLBST  000445EC  00000000  0000  0001  00000000  0001  0000   00   0000  00000000
   DSN  000445B8  DSN=SYS1.PROCLIB                              UPJN=00000000
000445EC  IATPLBI1  00044718  00000000  0000  0002  00000000  0003  0000   00   5B90  00000000
   DSN  0004467C  DSN=SYS1.PROCLIB                              UPJN=00000000
   DSN  000446B0  DSN=C49FCT.PROCLIB                            UPJN=00000000
   DSN  000446E4  DSN=D75JES3.PROCLIB                           UPJN=00000000
00044718  IATPLBS1  00044844  00000000  0000  0003  00000000  0003  0000   00   5B90  00000000
   DSN  000447A8  DSN=SYS1.PROCLIB                              UPJN=00000000
   DSN  000447DC  DSN=C49FCT.PROCLIB                            UPJN=00000000
   DSN  00044810  DSN=D75JES3.PROCLIB                           UPJN=00000000
00044844  IATPLBT1  00000000  00000000  0000  0004  00000000  0003  0000   00   5B90  00000000
   DSN  000448D4  DSN=SYS1.PROCLIB                              UPJN=00000000
   DSN  00044908  DSN=C49FCT.PROCLIB                            UPJN=00000000
   DSN  0004493C  DSN=D75JES3.PROCLIB                           UPJN=00000000
----------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the C/I procedure library table entry.

NAME cccccccc - is the name of the procedure library.

CHN hhhhhhhh - is the address of the next C/I procedure library table entry.

EDCH hhhhhhhh - is the address of the Enable/Disable chain.

UUSE hhhh - is the update use count. It gives the number of data sets being updated.

SEQN hhhh - is the procedure library sequence number.

CUSE hhhhhhhh - is the current C/I use count. It gives the number of jobs in C/I using that procedure
                library.

DSCT hhhh - is the number of data set name entries.

FLG1 hh - is the flag byte of PROCLIB table.
The following bits can be set in this flag.

Value    Meaning
X'80'    Update job hold on this PROC.
X'40'    Procedure library is unallocated.
X'20'    Procedure library disabled by all C/I FSS's. It is used by the DISABLE DSP.
X'10'    Procedure library enabled by all C/I FSS's. It is used by the ENABLE DSP.
X'08'    PROC disabled due to error.
X'04'    Enable request is pending for the procedure library.
X'02'    Disable request is pending for the procedure library.
X'01'    Abort the Disable/Enable for the procedure library. It is set by the C/I driver if an abend
       occurs.

MBSI hhhh - is the maximum block size.
```

```
MSID hhhhhhhh - is the message ID to dequeue.
DSN cccccccccccccccccccccccccccccccccccccccccccc - is the procedure library data set name.

UPJN hhhhhhhh - is the update job number.
```

DFC-Device fence control blocks

The Device Fence Control Blocks contains information used to allocate or deallocate fenced devices for job class groups or DJC networks. It is mapped by the JES3 macro IATYDFC. It is not formatted in an FSS dump.

```
----------------------------------------------------------------------------------------------------
DEVICE FENCE CONTROL BLOCKS

ADDRESS    GNAME     CHAIN    ENUM  TSIZE  ALOPT SEQN CKIDX   RQM      ENMSK    MNSEQ FLG1 FLG2 FLG3

057BF100  JES3TEST  057BF14C   01   004C    FF    01  0020  FF000000  00000000   00    92   10   00
   DEV  057BF13C  DEVT=3800      DEVN=0001
057BF14C  JES3HOLD  00000000   01   004C    00    02  0000  FF000000  00000000   00    94   00   00
   DEV  057BF188  DEVT=TAPE      DEVN=000A
----------------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the device fence control block entry

GNAME cccccccc - is the Job class group name or DJC (Dependent Job Control) network ID.

CHAIN hhhhhhhh- is the address of the next device fence control block (DFCB) in the chain.

ENUM hh - is the number of device entries.

TSIZE hhhh - is the total size of the DFCB.

ALOPT hh - is the allocation option indicator.
X'00'     indicates allocation ANY.
X'FF'     indicates allocation GROUP/NET.

SEQN hh - is sequence number of the DFCB.

CKIDX hhhh - is the index to check point FDB.

RQM hhhhhhhh - is the main mask for allocation.

ENMSK hhhhhhhh - is the enabled main mask.

MNSEQ hh - is the main PROC sequence number.

FLG1 hh - is the flag byte of  DFCB.
The following bits can be set in this flag.

Value    Meaning
X'80'    Device fence by group. It means DEVPOOL specified on the GROUP statement.
X'40'    Device fence by main. It means device information specified in the EXRESC parameter of
    the GROUP statement.
X'20'    Device fence for DJC network.
X'10'    Allocation allowed outside fence.
X'08'    Device fence is active.
X'04'    Last DFCB in the chain.
X'02'    Device dedication in progress.
X'01'    Device dedication failed.

FLG2 hh - is the flag byte of DFCB.
The following bits can be set in this flag.

Value    Meaning
X'80'    Request device dedication.
X'40'    Request device unallocation.
X'20'    Request build JST.
X'10'    JST built for the DFCB.
X'08'    DFCB in use. It is used to synchronize GMS/MDS.
X'04'    The fence associated with the DFCB was found in the device dedication checkpoint
    (DDC) record during a restart.

FLG3 hh - is the flag byte of DFCB.
The following bits can be set in this flag.

Value    Meaning
X'80'    During a hot start with refresh, the old JST for the device
          fence was discarded because the     new device fence definition
```

```
            no longer matches the old one.  A new JST will be built after     MDS restart.
X'40'    During a hot start with refresh, the spooled DFCB in the JST was updated with new
    information.

DEV hhhhhhhh - is the address of  device.

DEVT cccccccc - is the name of device.

DEVN hhhh - is the number of devices fenced.
```

DLY-JQEX delay information for jobs in main service

The JQEX Delay Information for Jobs in Main gives the job delay information from the JQEX control block for jobs that are waiting to be scheduled for or active in main service. It is mapped by the JES3 macro IATYJQEX. It is not formatted in an FSS dump.

```
---------------------------------------------------------------------------------------------------------
----
JQEX DELAY INFORMATION FOR JOBS IN MAIN SERVICE

ADDRESS  JOBNAME  JOBID    FUNCTION  TYPE     REASON     CLS  CONVD LY  RESCDLY  JESSCDLY  OPERDLY
CURDLYTM

05902000 WTPLOPA JOB00039  MAINWAIT  OPER  NO AVAIL DSPS  01  00000001 00000000 00000000  00000000
B74C0B0A
05902030 J3TEST  JOB00042  MAINWAIT  OPER  NO AVAIL DSPS  01  00000000 00000000 00000000  00000000
B74C0B44
---------------------------------------------------------------------------------------------------------
----

ADDRESS hhhhhhhh - is the address of  the JQEX for the job.

JOBNAME cccccccc - is the name of the job.

JOBID cccccccc - is the job id based on the job number in JQE table.

FUNCTION cccccccc - is the function the job is in. If the job does not have a RQ, the displayed function
would
 be "MAINWAIT". Other descriptions that are possible for this field are: *INVALID, FETCH (MDS Fetch),
WAITVOL
(MDS WaitVol), SYSSEL (MDS system select), ALLOCATE (MDS allocate), VOLUNAV (MDS volume unavailable),
VERIFY
(MDS verify), SYSVER (MDS system verify), ERROR (MDS error), SELECT (GMS select), ON MAIN (Job is
executing),
BRKDOWN (MDS breakdown), RESTART (MDS restart), DONE (MDS/GMS done).

TYPE cccccccc - is the description of the delay type. The descriptions that could be possible for this
field
are:*INVALID,NO DELAY, RESOURCE (Resource delay), JESSCHED (JES Scheduling delay),  OPER (Operational
delay).

REASON cccccccccccccccc - is the description of the delay reason.

CLS hh - is the GMS job class sequence number.

CONVDLY hhhhhhhh - is the total C/I delay for the job.

RESCDLY hhhhhhhh - is the total resource delay for the job.

JESSCDLY hhhhhhhh - is the total JES scheduling delay for the job.

OPERDLY hhhhhhhh - is the total operational delay for the job.

CURDLYTM hhhhhhhh - is the current delay time stamp.
```

DSP-DSP dictionary entries

The DSP Dictionary Entries give information about each dynamic support program entry. It is mapped by the JES3 macro IATYDSP. It is formatted in both JES3 and FSS dumps.

```
--------------------------------------------------------------------------------------------------
                   DSP DICTIONARY ENTRIES
```

```
ADDRESS     NAME     CSECT      DRVR     JBVAL    NO  PRTY    MXCT      USCT     JQEWQ     JQEAW
05649B48  RSVD1                                   01  001   00000001  00000000  00000000  00000000
05649BA8  CONSERV                                 02  254   00000001  00000000  00000000  00000000
05649C08  JSAM                                    03  250   00000001  00000000  00000000  00000000
05649C68  CONSDM                                  04  240   00000001  00000000  00000000  00000000
05649CC8  TRAKALOC            IATDMTA             05  040   00000001  00000000  00000000  00000000
05649D28  DYNAL                                   06  035   00000001  00000000  00000000  00000000
05649D88  OUTSERV                       IATOSJV   07  030   000F423F  00000000  00000000  00000000
05649DE8  VERIFY                                  08  030   00000001  00000000  00000000  00000000
05649E48  SETUP                         IATMDJV   09  030   00000001  00000000  00000000  00000000
05649EA8  BDT                                     0A  025   00000001  00000000  00000000  00000000
05649F08  MODDRVR                                 0B  015   00000001  00000000  00000000  00000000
05649F68  INQDRVR                                 0C  014   00000001  00000000  00000000  00000000
05649FC8  WTDDRVR                                 0D  012   00000001  00000000  00000000  00000000
0564A028  LOCATE                                  0E  005   00000001  00000000  00000000  00000000
0564A388  WTR                 IATOSWC             17  004   000F423F  00000000  00000000  00000000
0564A3E8  CR        IATISRD   IATISCR   IATISJV   18  004   000F423F  00000000  00000000  00000000
0564A448  TR        IATISRD   IATISTR   IATISJV   19  004   000F423F  00000000  00000000  00000000
0564A4A8  DR        IATISRD   IATISDR   IATISJV   1A  004   00000001  00000000  00000000  00000000
0564A508  CI                  IATIIDR   IATIIJV   1B  007   0000000A  00000000  00000000  00000000
0564A568  POSTSCAN            IATIIDR             1C  007   00000022  00000000  00000000  00000000

ADDRESS     NAME      SCCT     SCCTA    FLAGS  FLAG1   DEVRQ    NOREQ
05649B48  RSVD1     00000000  00000000   00     00    0564C1F0   00
05649BA8  CONSERV   00000000  00000000   00     08    0564C1F0   00
05649C08  JSAM      00000000  00000000   00     00    0564C1F0   00
05649C68  CONSDM    00000000  00000000   00     08    0564C1F0   00
05649CC8  TRAKALOC  00000000  00000000   08     00    0564C1F0   00
05649D28  DYNAL     00000000  00000000   00     00    0564C1F0   00
05649D88  OUTSERV   00000000  00000000   84     00    0564D3F6   01
05649DE8  VERIFY    00000000  00000000   00     00    0564C1F0   00
05649E48  SETUP     00000000  00000000   00     00    0564C1F0   00
05649EA8  BDT       00000000  00000000   00     00    0564C1F0   00
05649F08  MODDRVR   00000000  00000000   00     08    0564C1F0   00
05649F68  INQDRVR   00000000  00000000   00     08    0564C1F0   00
05649FC8  WTDDRVR   00000000  00000000   00     08    0564C1F0   00
0564A028  LOCATE    00000000  00000000   00     00    0564C1F0   00
0564A388  WTR       00000000  00000000   06     00    0564C1F0   01
0564A3E8  CR        00000000  00000000   46     00    0564FAB2   01
0564A448  TR        00000000  00000000   46     00    0564FAC2   01
0564A4A8  DR        00000000  00000000   8E     00    0564C1F0   01
0564A508  CI        00000000  00000000   84     20    0564C1F0   00
0564A568  POSTSCAN  00000000  00000000   04     00    0564C1F0   00
----------------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of DSP dictionary entry.

NAME cccccccc - is the DSP name.

CSECT cccccccc - is the CSECT name for re-entrant modules.

DRVR cccccccc - is the DSP driver module name.

JBVAL cccccccc - is the job validation module name.

NO  hh - is the DSP number.

PRTY ddd - is the DSP priority.

MXCT hhhhhhhh - is the maximum allowable use count for the DSP.

USCT hhhhhhhh - is the current use count for the DSP.

JQEWQ hhhhhhhh - is the anchor for DSP JQE wait queue.

JQEAW hhhhhhhh - is the anchor for alternate DSP JQE wait queue.

SCCT hhhhhhhh - is the number of backlogged JQEs.

SCCTA hhhhhhhh - is the alternate SCCT. It gives the number of CI/POSTSCAN DEMSEL JQEs moved to ready
                 queue.

FLAGS hh - is  the flag byte of  DSP.
The following bits can be set in this flag.

Value    Meaning
X'80'    DSP is processable.
X'40'    DSP rescheduled on GETUNIT not available.
X'20'    JSS does INIT GETUNIT for this DSP.
X'10'    An FCT for the DSP is available.
X'08'    No MXCT change allowed through *F
X'04'    DSP is reentrant.
```

```
X'02'    DSP is callable from console.
X'01'    Use count change for this DSP.

FLAG1 hh - is the flag byte of DSP.
The following bits can be set in this flag.

Value    Meaning

X'80'    Refresh driver module.
X'40'    Refresh data CSECT.
X'20'    DSP holdable through modify command.
X'10'    DSP held by modify command.
X'08'    Exempt for message/WTO.

DEVREQ  hhhhhhhh - is the address of device requirements limit.

NOREQ hh - is the number of requirements.
```

ENQ

AENQ control data entries

The AENQ Control Data Entry contains information about exclusive or shared use of JES3 resource. It is mapped by the JES3 macro AENQ. It is formatted in both JES3 and FSS dumps.

```
------------------------------------------------------------------------
                    AENQ CONTROL DATA ENTRIES

ADDRESS     NAME     EXFCT     EXDSP     SHFCT     SHDSP    SHRCT  EXFLG
056555BC  RQ        00000000  00000000  00000000  00000000  0000    00
056555D4  DLQ       00000000  00000000  00000000  00000000  0000    00
056555EC  JNCBCTL   00000000  00000000  00000000  00000000  0000    00
05655604  SYSUNIT   0564D0E8  05649D88  00000000  00000000  0000    00
0565561C  CHKPNT    0564DD08  05649F08  00000000  00000000  0000    00
05655634  WTD       0564E2F8  05649FC8  00000000  00000000  0000    00
0565564C  FCT       05808370  0564A2C8  00000000  00000000  0000    00
05655664  PRO       00000000  00000000  00000000  00000000  0000    00
0565567C  SNARMVCB  00000000  00000000  00000000  00000000  0000    00
05655694  ICT       00000000  00000000  00000000  00000000  0000    00
056556AC  LCLJNEWS  00000000  00000000  00000000  00000000  0000    00
056556C4  RJPJNEWS  00000000  00000000  00000000  00000000  0000    00
056556DC  TSOJNEWS  00000000  00000000  00000000  00000000  0000    00
056556F4  FSSCKPT   058020A0  0564A628  00000000  00000000  0000    00
0565570C  GMSCKPT   056C7D00  0564A328  00000000  00000000  0000    00
05655724  JQEPTY0   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
0565573C  JQEPTY1   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
05655754  JQEPTY2   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
0565576C  JQEPTY3   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
05655784  JQEPTY4   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
0565579C  JQEPTY5   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
056557B4  JQEPTY6   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
056557CC  JQEPTY7   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
056557E4  JQEPTY8   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
056557FC  JQEPTY9   0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
05655814  JQEPTY10  0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
0565582C  JQEPTY11  0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
05655844  JQEPTY12  0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
0565585C  JQEPTY13  0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
05655874  JQEPTY14  0564E2F8  05649FC8  0564E2F8  05649FC8  0000    00
------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the AENQ control data entry.

NAME cccccccc - is the resource name.

EXFCT hhhhhhhh - is the address of the FCT  who has exclusive use of the resource.

EXDSP hhhhhhhh - is the address of  the DSP dictionary for FCT who has exclusive use of the resource.

SHFCT hhhhhhhh - is the address of the first FCT who has shared use of resource.

SHDSP hhhhhhhh - is the address of the DSP dictionary for first FCT who has shared use of resource.

SHRCT hhhh - is the number of users who have shared use of the resource.
```

```
EXFLG hh - is the exclusive use flag. The value of X'FF' indicates that someone has exclusive use of
the resource.
```

FCT AENQ elements

The FCT AENQ element contains information to map AENQ resource with the corresponding FCT. Each time an FCT issues an AENQ request and obtains access to a resource, an FCT AENQ element is initialized and chained from the FCT. It is mapped by the JES3 macro AENQ. It is formatted in both JES3 and FSS dumps.

```
------------------------------------------------------------------
                     FCT AENQ ELEMENTS

ADDRESS     NAME    FCTADDR    ID     NEXT      RSNM    RSNO  FLG1
057BF1B8  JSS       0574EBE0  FENQ  057BF198  FCT       0006   80
057BF198  JSS       0574EBE0  FENQ  00000000  FCT       0006   80
------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the FCT AENQ element queue for the resource that were AENQ'd by
the FCT.

NAME cccccccc - is the name of the resource.

FCTADDR hhhhhhhh -  is the address of the FCT entry.

ID cccc - is the ID of the control block (FENQ).

NEXT hhhhhhhh - is the address of the next FCT AENQ element on the FCT queue.

RSNM cccccccc - is the name of the AENQ resource.

RSNO hhhh - is the AENQ resource number.

FLG1 hh - is the flag byte of FCT AENQ.
The following bits can be set in this flag.

Value    Meaning
X'80'    Resource was obtained exclusively.  If off, resource was obtained shared.
```

FCT AENQ element free queue

It contains information about the resources in the FCT AENQ element free queue. When an FCT issues an ADEQ request to release control of the resource, the FCT AENQ element is removed from the FCT chain and put on FCT AENQ element free queue. It is mapped by the JES3 macro AENQ. It is not formatted in an FSS dump.

```
------------------------------------------------------------------
                    FCT AENQ ELEMENT FREE QUEUE

ADDRESS    ID     NEXT      RSNM    RSNO    FCT       DSP     FLG1
056BF198  FENQ  056BF1B8  JQEPTY0   000F  0564E2F8  05649FC8   00
056BF1B8  FENQ  056BF1D8            0000  00000000  00000000   00
056BF1D8  FENQ  056BF1F8            0000  00000000  00000000   00
056BF1F8  FENQ  056BF218            0000  00000000  00000000   00
056BF218  FENQ  056BF238            0000  00000000  00000000   00
056BF238  FENQ  056BF258            0000  00000000  00000000   00
056BF258  FENQ  056BF278            0000  00000000  00000000   00
056BF278  FENQ  056BF298            0000  00000000  00000000   00
056BF298  FENQ  056BF2B8            0000  00000000  00000000   00
056BF2B8  FENQ  056BF2D8            0000  00000000  00000000   00
056BF2D8  FENQ  056BF2F8            0000  00000000  00000000   00
056BF2F8  FENQ  056BF318            0000  00000000  00000000   00
056BF318  FENQ  056BF338            0000  00000000  00000000   00
056BF338  FENQ  056BF358            0000  00000000  00000000   00
056BF358  FENQ  056BF378            0000  00000000  00000000   00
056BF378  FENQ  056BF398            0000  00000000  00000000   00
056BF398  FENQ  056BF3B8            0000  00000000  00000000   00
056BF3B8  FENQ  056BF3D8            0000  00000000  00000000   00
056BF3D8  FENQ  056BF3F8            0000  00000000  00000000   00
056BF3F8  FENQ  056BF418            0000  00000000  00000000   00
```

```
056BF418  FENQ  056BF438            0000  00000000  00000000   00
056BF438  FENQ  056BF458            0000  00000000  00000000   00
056BF458  FENQ  056BF478            0000  00000000  00000000   00
056BF478  FENQ  056BF498            0000  00000000  00000000   00
056BF498  FENQ  056BF4B8            0000  00000000  00000000   00
056BF4B8  FENQ  056BF4D8            0000  00000000  00000000   00
056BF4D8  FENQ  056BF4F8            0000  00000000  00000000   00
056BF4F8  FENQ  056BF518            0000  00000000  00000000   00
056BF518  FENQ  056BF538            0000  00000000  00000000   00
056BF538  FENQ  00000000            0000  00000000  00000000   00
-----------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the FCT AENQ element free queue entry.

ID cccc - is the ID of the control block (FENQ).

NEXT hhhhhhhh - is the address of the next FCT AENQ element on the free queue.

RSNM cccccccc - is the name of the AENQ resource.

RSNO hhhh - is the number of the AENQ resource.

FCT hhhhhhhh -  is the address of the FCT entry.

DSP hhhhhhhh - is the address of the DSP.

FLG1 hh - is the flag byte of FCT ENQ.
The following bits can be set in this flag.

Value    Meaning
X'80'    Resource was obtained exclusively.  If off, resource was obtained shared.
```

GST

Generalized subtask global data area

The Generalized Subtask Global Data Area contains information used to manage the generalized subtasks and the work associated with those tasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

```
--------------------------------------------------------------------------------------
                    GENERALIZED SUBTASK GLOBAL DATA AREA - 05635838

 NSGSD     SAVAL     SAVCT     SDISP     SNOWK    TSKAT  NSMAX   FRSQD    SQDEX  FLAG1
05801410  05800E08  00000008  000008DF  00000075  0008   0008   0580F600  0001    80
--------------------------------------------------------------------------------------

NSGSD hhhhhhhh -  is the address of the first GSD on the queue.

SAVAL hhhhhhhh - is the address of the first GSD on the subtask available queue. The GSD is removed from
this queue when a subtask is posted for work, and added to the queue when the subtask is finished.

SAVCT hhhhhhhh -  is the number of available subtasks.

SDISP hhhhhhhh -  is the number of times a subtask was dispatched.

SNOWK hhhhhhhh -  is the number of times a subtask was dispatched and there was no work found.

TSKAT hhhh - is the number of subtasks attached.

NSMAX hhhh - is the maximum number of non-specific Generalized subtasks.

FRSQD hhhhhhhh - is the address of the first free subtask queue descriptor.

SQDEX hhhh - is the number of SQD extents.

FLAG1 hh - is the flag byte of GSG.
The following bits can be set in this flag.

Value    Meaning
X'80'    Subtask Queue Descriptors are available.
```

Non-specific subtask GSDS

This formatter gives the generalized subtask directories for the non-specific subtasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

```
 ----------------------------------------------------------
                    NON-SPECIFIC SUBTASK GSDS

ADDRESS    ID     ECB      AVNXT     SQDAD      TCB     FLG
05801410  GSD   807BFDA8  056B3E08  00000000  007E7B00   40
05800A18  GSD   807C3038  056AA670  00000000  007E7D90   50
05800E08  GSD   807B1108  05801410  00000000  007CE0E0   50
056C2410  GSD   807B8080  05800A18  00000000  007CE370   40
056B70A8  GSD   807B8198  056C2410  00000000  007CE600   50
056B3E08  GSD   807BF198  056B70A8  00000000  007CE890   50
056AA670  GSD   807F95D8  0580F048  00000000  007CEA28   40
0580F048  GSD   807F9180  00000000  00000000  007D8C58   50
-----------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the GSD entry on the queue.

ID cccc - is the directory ID (GSD)

ECB hhhhhhhh - is  the subtask ECB.

AVNXT hhhhhhhh - is the address of the next GSD on the subtask available queue.

SQDAD hhhhhhhh - is the address of the subtask queue descriptor (SQD) being processed at the time
of error.

TCB hhhhhhhh - is the address of the subtask TCB.

FLG1 hh - is the flag byte of GSD.
The following bits can be set in this flag.

Value    Meaning
X'40'    Subtask initialization complete.
X'20'    Subtask is to terminate after this request.
X'10'    Work was found after subtask was dispatched.
```

Specific subtask GSDS

This formatter gives the generalized subtask directories for the specific subtasks. It is mapped by the JES3 macro IATYGSD. It is formatted in both JES3 and FSS dumps.

```
 ------------------------------------------------------------------
                    SPECIFIC SUBTASK GSDS

ADDRESS    ID   SBTID    ECB      SQDAD     USERP      TCB     FLG1
058195B0  GSD    05    807BF298  00000000  00000000  007B1E88   50
05815058  GSD    07    00000000  0580F240  00000000  007D8798   50
-------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the GSD entry on the queue.

ID cccc - is the directory ID (GSD).

SBTID hh - is the subtask ID.

ECB hhhhhhhh - is  the subtask ECB.

SQDAD hhhhhhhh - is the address of the subtask queue descriptor (SQD) being processed at the time of
error.

USERP hhhhhhhh - is the user parameter area saved across subtask calls.

TCB hhhhhhhh - is the address of the subtask TCB.

FLG1 hh - is the flag byte of GSD.
The following bits can be set in this flag.

Value    Meaning
X'40'    Subtask initialization complete.
X'20'    Subtask is to terminate after this request.
X'10'    Work was found after subtask was dispatched.
```

SQDS in the free pool

The Subtask Queue Descriptor (SQD) contains information that is used by a generalized subtask to process an IATXCSF request. IATXCSF invoke the call subtask function service subroutines in IATGRGS. It is mapped by the JES3 macro IATYSQD. It is formatted in both JES3 and FSS dumps.

```
--------------------------------------------------------------------------------------------------------
-------------
SQD  0580F240  DESC=WLM SUBTASK       RTNAD=05693DF0  FCTAD=0564EBE0  REG10=058429A0  REG13=0001D7E8
FLAG1=80

                   SQDS IN THE FREE
POOL


ADDRESS         DESC      RTNAD    FLAG1  FCTAD      REG2      REG3      REG4      REG5      REG6
REG7      REG8
0580F600  WTR-PURGE      05959EFA   40   0580B9A0  00000030  20000000  0001E000  0001DC68  0001DAE0
05260AA0  057FE540
0580F588  WTR-PURGE      05948EFA   40   05809CF0  00000030  20000000  0001E000  0001DC68  0001DAE0
05260AA0  057FE440
0580F420                 056178D6   40   0564C1F8  000134B0  05617301  00000000  00000002  00000000
04F67000  7F3AC890
0580F510  ALOAD-IATISDT  0564592A   40   05803A20  0592FF18  0564ABD0  00000000  0564ABD0  00FC673C
056C20C8  0569DA8C
0580F498  IXZXIXCN-END   058DF29E   40   058033C0  80000000  7F7578EE  0584D158  B7496330  C2F4DE0F
0564B108  7F757890
0580F6F0  IXZXIXIF       0583F9F2   40   0580C130  DFFFFFFF  00000000  04FD9098  00000000  0583EA88
00000000  056C2608
0580F2B8  IXZXIXIF       0583F9F2   40   058005E0  DFFFFFFF  00000000  04FD9098  00000000  0583EA88
00000000  056B3C10
0580F768  IXZXIXIF       0583F9F2   40   057F4CF0  DFFFFFFF  00000000  04FD9098  00000000  0583EA88
00000000  056AA478
0580F678  ALOAD-IATGRMN  0564592A   40   05802A30  05927AD0  0564A758  00000000  0564A758  00FC673C
056C20C8  0569D834
0580F3A8  IXZXIXIF       0583F9F2   40   057F4CF0  00000000  00000000  00000000  00000000  0583EA88
00000000  056AA478
0580F330  IXZXIXIF       0583F9F2   40   057BFCF0  00000000  00000000  00000000  00000000  0583EA88
00000000  056AA868
0580F7E0                 00000000   00   00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000
0580F858                 00000000   00   00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000
0580F8D0                 00000000   00   00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000
0580F948                 00000000   00   00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000
0580F9C0                 00000000   00   00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000

ADDRESS     REG9     REG10     REG13     ECFAD    ECFMK   RTNRC     RREG0     RREG1      ABCC
ABPSW
0580F600  0594AA40  05959AB0  0594ED40  00000000   00    00000000  00FEDCA0  0001DC68  00000000
0000000000000000
0580F588  0593DA40  05948AB0  05944D40  00000000   00    00000000  00FEDCA0  0001DC68  00000000
0000000000000000
0580F420  7F3AC8EE  05617880  05606C38  00000000   00    00000000  00000000  7F3A8298  00000000
0000000000000000
0580F510  056982A0  056451EC  00000000  00000000   00    00000000  8592FF18  0000041D  00000000
0000000000000000
0580F498  04F67000  058DF000  0580E200  00000000   00    00000000  00000000  058DF2B0  00000000
0000000000000000
0580F6F0  04F64000  0583F998  00000000  00000000   00    00000000  00000000  056C26F0  00000000
0000000000000000
0580F2B8  04F65000  0583F998  00000000  00000000   00    00000000  00000000  056B3CF8  00000000
0000000000000000
0580F768  04F66000  0583F998  00000000  00000000   00    00000000  00000000  056AA560  00000000
0000000000000000
0580F678  05698240  056451EC  00000000  00000000   00    00000000  85927AD0  000004A6  00000000
0000000000000000
0580F3A8  04F66000  0583F998  00000000  00000000   00    00000000  00000000  056AA560  00000000
0000000000000000
0580F330  04F67000  0583F998  00000000  00000000   00    00000000  00000000  056AA950  00000000
0000000000000000
0580F7E0  00000000  00000000  00000000  00000000   00    00000000  00000000  00000000  00000000
0000000000000000
0580F858  00000000  00000000  00000000  00000000   00    00000000  00000000  00000000  00000000
0000000000000000
0580F8D0  00000000  00000000  00000000  00000000   00    00000000  00000000  00000000  00000000
```

```
0000000000000000
0580F948  00000000  00000000  00000000  00000000   00    00000000  00000000  00000000  00000000
0000000000000000
0580F9C0  00000000  00000000  00000000  00000000   00    00000000  00000000  00000000  00000000
0000000000000000
-----------------------------------------------------------------------------------------------------
--------------

SQD hhhhhhhh - is the address of the active SQD under a generalized subtask.

DESC cccccccccccccccc - is the function description of the subtask.

RTNAD hhhhhhhh - is the address of the routine to be subtasked.

FCTAD hhhhhhhh - is the address of the calling FCT.

ADDRESS hhhhhhhh - is the address of the free subtask queue descriptor entry.

FLAG1 hh - is the flag byte of SQD.
The following bits can be set in this flag.

Value    Meaning
X'80'    Asynchronous request.
X'40'    Processing complete. This is the ECF mask used for synchronous subtask requests.
X'20'    Don't issue DM146 abend if subtask abends.
X'10'    Subtask should terminate after this request is complete.
X'08'    JESTAE recursion indicator
X'04'    Subtask should bypass processing this request because the requesting FCT is in recovery
    processing. This means that the data that needs to be referenced by the subtask may no
    longer be valid.

REG2 hhhhhhhh - is the Register 2 content used by the subtask.

REG3 hhhhhhhh - is the Register 3 content used by the subtask.

REG4 hhhhhhhh - is the Register 4 content used by the subtask.

REG5 hhhhhhhh - is the Register 5 content used by the subtask.

REG6 hhhhhhhh - is the Register 6 content used by the subtask.

REG7 hhhhhhhh - is the Register 7 content used by the subtask.

REG8 hhhhhhhh - is the Register 8 content used by the subtask.

REG9 hhhhhhhh - is the Register 9 content used by the subtask.

REG10 hhhhhhhh - is the Register 10 content used by the subtask.

REG13 hhhhhhhh - is the Register 13 content used by the subtask.

ECFAD hhhhhhhh - is the address of ECF to be posted when work is complete.
This field will only be non-zero for asynchronous requests where the caller
specified an ECF address and mask.

ECFMK hh - is the ECF mask to be used to post the ECF when work is complete.

RTNRC hhhhhhhh - is the routine return code. It is the Register 15 content.

REG0 hhhhhhhh - is the routine return Register 0 content.

REG1 hhhhhhhh - is the routine return Register 1 content.

ABCC hhhhhhhh - is the abend completion code.

ABPSW hhhhhhhhhhhhhhhh - is  the PSW content at the time of error (abend).
```

LOC

Locate control tables

The Locate Control Table contains data used by each locate subtask. It is also used by the locate FCT to communicate with each locate subtask. It is mapped by the JES3 macro IATYLCT. It is formatted in both JES3 and FSS dumps.

```
---------------------------------------------------------------------------------------------------------
--
                    LOCATE CONTROL
TABLES


ADDRESS    NEXT    MODEP     LET       TCB       JSCB      SEL       SSOB     CSSSA     VSSSA
UVR      BLK      RAB
058F4F40 058EFF40 858F6440 00000000  007D7C58  007D1218  00000000  00000000  00000000  00000000
058F5D10 058F5B98 0504F038
058EFF40 058EAF40 858F1440 00000000  007D7E88  007D1748  00000000  00000000  00000000  00000000
058F0D10 058F0B98 00000000
058EAF40 058E5F40 858EC440 00000000  007D1598  007D1AF8  00000000  00000000  00000000  00000000
058EBD10 058EBB98 00000000
058E5F40 058E0F40 858E7440 00000000  007D1948  007D82D0  00000000  00000000  00000000  00000000
058E6D10 058E6B98 00000000
058E0F40 00000000 858E2440 00000000  007D8120  007D1058  00000000  00000000  00000000  00000000
058E1D10 058E1B98 00000000


ADDRESS   SCACB    JBACB    SCRPL     JBRPL     SCDSS     JBDSS     SCDEB     JBDEB     SCSDM
JBSDM    SPAFS    SPAFJ
058F4F40 00000000 00000000 00000000  00000000  00000000  00000000  00000000  00000000  058F5C30
00000000 00000000 00000000
058EFF40 00000000 00000000 00000000  00000000  00000000  00000000  00000000  00000000  058F0C30
00000000 00000000 00000000
058EAF40 00000000 00000000 00000000  00000000  00000000  00000000  00000000  00000000  058EBC30
00000000 00000000 00000000
058E5F40 00000000 00000000 00000000  00000000  00000000  00000000  00000000  00000000  058E6C30
00000000 00000000 00000000
058E0F40 00000000 00000000 00000000  00000000  00000000  00000000  00000000  00000000  058E1C30
00000000 00000000 00000000


ADDRESS   LRSWK     LRS     LRSLA     CRLRS     FRESP      LVS      LVCID    NXCAT  NXDSN
CRLVS
058F4F40 058F5398 00000000 00000000  058F591A  058F59A8  7F43AF34  7F43AF00  0000   0000
0000
058EFF40 058F0398 00000000 00000000  00000000  00000000  00000000  7F444F00  0000   0000
0000
058EAF40 058EB398 00000000 00000000  00000000  00000000  00000000  7F44DF00  0000   0000
0000
058E5F40 058E6398 00000000 00000000  00000000  00000000  00000000  7F456F00  0000   0000
0000
058E0F40 058E1398 00000000 00000000  00000000  00000000  00000000  7F469F00  0000   0000   0000

ADDRESS   CTGPL    CTGP2    CTGWA     CTGW2     PCTVL     PCTV2     GCTVL     GCTV2     CTGCV
CTGC2     CTGFL
058F4F40 058F5D58 00000000 058F5D78  00000000  058F5D88  00000000  00000000  00000000  058F5F88
00000000  058F5FE6
058EFF40 058F0D58 00000000 058F0D78  00000000  058F0D88  00000000  00000000  00000000  058F0F88
00000000  058F0FE6
058EAF40 058EBD58 00000000 058EBD78  00000000  058EBD88  00000000  00000000  00000000  058EBF88
00000000  058EBFE6
058E5F40 058E6D58 00000000 058E6D78  00000000  058E6D88  00000000  00000000  00000000  058E6F88
00000000  058E6FE6
058E0F40 058E1D58 00000000 058E1D78  00000000  058E1D88  00000000  00000000  00000000  058E1F88
00000000  058E1FE6


ADDRESS   ALLOC    UNALC   DVIDX  VTIDX   DDNAM     FRSAV      ECB      JOBNO     LOCNT    FLAG1  FLAG2
FLAG3
058F4F40 058F5CA8 058F5CDC 0000   0004             058F51B0  807D7B38  00000000  00000005   00
88     00
058EFF40 058F0CA8 058F0CDC 0000   0003             058F01B0  807D12F8  00000000  00000000   00
00     00
058EAF40 058EBCA8 058EBCDC 0000   0002             058EB1B0  807D1478  00000000  00000000   00
00     00
058E5F40 058E6CA8 058E6CDC 0000   0001             058E61B0  807D1828  00000000  00000000   00
00     00
058E0F40 058E1CA8 058E1CDC 0000   0000             058E11B0  807D1BD8  00000000  00000000   00
00     00
---------------------------------------------------------------------------------------------------------
---------

ADDRESS hhhhhhhh - is the address of the locate control table entry.

NEXT hhhhhhhh - is the address of the next locate control table in chain.

MODEP hhhhhhhh - is the module (IATLVLC) entry point.
```

```
LET hhhhhhhh - is the address of the locate entrance table (LET) of the current request
being processed.

TCB hhhhhhhh - is the address of the locate subtask TCB address.

JSCB hhhhhhhh - is the address of the locate subtask JSCB.

SEL hhhhhhhh - is the address of the service entrance list for SSISERV (local locate subtask only).

SSOB hhhhhhhh - is the address of the subsystem option block.

CSSSA hhhhhhhh - is the address of  the SSOB extension (SSSA) for SMS catalog services.

VSSSA hhhhhhhh - is the address of the SSOB extension (SSSA) for SMS VOLREF services.

UVR hhhhhhhh - is the address of the unit verification parameter list.

BLK hhhhhhhh - is the address of the block spooler parameter list.

RAB hhhhhhhh - is the address of the record allocation block of current request being processed.

SCACB hhhhhhhh - is the address of the access method control block (ACB) for the SMS scheduling
information data set.

JBACB hhhhhhhh - is the address of the access method control block (ACB) for the SMS job information
data set.

SCRPL hhhhhhhh - is the address of the request parameter list (RPL) for the SMS scheduling information
data set.

JBRPL hhhhhhhh - is the address of the request parameter list (RPL) for the SMS job information data set.

SCDSS hhhhhhhh - is the address of the data set status block (DSS) for the SMS scheduling information
data
set.

JBDSS hhhhhhhh - is the address of the data set status block (DSS) for the SMS job information data set.

SCDEB hhhhhhhh - is the address of the data extent block (DEB) for the SMS scheduling information data
set.

JBDEB hhhhhhhh - is the address of the data extent block (DEB) for the SMS job information data set.

SCSDM hhhhhhhh - is the address of the spool data management (SDM) parameter for the SMS scheduling
information data set.

JBSDM hhhhhhhh - is the address of the spool data management (SDM) parameter for the SMS job information
data set.

SPAFS hhhhhhhh - is the address of the JES3 spool access facility parameter list for the SMS scheduling
information data set.

SPAFJ hhhhhhhh - is the address of the JES3 spool access facility parameter list for the SMS job
information data set.

LRSWK hhhhhhhh - is the address of the locate response work area which is used to create LRSs.

LRS hhhhhhhh - is the address of the locate response. It is only for global locate subtask.

LRSLA hhhhhhhh - is the address of the last locate response in the chain of LRSs. It is only for global
locate subtask.

CRLRS hhhhhhhh - is the address of the current LRS Fixed or Data entry in the current LRS buffer. It is
set
to zero when a new LRS buffer is initialized.

FRESP hhhhhhhh - is the address of  the next free space in the LRS work area to allocate a new LRS Fixed
or
LRS Data entry in the current LRS buffer.

LVS hhhhhhhh - is the address of the locate request (LVS).

LVCID hhhhhhhh - is the LVS cellpool identifier. This cellpool is also used for the SMS job
information data set.

NXCAT hhhh - is the relative LVS number of the next catalog LVS entry.

NXDSN hhhh - is the relative LVS number of the next data set LVS entry.

CRLVS hhhh - is the relative LVS number of the current LVS entry.
```

```
CTGPL hhhhhhhh - is the address of the catalog parameter list.

CTGP2 hhhhhhhh - is the address of the second catalog parameter list.

CTGWA hhhhhhhh - is the address of the catalog work area.

CTGW2 hhhhhhhh - is the address of the second catalog work area.

PCTVL hhhhhhhh - is the address of the preallocated catalog volume list.

PCTV2 hhhhhhhh - is the address of the second preallocated catalog volume list.

GCTVL hhhhhhhh - is the address of the GETMAINed catalog volume list.

GCTV2 hhhhhhhh - is the address of the second GETMAINed catalog volume list.

CTGCV hhhhhhhh - is the address of the catalog control volume list.

CTGC2 hhhhhhhh - is the address of the second catalog control volume list.

CTGFL hhhhhhhh - is the address of the catalog field parameter list.

ALLOC hhhhhhhh - is the address of the catalog allocate parameter list.

UNALC hhhhhhhh - is the address of the catalog unallocate parameter list.

DVIDX hhhh - is the device index for the allocation of user catalogs.

VTIDX hhhh - is the locate subtask vector table (LSVT) index.

DDNAM cccccccc - is the DDNAME used to allocate user catalogs.

FRSAV hhhhhhhh - is the address of the free save area.

ECB hhhhhhhh - is the locate subtask ECB.

JOBNO hhhhhhhh - is the job number of the job currently being processed.

LOCNT hhhhhhhh - is the number of  locate requests performed by that subtask.

FLAG1 hh -  is the flag byte of LCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Subtask is busy.
X'40'    Private catalog being allocated is an MSS catalog.
X'20'    GDG-all processing.
X'10'    Special unit count assignment needs to be done.
X'08'    The current data set is an SMS managed data set.
X'04'    Locate subtask termination complete - set by ETXR.
X'02'    Locate subtask abended.
X'01'    Subtask finished with current request. It is used by local locate FCT to determine which
    subtask completed.

FLAG2 hh -  is the flag byte of LCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Last LRS buffer being sent.
X'40'    Locate request needs to be processed.
X'20'    Normal termination request.
X'10'    Don't take SDUMP in ESTAE.
X'08'    Last LRS entry created was a LRS Fixed entry (as opposed to an LRS Data entry).
X'04'    Single data set name locate request by a DSP.
X'02'    Catalog being processed is an OS CVOL.  Do not open this catalog (used by the
     LCALLOC routine).

FLAG3 hh -  is the flag byte of LCT.
NOTE: Currently this flag is not used.
```

Locate data area

The Locate Data Area contains information used by all locate modules under the locate FCT. It is mapped by the JES3 macro IATYLDA. It is formatted in both JES3 and FSS dumps.

```

----------------------------------------------------------------------------------------------------
                    LOCATE DATA AREA -
```

```
0584D158


  LCT      MLCT     LSVT     LVAT     LETQ    LCFCT     LCR      ATTT     DETT    RMAIN       LCPFD
058F4F40 0578A398 056C2000 0585C0F8 00000000 0564E5F0 00000000 B749632A B749632A FFFFFFFF
7F4A400C000004D000000000


ECF  FLAG1  FLAG2  FLAG3    PARM    FUNC  TRACE
RCODE
00    00     02     00    00000000   00    00
00
---------------------------------------------------------------------------------------------------------
----

LCT hhhhhhhh - is the address of the first locate control table.

MLCT hhhhhhhh - is the address of the master locate subtask LCT.

LSVT hhhhhhhh - is the address of the locate subtask vector table.

LVAT hhhhhhhh - is the address of locate subtask maintenance module (IATLVAT).

LETQ hhhhhhhh - is the address of the locate entrance table queue.

LCFCT hhhhhhhh - is the address of locate FCT.

LCR hhhhhhhh - is the address of locate restart record during main connect processing.

ATTT hhhhhhhh - is the first word of time of the last locate subtask attach (STCK value).

DETT hhhhhhhh - is the first word of time of the last locate subtask detach by LVINSDET (STCK value).

RMAIN hhhhhhhh - is the main mask representing  mains that cannot be scheduled because of some problem.
It is initialized to FFFFFFFF.

LCPFD - is the locate checkpoint (LCP) FDB.

ECF hh - is the ECF of locate FCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Locate request needs to be processed (a LET has been added to the LET queue).
X'40'    Staging area has been added to the destination queue.
X'20'    Locate subtask has completed processing.
X'10'    Locate restart processing is required.
X'08'    Locate subtask has abended.
X'04'    Job has been cancelled.
X'02'    Catalog being processed is an OS CVOL.  Do not open this catalog (used by the
    LCALLOC routine).

FLAG1 hh -  is the flag byte of LDA (Recursion flag).
The following bits can be set in this flag.

Value    Meaning
X'80'    General recursion indicator.
X'40'    LDACANCL - Job cancel.
X'20'    LDASTAR  - Staging area.
X'10'    LDASBTSK - Locate subtask completed.
X'08'    LDALOCRQ - New locate request.
X'04'    LDASABND - Locate subtask abend.
X'02'    LDARESTR - Locate restart.
X'01'    LVINRTRY - Retry processing.

FLAG2 hh -  is the flag byte of LDA.
The following bits can be set in this flag.

Value    Meaning
X'80'    First CANCEL command.
X'40'    Queued CANCEL command.
X'20'    IATLVAT in control.
X'10'    Disable the locate function.
X'08'    Do not allow attaches.
X'04'    At least one subtask attached.
X'02'    Okay to schedule locates.

FLAG3 hh -  is the flag byte of LDA.
NOTE: Currently this flag is not used.

PARM hhhhhhhh - is the specific function trace parameter. It defines information which qualified by
LDATRACE requires recovery processing.
```

```
FUNC hh - is the function identifier. It defines the specific locate work post (function)
that is under control. If it is zero, then IATLVIN is not processing any of the locate work posts.

TRACE hh - is the trace flag.
The following bits can be set in this flag.

Value    Meaning
X'01'    Staging area locate request.
X'02'    Staging area locate response.
X'03'    Staging area job cancel.
X'04'    Staging area job cancel complete.
X'05'    WRTCHAIN processing.
X'06'    No LCP job entry processing.

RCODE hh - is the abend reason code.
The following bits can be set in this flag.

Code    Meaning
X'01'    No LCT address when LET entry indicates scheduled
X'02'    Staging area specifies zero sequence number.
X'03'    Staging area specifies an existing sequence number.
X'04'    No LET entry on chain to dequeue.
X'05'    Invalid staging area found.
X'06'    WRTCHAIN error checkpointing the LCP.
X'07'    No LCP checkpoint data set.
X'08'    No LCP job entry existed for checkpoint.
X'09'    Locate subtask attached but no schedule occurred.
X'0A'    Invalid C/I FSS CANCEL command.
X'0B'    An available LSVT entry could not be found when attempting to initialize a locate
    subtask.
X'0C'    Master subtask attach failure.
X'0D'    No global MPC found.
X'0E'    Invalid LCT address.
```

Locate entrance tables

The Locate Entrance Table contains information used by the DSPs to request the services of the Locate FCT. It is mapped by the JES3 macro IATYLET. It is formatted in both JES3 and FSS dumps.

```
------------------------------------------------------------------------------------------
                    LOCATE ENTRANCE TABLES

ADDRESS    CHAIN     JOBNO     MAINS      LRS       RAB       MPC       LCT     FLAG1  FLAG2
000247F0  00012AE8  00000037  01000000  00000000  050E3330  04FE3000  059F3F40   04     00
00012AE8  00000000  00000038  01000000  00000000  050CF208  00000000  00000000   00     00
------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the LET entry.

CHAIN hhhhhhhh - is the address of the next LET entry on queue.

JOBNO hhhhhhhh - is the job number.

MAINS hhhhhhhh - is the main processor eligibility mask.

LRS hhhhhhhh - is the address of the locate response.

RAB hhhhhhhh - is the address of the record allocation block.

MPC hhhhhhhh - is the address of the main processor where the locate request has been scheduled
to.

LCT hhhhhhhh - is the address of the locate control table of the locate subtask that is processing
the job.

FLAG1 hh -  is the flag byte of LET.
The following bits can be set in this flag.

Value    Meaning
X'80'    Locate processing complete. It is set by the Locate FCT to post the requester.
X'40'    Job was cancelled.
X'20'    Locate FCT failure.
X'10'    No eligible main.
X'08'    LET was GETMAINed. Otherwise the LET is an integral part of the IDD.
X'04'    LET serviced (scheduled).
X'02'    LET is residual over a global restart.
X'01'    LET will be marked complete at the end of locate restart processing.  The job was in the
global LCP but not the local's LCR, thus no match.
```

```
FLAG2 hh -  is the flag byte of LET.
NOTE: Currently this flag is not used.
```

Locate Restart Records

The Locate Restart Record contains information about jobs active in Locate on a local processor during Main connect processing. For Main processor flush (*START,MAINNAME,FLUSH), it contains information about the main that was flushed. It is mapped by the macro IATYLCR. It is formatted in both JES3 and FSS dumps.

```
-------------------------------------------------------------------------------------------
                    LOCATE RESTART RECORDS

ADDRESS   SIZE  JBCNT   NEXT      MPC       MAIN    HFLG1
000247F0  001C  0000  00000000  04F96000  SY2          40
-------------------------------------------------------------------------------------------

ADDRESS hhhhhhhh - is the address of the locate restart record (LCR) entry during main connect
processing.

SIZE hhhh - is the total size of LCR including the job entries.

JBCNT hhhh - is the number of locate restart record job entries.

NEXT hhhhhhhh - is the address of the next locate restart record entry on chain.

MPC hhhhhhhh - is the address of main processor control table (in global processor only).

MAIN cccccccc - is the name of the main processor being restarted.

HFLG1 hh - is the flag byte of LCR.
The following bits can be set in this flag.

Value    Meaning
X'80'    Main Connect LCR.
X'40'    Main Flush LCR.
```

Locate subtask vector table

The Locate Subtask Vector Table contains information to map Locate subtask control table with locate subtask TCB address. It is mapped by the JES3 macro IATYLSVT. It is formatted in both JES3 and FSS dumps.

```
---------------------------------------------------------------
                LOCATE SUBTASK VECTOR TABLE

                ADDRESS     LCT       TCB
                056C2014  058E0F40  007D8120
                056C201C  058E5F40  007D1948
                056C2024  058EAF40  007D1598
                056C202C  058EFF40  007D7E88
                056C2034  058F4F40  007D7C58
                056C203C  00000000  00000000
                056C2044  00000000  00000000
                056C204C  00000000  00000000
                056C2054  00000000  00000000
                056C205C  00000000  00000000
--------------------------------------------------------------
ADDRESS hhhhhhhh - is the address of the Locate Subtask Vector Table entry.

LCT hhhhhhhh - is the address of the Locate Subtask Control Table.

TCB hhhhhhhh - is the address of the Locate Subtask TCB.
```

Master Locate Control Table

The Master Locate Control Table contains information regarding the locate master task like master task ECB, LCT for the subtask that is being attached, parameter list, etc. It is mapped by the JES3 macro IATYLCT. It is formatted in both JES3 and FSS dumps.

```
--------------------------------------------------------------------------------
                    MASTER LOCATE CONTROL TABLE - 0578A398

  MECB      MTCB      MTVT     ATLCT     AD4F4     AD4F5    MFLG1
807D8960  007D83B0  05604000  00000000  83E7D188  83E7D978   90
--------------------------------------------------------------------------------

MECB hhhhhhhh - is the master task ECB.

MTCB hhhhhhhh - is the address of the locate master task TCB.

MTVT hhhhhhhh - is the address of the transfer vector table.

ATLCT hhhhhhhh - is the address of the LCT for the subtask that is being attached.

AD4F4 hhhhhhhh - is the address of the IEFAB4F4 entry point.

AD4F5 hhhhhhhh - is the address of the IEFAB4F5 entry point.

MFLG1 hh - is the flag byte of master locate control table.
The following bits can be set in this flag.

Value    Meaning
X'80'    Locate subtask attach complete.
X'40'    Locate subtask attach not successfully completed.
X'20'    Locate Master Task abend.
X'10'    Locate Master Task  initialization complete.
X'08'    ESTAE entered. It is reset after a successful ATTACH has been performed.
X'04'    ETXR processing being performed.
X'02'    ATTACH processing being performed.
```

MOD-JES3 module information from the JDEs

It displays the information about the executable modules from the JES3 Directory Elements. It is mapped by the JES3 macro IATYJDE. It is formatted in both JES3 and FSS dumps.

```
----------------------------------------------------------------------------------------------------------
---------
                    JES3 MODULE INFORMATION FROM THE
JDES


ADDRESS     NAME     BUFAD      ADDR      PRVEP     MSIZE     DATE   TIME  APAR  PTF     USE   ALDS
FCTP   FLAG FLAG2
05699000  IATFSLG   056A0188  056A0188  00000000  00008E78  010502  0730        1.4.0   0001  0001
00000000   00    90
05699064  IATFSRC   0569FC28  0569FC28  00000000  00000268  113000  1613        1.2.0   0001  0001
00000000   00    90
056990C8  IATABN0   00014BF0  00014BF0  00000000  00002410  011002  2256        1.4.0   0001  0001
00000000   00    10
0569912C  IATGROP   0000D6B0  0000D6B0  00000000  000007D8  113000  1614        1.2.0   0001  0001
00000000   00    10
05699190  IATISCB   0000D5D8  0000D5D8  00000000  000000D8  113000  1626        1.2.0   0001  0001
00000000   00    10
056991F4  IATBDC    00017000  00017F90  00000000  00003B98  113000  1609        1.2.0   0001  0001
00000000   00    10
05699258  IATINDT   00000000  00000000  0001D7E8  00000000  092901  0946        1.4.0   0000  0001
00000000   00    10
056992BC  IATINRN   00000000  00000000  0001F0F0  00000000  010502  0731        1.4.0   0000  0001
00000000   00    10
05699320  IATMSSTA  056B1C40  056B1C40  00000000  000013C0  010502  0731        1.4.0   0001  0001
00000000   00    90
05699384  IATINMPC  00000000  00000000  056B3A90  00000000  010502  0730        1.4.0   0000  0001
00000000   00    90
056993E8  IATINM4   00000000  00000000  056AA780  00000000  111401  2040        1.4.0   0000  0001
00000000   00    90
0569944C  IATINIC   00000000  00000000  00023650  00000000  010502  0730        1.4.0   0000  0001
00000000   00    10
056994B0  IATGRUX   00000000  00000000  0569F0D8  00000000  113000  1614        1.2.0   0000  0001
00000000   00    90
05699514  IATUX03   0569AFC0  0569AFC0  00000000  00000040  113000  1638        1.2.0   0001  0001
00000000   00    90
05699578  IATUX04   0569BFC0  0569BFC0  00000000  00000040  113000  1638        1.2.0   0001  0001
00000000   00    90
056995DC  IATUX05   0569CFC0  0569CFC0  00000000  00000040  113000  1638        1.2.0   0001  0001
00000000   00    90
```

```
05699640  IATUX06   0569DFC0  0569DFC0  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
056996A4  IATUX07   0569EFC0  0569EFC0  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699708  IATUX08   0569F028  0569F028  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699708  IATUX08   0569F028  0569F028  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
0569976C  IATUX09   0569F4F0  0569F4F0  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
056997D0  IATUX10   0569FEC0  0569FEC0  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699834  IATUX11   056A0148  056A0148  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699898  IATUX14   056A00C8  056A00C8  00000000  00000080  113000  1638       1.2.0   0001  0001
00000000   00    90
056998FC  IATUX15   00000000  00000000  056AA288  00000000                             0000  0001
00000000   00    90
05699960  IATUX17   056A0048  056A0048  00000000  00000080  113000  1638       1.2.0   0001  0001
00000000   00    90
056999C4  IATUX18   056AA208  056AA208  00000000  00000080  021102  0815       1.4.0   0001  0001
00000000   00    90
05699A28  IATUX19   056A0008  056A0008  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699A8C  IATUX20   056B5220  056B5220  00000000  00000DE0  113000  1638       1.2.0   0001  0001
00000000   00    90
05699AF0  IATUX21   056B12E8  056B12E8  00000000  00000958  121100  1927       1.2.0   0001  0001
00000000   00    90
05699B54  IATUX22   056AA1C8  056AA1C8  00000000  00000040  113000  1638       1.2.0   0001  0001
00000000   00    90
05699BB8  IATUX23   056B61B0  056B61B0  00000000  00000E50  113000  1638       1.2.0   0001  0001
00000000   00    90
05699C1C  IATUX24   056AA180  056AA180  00000000  00000048  113000  1638       1.2.0   0001  0001
00000000   00    90
05699C80  IATUX25   056AA100  056AA100  00000000  00000080  113000  1638       1.2.0   0001  0001
00000000   00    90
05699CE4  IATUX27   056AA080  056AA080  00000000  00000080  113000  1638       1.2.0   0001  0001
00000000   00    90
05699D48  IATUX28   056AA000  056AA000  00000000  00000080  113000  1638       1.2.0   0001  0001
00000000   00    90
-----------------------------------------------------------------------------------------------------------
-------------

ADDRESS hhhhhhhh - is the address of the JDE entry.

NAME cccccccc - is the name of the module.

BUFAD hhhhhhhh - is the buffer address of the module location.

ADDR hhhhhhhh - is the address of the module origin.

PRVEP hhhhhhhh - is the address of the previous entry point of module before it was deleted.

MSIZE hhhhhhhh - is the size of the module in bytes.

DATE cccccc - is the date on which the module was assembled.

TIME cccc - is the time at which the module was assembled.

APAR ccccccc - is the most recent APAR applied.

PTF ccccccc - is the most recent PTF applied.

USE hhhh - is the module use count.

ALDS hhhh - is the total number of ALOADs of the module.

FCTP hhhhhhhh - is the pointer to the owning FCT.

FLAG hh - is the flag byte of JDE.
The following bits can be set in this flag.

Value    Meaning
X'80'    Refresh on next ALOAD.
X'40'    Caller waiting for a new module.
X'20'    Caller needs zero use count.
X'10'    Not frequently used. Delete module if ON  regardless of threshold value.
X'08'    Lock to serialize the use of JDE.
X'04'    Element is reusable.
X'02'    Element is a data CSECT.
X'01'    Module not deletable.
```

```
FLAG2 hh - is the flag byte of JDE.
The following bits can be set in this flag.

Value    Meaning
X'80'    RMODE of module.
    0 - RMODE = 24
    1 - RMODE = ANY
X'40'    BLDL subtask called.
X'20'    LOAD subtask called.
X'10'    AMODE of module.
    0 - AMODE = 24
    1 - AMODE = 31
X'08'    RETRY indicator for IATGRLD.
X'04'    JDE Cleanup is in progress (left ON if cleanup abends).
X'02'    A *F,X,M=modname,REFRESH command is pending. Delete the module and reset the
    load count when the module is no longer being used.
X'01'    The JDE represents a JES3 Nucleus module that was refreshed through a
    *F,X,M=modname,REFRESH command.
```

SCT-SYSOUT Class table

The SYSOUT Class Table contains the characteristics of SYSOUT classes. It is mapped by the JES3 macro IATYSCT. It is not formatted in the FSS dump.

```
---------------------------------------------------------------------------------------------------------
-------------
                    SYSOUT CLASS
TABLE


ADDRESS   CLASS  TYPE   RSVT   FLAG1   FLAG2   FLAG3   COPY    DEST  DEVT  FORMS    CARR     TRAIN
CHARS       COPYS
05819FA8    A     80    00    00     10     00     FF   PRT002
0000000000000000
0581A01C    B     40    00    00     10     00     FF
0000000000000000
0581A090    C     80    00    00     10     C0     FF                 1PRT              PN
0000000000000000
0581A104    D     80    00    00     10     00     FF   PRT003
0000000000000000
0581A178    E     80    00    00     10     00     FF   NODE5
0000000000000000
0581A1EC    F     80    00    00     10     00     FF   NODE6
0000000000000000
0581A260    G     80    00    00     00     00     00
0000000000000000
0581A2D4    H     80    00    00     00     00     00
0000000000000000
0581A348    I     80    00    00     10     00     FF
0000000000000000
0581A3BC    J     80    00    00     10     00     FF                 2PRT
0000000000000000
0581A430    K     81    20    00     10     00     FF                 2PRT
0000000000000000
0581A4A4    L     80    00    00     10     00     FF   LDEST         8PRT                      GS18
0000000000000000
0581A518    M     80    00    00     10     00     FF   LOCAL
0000000000000000
0581A58C    N     80    00    00     10     00     FF   NODE4
0000000000000000
0581A600    O     80    00    00     00     00     00
0000000000000000
0581A674    P     80    00    00     00     00     00
0000000000000000
0581A6E8    Q     80    00    00     00     00     00
0000000000000000
0581A75C    R     80    00    00     10     00     FF   NODE3
0000000000000000
0581A7D0    S     80    00    00     00     00     00
0000000000000000
0581A844    T     81    80    00     10     00     FF
0000000000000000

ADDRESS   CLASS  FLASH  MODID  FLCNT  MODRC  STACK  TRKG1  TRKG2   THRES     CTABN    CHNSZ
05819FA8    A                   00                   00     00    00000000            0000
0581A01C    B                   00                   00     00    00000000            0000
0581A090    C                   00                   00     00    00000000            0000
0581A104    D                   00                   00     00    00000000            0000
```

```
0581A178    E                   00                    00     00    00000000            0000
0581A1EC    F                   00                    00     00    00000000            0000
0581A260    G                   00                    00     00    00000000            0000
0581A2D4    H                   00                    00     00    00000000            0000
0581A348    I                   00                    00     00    00000000            0000
0581A3BC    J                   00                    00     00    00000000            0000
0581A430    K                   00                    00     00    00000000            0000
0581A4A4    L                   00                    00     00    00000000            0000
0581A518    M                   00                    00     00    00000000            0000
0581A58C    N                   00                    00     00    00000000            0000
0581A600    O                   00                    00     00    00000000            0000
0581A674    P                   00                    00     00    00000000            0000
0581A6E8    Q                   00                    00     00    00000000            0000
0581A75C    R                   00                    00     00    00000000            0000
0581A7D0    S                   00                    00     00    00000000            0000
0581A844    T                   00                    00     00    00000000            0000
---------------------------------------------------------------------------------------------------------
------------

ADDRESS hhhhhhhh - is the address of the SYSOUT Class Table entry.

CLASS c - is the SYSOUT Class (Valid values are A-Z, 0-9).

TYPE hh - is the SYSOUT Type flag.
The following bits can be set in this flag.

Value    Meaning
X'80'    PRINT Class (TYPE=PRINT).
X'40'    PUNCH Class (TYPE=PUNCH).
X'10'    The Class requires DS TAT (TYPE=DSISO).
X'08'    Type reserved for user (TYPE=USER1).
X'04'    Type reserved for user (TYPE=USER2).
X'02'    Reserved SYSOUT Class (TYPE=RSVD).
X'01'    HOLD for system output.

RSVT hh - is the reserved Type flag.
The following bits can be set in this flag.

Value    Meaning
X'80'    HOLD for MVS TSO output (HOLD=TSO).
X'40'    HOLD for 3540 WTR (HOLD=3540).
X'20'    HOLD for External WTR (HOLD=EXTWTR).

FLAG1 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Overflow is OFF (OVFL=OFF)
X'40'    Overflow is ON (OVFL=ON).
X'20'    Interpret option for punched output is required (INT=YES).
X'10'    Interpret option for punched output is not required (INT=NO).
X'08'    Program control required (CONTROL=PROGRAM).
X'04'    Single spacing required (CONTROL=SINGLE).
X'02'    Double spacing required (CONTROL=DOUBLE).
X'01'    COPIES field is valid.


FLAG2 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    PRTY field is valid.
X'40'    COPIES sublist is valid.
X'20'    FLASH count field is valid.
X'10'    SYSOUT INISH card defined.
X'08'    THRESHLD field is valid..
X'04'    Chain size is a data set.
X'02'    Chain size was specified.
X'01'    MODIFY count field is valid.

FLAG3 hh - is the flag byte of SCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Trailing blanks are to be truncated (TRUNC=YES).
X'40'    Trailing blanks are not to be truncated (TRUNC=NO).

COPY hh - is the number of copies of each data set to be produced.

DEST cccccccc - is the data set destination name (name for the printer or punch).

DEVT cccccccc - is the device type.
```

```
FORMS cccccccc - is the printer forms required.

CARR cccccccc - is the carriage tape / FCB required.

TRAIN cccccccc - is the print train or band required to print.

CHARS cccc - is the name of the character image to be used.

COPYS hhhhhhhhhhhhhhhh - is the copy subgroupings.

FLASH cccc - is the name of the forms flash cartridge.

MODID cccc - is the name of the copy modification module to be used.

FLCNT hh - is the number of consecutive copies the forms flash is to print.

MODRC c - is the table reference character to be used with the copy modification module.

STACK c - is the 3800 stacker required.

TRKG1 hh - is the number of primary track groups to be allocated.

TRKG2 hh - is the number of secondary track groups to be allocated.

THRES hhhhhhhh - is the default maximum size for a SYSOUT data set.

CTABN cccccccc - is the name of the compaction table. The data sets which are sent to SNA
work station is compacted using this compaction table.

CHNSZ  hhhh - the size of the RU chain to be transmitted to SNA work stations.
```

SRS

MDSSRS Data Area

The MDSSRS Data Area contains information needed by the MDSSRS FCT. It is mapped by the JES3 macro IATYSRS. It is not formatted in FSS dump.

```
----------------------------------------------------------------------------------------------------
                     MDSSRS DATA AREA -
05945458


   FCT      SELQ     VFYQ     MMCT    MCTCH     SAR     CURRQ     MDAT     MDRL    ATMW1    DTMW1
 059400A8 00000000 00000000 057C70A8 05965068 00000000 00000000 05957270 0595C2B0 B758AA78 B758AA78


 ECF  FLG1  FLG2  FLG3
MFOOT
 00    10    00    00
00
----------------------------------------------------------------------------------------------------

FCT hhhhhhhh - is the address of the MDSSRS FCT.

SELQ hhhhhhhh - is the address of the start of the MDS system select queue.

VFYQ hhhhhhhh - is the address of the start of the MDS system verify queue.

MMCT hhhhhhhh - is the address of the MDS control table for the master MDS subtask.

MCTCH hhhhhhhh - is the address of the start of the MDS control table. This chain does not include the
master MDS control table.

SAR hhhhhhhh - is the address of the SMS available resource chain.

CURRQ hhhhhhhh - is the address of the current Resqueue.

MDAT hhhhhhhh - is the entry point of the module IATMDAT.

MDRL hhhhhhhh - is the entry point of the module IATMDRL.

ATMW1 hhhhhhhh - is the first word of time of the last MDS subtask attached (STCK value).

DTMW1 hhhhhhhh - is the first word of time the MCT chain was last scanned to determine whether any MDS
subtasks needs to be detached.
```

```
ECF hh - is the MDSSRS FCT event completion flag (ECF).
The following bits can be set in this flag.

Value    Meaning
X'80'    A job has been placed on the MDS system select queue.
X'40'    A job has been placed on the MDS system verify queue.
X'20'    An MDS subtask has completed processing.
X'10'    An MDS subtask has abended.
X'08'    Operator command entered to cancel a job being processed by MDSSRS.

FLG1 hh - is the flag byte of MDSSRS data area.
The following bits can be set in this flag.

Value    Meaning
X'80'    The MDSSRS JESTAE retry routine has been entered.
X'40'    FAILDSP dump code was DM045 (RESQUEUE management error) - Do not issue the
    RQTAPUT macro
X'20'    Working with SARs.
X'10'    System Select/Verify Queue scanning.

FLG2 hh - is the flag byte of MDSSRS data area.
The following bits can be set in this flag.

Value    Meaning
X'80'    Dechained first SCHRE.
X'40'    Resource dechained.
X'20'    End of group found.
X'10'    Search is in group.
X'08'    RQ processing done.
X'04'    JESTAE entered before.
X'02'    Release all jobs.
X'01'    Post IATMDSR.

FLG3 hh - is the flag byte of MDSSRS data area.
NOTE: Currently this flag is not used.

MFOOT hh - is the flag used to footprint IATMDRL.
The following bits can be set in this flag.

Value    Meaning
X'80'    In FREE_SAR routine.
X'40'    In FREE_ALL routine.
X'20'    In DO_SCHRL routine
X'10'    In CHEK_SAR routine.
X'08'    SCHRL pointer error.
X'04'    SAR pointer error.
```

MDS Control Tables

The MDS Control Tables contain status information, addresses and work areas used by MDS subtasks, the MDS master task and MDSSRS FCT. It is mapped by the JES3 macro IATYMCT. It is not formatted in FSS dump.

```
----------------------------------------------------------------------------------------------------
---------
                    MASTER MDS CONTROL TABLE -
057C70A8


                      MECB      MTCB     ATMCT
MFLG1
                    807D7868  007D72B8  00000000
A0






                    MDS CONTROL
TABLES


ADDRESS    NEXT    CMTW1     MDST     ECB     CETXR     TCB      SSOB     SSSA     ACB
```

```
RPL      RAB
05965068 059655D8 00000000 8597E120 807D02E8 05979B60 007D6E88 059651D0 05965394 0001ADEC
0001ADA0 05965284
059655D8 05962210 00000000 8597D120 807D03A0 05979B60 007D04D0 05965740 05965904 0001AF1C
0001AED0 059657F4
05962210 05962780 00000000 8597C120 807D0668 05979B60 007D0788 05962378 0596253C 00014124
000140D8 0596242C
05962780 0594D140 00000000 8597B120 807D0CE0 05979B60 007D0E00 059628E8 05962AAC 0001429C
00014250 0596299C
0594D140 00000000 00000000 8597A120 807D0F98 05979B60 007D7120 0594D2A8 0594D46C 00014414
000143C8 0594D35C


ADDRESS    BLK      SDM      SPAF      RQ      BUFF      CPID     BFSZ    DSSAD    DEBAD
SPSCH
05965068 059651EC 059652F4 0596536C 00000000 00000000 7F3EDF00 00001000 0506C8B8 000137C8
000000000000
059655D8 0596575C 05965864 059658DC 00000000 00000000 7F3F9F00 00001000 0506CA98 000137E8
000000000000
05962210 05962394 0596249C 05962514 00000000 00000000 7F402F00 00001000 050CB0E0 00013808
000000000000
05962780 05962904 05962A0C 05962A84 00000000 00000000 7F40BF00 00001000 050CF098 00013828
000000000000
0594D140 0594D2C4 0594D3CC 0594D444 00000000 00000000 7F437F00 00001000 050E32C8 00013848
000000000000

ADDRESS   FLG1  FLG2  RCMND
05965068   00    00    00
059655D8   00    00    00
05962210   00    00    00
05962780   00    00    00
0594D140   00    00    00
-------------------------------------------------------------------------------------------
--------
MECB hhhhhhhh - is the  MDS master task ECB.

MTCB hhhhhhhh - is the address of the MDS master task TCB.

ATMCT hhhhhhhh - is the address of the MCT of the MDS subtask to be attached.

MFLG1 hh - is the flag byte of master MCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    MDS subtask attach is complete.
X'40'    MDS master task has abended.
X'20'    MDS master task has completed initialization.
X'10'    The MDS master task's ESTAE exit has been entered.
X'08'    ATTACH processing is being performed.
X'04'    ETXR processing is being performed.

ADDRESS hhhhhhhh - is address of the MDS control table entry.

NEXT hhhhhhhh- is the address of the next MCT entry.

CMTW1 hhhhhhhh - is the first word of time the MDS subtask completed its work.
MDST hhhhhhhh - is the address of IATMDST using the MCT.

ECB hh - is the MDS subtask ECB.

CETXR hhhhhhhh - is the address of the common ETXR entry point (in IATMDMT).

TCB hhhhhhhh - is the MDS subtask TCB.

SSOB hhhhhhhh - is the address of the SSOB for MDS subtask's use.

SSSA hhhhhhhh - is the address of the SSOB extension for SMS.

ACB hhhhhhhh - is the address of the access method control block for MDS subtask's use.

RPL hhhhhhhh - is the address of the request parameter list for MDS subtask's use.
```

```
RAB hhhhhhhh - is the address of the USAM record allocation block for MDS subtask's use.

BLK hhhhhhhh - is the address of the block spooler parameter list for MDS subtask's use.

SDM hhhhhhhh - is the address of the spool data management parameter list for MDS subtask's
use.

SPAF hhhhhhhh - is the address of the JES3 spool access facility parameter list for MDS
subtask's use.

RQ hhhhhhhh - is the address of the Resqueue for job MDS subtask is processing.

BUFF hhhhhhhh - is the address of the buffer for block spooler's use.

CPID hhhhhhhh - is the cellpool identifier for block spooler.

BFSZ hhhhhhhh - is the size of buffer in cellpool.

DSSAD hhhhhhhh - is the address of the data set status block.

DEBAD hhhhhhhh - is the address of the data extent block.

SPSCH hhhhhhhhhhhh - is the spool address of the SMS scheduling information spool data set.

FLG1 hh - is the flag byte of MCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    MDS subtask has abended.
X'40'    The MDS subtask associated with the MCT is busy on behalf of a job.
X'20'    MDS subtask has completed processing.
X'10'    MDS subtask termination request.
X'08'    MDS subtask termination processing is complete.
X'04'    Invoke SMS request.

FLG2 hh - is the flag byte of MCT.
The following bits can be set in this flag.

Value    Meaning
X'80'    Operator command to cancel the job being processed by the MDS subtask has been
    entered.
X'40'    Don't take SDUMP (in ESTAE).


RCMND hh - is the MDS subtask's  recommendation to MDSSRS FCT  as to the disposition of the
job.
The following bits can be set in this flag.

Value    Meaning
X'80'    Put the job on the MDS allocate queue.
X'40'    The job cannot execute. IATUX61 should be invoked to determine whether to put this
job
    on the MDS error queue or to cancel the job
X'20'    Job to remain on MDS system select queue
X'10'    Put this job on the MDS breakdown queue
X'08'    Put this job on the GMS select queue
X'04'    Give the job another try.
```

SMS available resource blocks

The SMS Available Resource Block contains information passed by SMS when SMS signals through ENF (Event Notification Facility) that the status of an SMS managed resource has changed. It is mapped by the JES3 macro IATYSAR. It is not formatted in the FSS dump.

```


------------------------------------------------------------------------------------------
                  SMS AVAILABLE RESOURCE BLOCKS

ADDRESS     NEXT    TYP  OSMST  NSMST   SYSNM    NMLNG              NAME
04FDCC98  00000000  02    04     E0    SY1       0007   GENERAL
```

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

ADDRESS hhhhhhhh - is the address of the SMS available resource block entry.

NEXT hhhhhhhh - is the address of the next SMS available resource block entry on chain.

TYP hh - is the type of SMS resource.
X'01'    indicates that resource type is Volume.
X'02'    indicates that resource type is Storage Group.
X'FF'    used to indicate free all jobs..

OSMST hh - is the old SMS status.

NSMST hh - is the new SMS status.

SYSNM cccccccc - is the system name for status.

NMLNG hhhh - is the length of the name of the storage group.

NAME -  is the name of the resource for which availability changed.
```

TGM

TGM JES3 spool track map

The JES3 spool track map contains information about which job or JES3 DSP owns each track group. It is not formatted in a JES3 dump unless specifically requested with OPTION=TGM. It is not formatted in an FSS dump.

```


-----------------------------------------------------------------------------------------------------
                     SPOOL TRACK MAPS

  'X.G'       ('R')      XX0/8    XX1/9    XX2/A    XX3/B    XX4/C    XX5/D    XX6/E    XX7/F

                         JOB/DSP  JOB/DSP  JOB/DSP  JOB/DSP  JOB/DSP  JOB/DSP  JOB/DSP  JOB/DSP
-----------------------------------------------------------------------------------------------
0002.000000D1 (00001C24)          JOB99996 JOB99982 MODCONFG JOB99995 JOB99986 JOB99990 JOB99994
0002.000000D8 (00001CB7) JOB99994 JOB99990 JOB99993 JOB99987 JOB99992 JOB99990 JOB99990 MODCONFG
0002.000000E0 (00001D5F) MODCONFG JOB99990 JOB99987 JOB99989 JOB99986 MODCONFG JOB99984 JOB99982
```

Chapter 5. JES3 Monitoring Facility

System programmers can use the JES3 Monitoring Facility (JMF) to obtain statistical data of the system.

JES3 tuning and performance diagnosis requires a great deal of JES3 knowledge. JMF can expand the information that is available to the person attempting either of these tasks. It can also provide a great deal of interesting information, some of which has value and some of which is merely information.

Characteristics of JMF

JMF runs on a local processor giving the installation the ability to monitor the activity of the JES3 local processor. While running on a local processor, JMF will produce SMF records. There is no interface to create spooled sysout in the local.

JMF creates SMF 84 records. The SMF records have the same information as the printed report. The information placed in the SMF records is dependent on what the call options are for JMF and where the JMF data is generated.

If you want to collect the SMF84 records, be certain to update SMFPRMxx (in SYS1.PARMLIB) for started tasks. Otherwise MVS discards the records.

```
SUBSYS(STC,EXITS(IEFUSI,IEFACTRT,IEFU29,IEFU83,IEFUJV),
NOINTERVAL,TYPE=(0,6,26,30,57,70:79,84))
```

The format of the SMF84 records is described in *z/OS MVS System Management Facilities (SMF)*. If your installation decides to collect JMF data in the SMF84 record, re-evaluate the size of the SYS1.MANx data sets. No formatter is provided for the SMF data.

JMF creates reports or SMF records on the global processor. You can have either the JMF reports or SMF records created during the running of JMF. Information that is not available on a local processor but is available on the global processor includes:

- Job related information
- Initiator and group usage information
- JES3-managed device information
- MDS information

JMF does not run in either the C/I FSS or WTR FSS address space. If your installation creates both SMF and printed JMF reports, you should not expect 100% agreement in the reports. Some of the information that JMF produces is obtained at the time the report is generated from active control blocks. Between the time the printed report is created and the SMF record is generated, the contents of these control blocks may change. It is very likely that the SMF and written reports will have slightly different values for certain JES3 measurements.

Getting Started with JMF

You should run JMF regularly and when the system is running normally. When JES3 is running poorly you will have the “historical perspective” necessary to identify deviations from when JES3 is running normally. You must have a base from which you can assess changes, even if the base moves as the configuration and workload evolves over time.

There is workload and capacity information that can be derived from JMF reports:

- Estimates of the total number of jobs in the system and the distribution of this work (for example, CI, MAIN, and OUTSERV)
- Changes in workload (group and initiator use counts)
- Demand for JES3 managed resources (for example, tape drives and spool space)

JMF can be used to look into specific performance problems that the installation is experiencing. JES3 performance problems are rarely solved with only JMF data or only RMF data. At a minimum you will need the JES3 initialization stream. You may also need a dump of global JES3 and the SYSLOG from the interval at the time JMF was run. This still may leave you with incomplete or inconclusive information.

Starting JMF

Enter the *X JMF command from a console associated with the required processor, or use the ROUTE command to direct the *X JMF command to the appropriate processor.

If you are running JMF on a local processor and have to issue a dynamic system interchange (DSI) to that processor, then JMF will disappear on the new global. This is a result of DSI processing. After the new global is connected, you can call JMF. For more information about JES3 commands, see *z/OS JES3 Commands*.

What To Look For When Finding Problems

This list may help you in determining what to look for in the JMF reports.

1. Task Activity
   - Increase in task activity
   - Increase in non-standard WAIT time
2. Real Storage
   - Paging rate increase
   - Working set decrease
3. FCT activity
   - Look for problem FCTs
   - Increase in FCT posted / active time
   - Increase in non-standard AWAIT time
   - Check JSS
4. Spool Data Management
   - Increase in spool utilization
   - (I/O rate and space)
   - STT overflow
   - Device/path contention
   - Buffer shortages
5. Miscellaneous
   - Long job queues
   - Increase in CPU utilization by function
   - Increase in control block utilization

Finding problems is essentially an exercise in observation. When JES3 performance characteristics change, something in the environment has changed.

Therefore, you have a purported JES3 performance problem. At least all the normal signs are the following:

- Consoles aren't responsive
- Inquiry commands are not coming back promptly
- TSO/E logons are backed-up
- Output processing is slow

This has all the classic symptoms of a JES3 problem. The question is: how does one determine what change occurred in the operating environment and how does one associate the external change with changes in JES3 internal processing so that the observed "abnormal" JES3 behavior can be explained? What is the first thing that you should do? You need to collect several pieces of information. These should include:

- A crisp, clear description of the observed changes in behavior
- When the behavior changed
- Known changes that have occurred in the system before this time including:
  - Configuration changes (for example, DASD movement, Catalog movement)
  - Operational changes (for example, changes in message traffic to different consoles)
  - Known workload changes (for example, additional TSO/E users)
  - Maintenance or software changes

If you are fortunate, you will be able to find the change and then use your knowledge of JES3. Most likely, you will get into the situation where the change is not easily identified, or there were several changes that occurred at the time, or "we didn't change a thing". You are going to have to examine the behavior of the system to find the change that no one remembers.

You probably are not going to dive into JMF reports first; but after looking through the normal RMF data and other reports, you have to investigate the JMF data. The JMF data must be examined in relationship to what JMF has reported in the past when the system was healthy. Without reference points, diagnosing the problems is very difficult.

Always start with the easy items and then work into the more difficult ones. For instance:

- Paging

  Has the JES3 working set size increase or decreased? Has paging increased or decreased? If so, why?
- Spool

  Has I/O activity increased? Has spool space utilization increased? Has disconnect time increased? Has someone rearranged the spool packs? Are there a lot of allocations to the JCT or STT packs. If so, why? Look at the job report: are there more jobs in the queue and has the distribution of the workload changed?

  A great majority of JES3 performance problems will turn out to be spool related. Most of the time, the spool problems will be due to workload changes.
- Buffers

  Has JES3's use of buffers changed? Are there shortages of JSAM buffers? If so why? Can you give JES3 more buffers?
- JES3 internal services

  Did some FCTs get busy? Is JES3 spending a lot of time in "new" modules? Is some FCT out of capacity? If so, why? This is where you have to delve into the FCT and AWAIT analysis, look at the hot spots, check into the DESTQ backlog.

  After you get a hunch, you may need to refine the JMF monitoring parameters to attempt to hone in on the FCTs that are causing the problem and the supporting code. The thing to remember is that problems have a cause. Finding the cause may be difficult, but it has to be done before corrective action can be formulated.

Running JMF

JMF should be run under normal conditions. A good sample size is 1000 samples in an interval. Sampling once a second for an hour should be sufficient for normal situations.

A normal situation would be:

CYCLE=
1 second

INTERVAL=
60 minutes

FCT=
250

AWAIT=
45 entries/FCT

JOB=
1

SPOT=
100

WIDTH=
100

The default number of FCTs is 250 which may not be sufficient in the following cases:

- If you have a great amount of BSC NJE activity
- When JMF is running with a long interval

The default value for JOB will let you track the first 50 jobs in the RESQUEUE and report scheduling information on them. Some reports are jobs in which you are interested. Because there are some jobs dependent on this option being in effect, have JMF track one job.

JMF sampling activity and output can be tailored to your needs by specifying the correct start-up options for your installation.

JMF Reports

After generating your JMF reports, there is a lot of data that is not self-explanatory. If you have a good basic knowledge of JES3, JMF can be a great aid in learning more about JES3 and how JES3 reacts under certain constraints and work loads. When you can find differences in JMF reports and explain them, you can identify JES3 performance problems when they occur.

Note: You will be able to discover problems using JMF, however it may not be a simple task.

There are seven major reports generated by JMF:

- System report
- FCT and AWAIT report
- Spool data management report
- JES3 control block utilization report
- Job analysis
- Hot spot analysis report
- JES3 function report

The **system** report contains information about IATNUC, IATAUX tasks, and CPU utilization. It also provides information about JES3 storage requirements and configuration data.

The **FCT and AWAIT** report contains information about the activity and location of each FCT at the time it is AWAITing.

The **spool data management** report contains information about the spool rate, space utilization, etc.

Note: You will find that this report does **not** match the resource management facility (RMF) reports. The spool data management report is the most accurate.

The **JES3 control block utilization** report contains information about the control block pools (for example, RQ's, JSAM buffers, staging areas, and JQE's) and performance information about the JCT cache.

The **job analysis** report contains information about job flow through the JES3 scheduler elements, JSS work-to-do queue, allocated JES3 managed devices, etc.

The **hot spot analysis** report contains information regarding the utilization of modules and the frequency of use in the JES3 address space.

The **JES3 function** report contains information about internal reader activity, Subsystem Interface (SSI) response time, and JES3 DESTQ lengths.

Only the system report and the JES3 control block report are created with every run of JMF.
The remaining reports are optional and can be eliminated. The reports often have overlapping and complimentary information. You will normally have to use two or more of the reports to analyze what the system is doing.

System Report

To understand the system report one must know the terminology used throughout the report. A dispatchable unit of work in the JES3 address space is in one of six mutually exclusive states. This unit of work can be either a TCB task (IATNUC, IATAUX, or one of the other subtasks) or a SRB. There is little information available on SRB activity.

The following describes the meaning of each state:

POSTED - ACTIVE
The work unit is using the processor when JMF takes a sample. JMF uses this technique to report the CPU utilization of each work unit.

POSTED - NOT ACTIVE
The work unit is ready to use the processor; however, the work unit is not dispatched. This is an indication that higher priority work is running at the time JMF takes a sample. If this number is high, it indicates the work unit is not using the processor as much as requested. By increasing the priority of the unit of work, the work will be processed more quickly.

NOT POSTED
The work unit is waiting for a condition to be satisfied. If the work unit is an FCT, it is AWAITing. If the work unit is the IATNUC or the IATAUX task, it is the standard MVS WAIT in the WAIT FCT.

Note: The MVS WAIT state represents the function giving up control voluntarily.

IN OS WAIT (IN NONSTANDARD WAIT)
The work unit gives up control involuntarily by calling an MVS service, which results in an MVS WAIT.

Note: If the task takes a page fault, this condition will result.

SUSPENDED - LOCAL LOCK REQ
The work unit requests the local lock but is suspended because the lock is currently held by some other function (TASK or SRB).

SUSPENDED - OTHER
The work unit is suspended for some reason other than the local lock.

JES3 Busy

The IATNUC POSTED - ACTIVE number is a good approximation of the CPU utilization in the JES3 global address space. If your installation's workload produces large amounts of printed output, you may see a significant amount of CPU utilization for the IATAUX task also.

```
IATNUC POSTED - ACTIVE              13.69 %
IATNUC POSTED - NOT ACTIVE           7.37 %
IATNUC NOT POSTED                   72.80 %
IATNUC IN NONSTANDARD WAIT            .04 %
```

```
IATNUC SUSPENDED - LOCAL LOCK REQ    5.67 %
IATNUC SUSPENDED - OTHER              .40 %
```

The example shows the IATNUC task is using the CPU 14% of the time. However, the task is considered to be 20% busy because 6% of the time the task is suspended because of unavailability of the local lock. The task busy time is the sum of the:

- ACTIVE,
- IN NONSTANDARD WAIT
- SUSPENDED - LOCAL LOCK REQ
- SUSPENDED - OTHER

A rule of thumb is to keep the IATNUC CPU utilization below 60%. Going any higher may lead to performance degradation. A few things can be done to reduce CPU utilization. If the global system has multiple engines, use the writer multi-tasking feature. Also, using C/I or writer FSS will off-load some of the CPU processing to other address spaces.

From a performance point of view, the starting and stopping of dynamic writers introduces additional CPU utilization for the IATNUC task. On the other hand, there is overhead associated with using a large number of idle hot writers. This overhead shows up in high multi-function monitor CPU consumption. There are performance and operational trade-offs to be made when making these decisions.

The SUSPENDED - LOCAL LOCK REQ is a popular commodity in the JES3 address space. JES3 attempts to avoid the use of services which would suspend IATNUC because of its unavailability. Some MVS services require the local lock. When the IATNUC or the IATAUX have nothing to do, the WAIT FCT issues an OS WAIT (SVC 1) which requires the local lock. (Even in busy JES3 globals, this does occasionally occur). If the WAIT FCT is the FCT suspended on the local lock there is no reason to be concerned. If other FCTs are often suspended waiting for the local lock, JES3 is being prevented from doing real work.

Note: FCTs which are frequently in OS WAIT to determine if this is something that the installation induced. Remember, if one FCT is OS WAITed, then all of IATNUC is OS WAITed.

Storage

Most of the work in the JES3 address space is done by the JES3 main task, and it is important to prevent JES3 from paging. You should monitor JES3's working storage size and paging rates. Changes in either one should be investigated. They typically indicate a configuration change, a workload change, or a code problem.

```
JES3 WORKING
SET

                 5800K
+


|

                 6000K
+*******************************************


|

                 6200K
+

                 6299K
+

                         ---+---+---+---+---+---+---+---+---+---
+

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

```
                          0   0   0   0   0   0   0   0   0
0

0
               AVERAGE WORKING SET SIZE =
6076K
               MINIMUM WORKING SET SIZE =
6076K
               MAXIMUM WORKING SET SIZE =
6080K
               NUMBER OF FIXED PAGES =   21 =
84K
               AUXILIARY SLOT COUNT  =     20 =
80K
               THE ALLOCATED STORAGE FOR JMF IS
30K
          JES3 PAGING COUNTS DURING JMF
MONITORING
               PAGE-IN'S =
0
               PAGE-OUT'S =
0
               PAGE-RECLAIM'S =
0
               PAGING RATE =    .00 PAGES/
SECOND
          SYSTEM PAGING RATE (NON-SWAP, NON
VIO)
               PAGING RATE =   1.50 PAGES/
SECOND
          JES3 SUBTASKS POSTED
CONCURRENTLY
               NUMBER OF SUBTASKS      1        2        3        4 OR
MORE
               CONCURRENTLY POSTED  100.00 %    .00 %    .00 %    .00
%
          JES3 SUBTASKS IN DISPATCHING
SEQUENCE
                   SUBTASK          %
POSTED
                  1  IATNUC              .00
%
                  2  IATGRMON            .00
%
                  3  IATGRSS             .00
%
                  4  IATGSC1             .00
%
                  5  IXZIXPE             .00
```

```
%
                6  IATGSC1            .00
%
                7  IATAUX             .00
%
                8  IATLVMT            .00
%
                9  IATLVLC            .00
%
               10  IATLVLC            .00
%
               11  IATLVLC            .00
%
               12  IATLVLC            .00
%
               13  IATLVLC            .00
%
               14  IATIISB            .00
%
               15  IATIIST            .00
%
               16  IATIIST            .00
%
               17  IATIIST            .00
%
               18  IATIIST            .00
%
               19  IATIIST            .00
%
               20  IATIIST            .00
%
               21  IATIIST            .00
%
               22  IATGSC1            .00
%
               23  IATGSC1            .00
%
               24  IATGSC1            .00
%
               25  IATGSC1            .00
%
               26  IATGSC1            .00
%
               27  IATGSC1            .00
%
               28  IATGSC1            .00
%
               29  IATGSC1            .00 %
```

```
          IATNUC POSTED BUT NO FCT POSTED =    .00
%

          IATAUX POSTED BUT NO FCT POSTED =    .00
%

          JES3 GLOBAL PROCESSOR
DESCRIPTION

               CPU MODEL = 4381                REAL STORAGE SIZE =  63.5
MEGS
               SYSTEM NAME:
SY1

               MVS RELEASE =
SP7.0.5


               JES3 RELEASE =
z1.5.0

               JES3 IS IN THE APG PRIORITY
LEVEL

               JES3 IS NON-SWAPPABLE

               JES3 DISPATCHING PRIORITY = 254
```

Note:

The JES3 Monitoring Facility (JMF) histogram for the JES3 WORKING SET can map working set sizes in the range of 1000K to 999999K. Working set sizes larger than 999999K are included in the maximum value on the histogram.

To improve JES3 performance you should:

1. Make certain that JES3 is kept out of an APG group.
2. Look at JES3's dispatching priority and the percentage of time that IATNUC is posted but not active. If JES3's dispatching priority is not near the top of the chain and the wait time is long, determine which address space is interfering with JES3's being dispatchable and change the priorities of the address space.
3. Use storage isolation to ensure that JES3's working storage is not constrained to the point that it interferes with responsiveness. Use PPGRT or PPGRTR to keep JES3's paging rate to a maximum of 1 to 2 pages per second. If you use PWSS, use it only for a lower boundary and set the upper boundary to *. This will prevent JES3 from being a prime candidate for page steals if you set the upper boundary too low.

Overhead

The JMF monitoring task places itself as one of the highest priority task in the address space. During portions of JMF sampling, all the other tasks are stopped (including IATNUC). It is important to make certain that JMF does not overly interfere with JES3 and that the performance problems that you see are not due to JMF.

JMF gives two indicators of interference:

1. JMF overhead - This is the time that the JMF sampling task is active. It is reported as a percentage of the cycle time; however, it comes out of the interval instead of the cycle. This is why you will see a 60 minute interval have 59 minutes and some number of seconds or the number of samples is less than expected. Nevertheless, you should keep the percentage of JMF overhead relative to the cycle time low. Less than five percent is desirable.
2. MVS overhead - This is the time delay that the JMF sampling task is to be dispatched. It is indicative of higher priority work in the system. If this number becomes large, an adjustment of JES3's dispatching priority may be in order.

```
JMF OVERHEAD
     MINIMUM =    .000704 SEC.
     MAXIMUM =    .105328 SEC.
     AVERAGE =    .001472 SEC.      .73 % OF JMF CYCLE TIME
MVS OVERHEAD
     MINIMUM =    .000256 SEC.
     MAXIMUM =    .167264 SEC.
     AVERAGE =    .000944 SEC.      .47 % OF JMF CYCLE TIME
```

JMF will also report on the number of tasks simultaneously active in the JES3 address space. You will also get a chart showing the percent active for each task. The only tasks that you have control over are the C/I subtasks. JES3's performance is impacted by having a great number of subtasks (there is no TCB ready queue similar to the ASCB ready queue). You should control the number of these tasks. You should consider moving the C/I function to a C/I FSS address space. This will have the added benefit of reducing local lock contention in the JES3 address space.

FCT and AWAIT

```
*******************************************************
FCT AND AWAIT REPORT
   IATNUC
         MULTI-FUNCTION MONITOR
              ACTIVE                          .00 % OF SAMPLES      .00 %
              SUSPENDED                       .00 % OF SAMPLES
              IN OS WAIT                      .00 % OF SAMPLES
         JES3 IRB'S
              IRB NAME          ACTIVE          SUSPENDED          OS WAI
                              % OF SAMPLES    % OF SAMPLES       %OF SAMP

              NO IRB INFORMATION WAS FOUND.
   IATAUX
         MULTI-FUNCTION MONITOR
              ACTIVE                          .00 % OF SAMPLES      .00 %
              SUSPENDED                       .00 % OF SAMPLES
              IN OS WAIT                      .00 % OF SAMPLES
         JES3 IRB'S
              IRB NAME          ACTIVE          SUSPENDED          OS WAI
                              % OF SAMPLES    % OF SAMPLES       %OF SAMP
              NO IRB INFORMATION WAS FOUND.
        AVERAGE AWAIT DURATION                       6.93 SEC.
        TOTAL AWAIT DURATION                        20.80 SEC.
        MAXIMUM AWAIT DURATION                      14.40 SEC.
```

At the beginning of the FCT and AWAIT report is some information about the multi-function monitor (MFM). The interesting information is the percent of IATNUC that MFM is active. MFM activity is basically dependent on the number of FCTs on the dispatching chain. Installations that have a large BSC NJE work load are highly susceptible to this phenomenon. Having a large number of inactive hot writers also contributes to high MFM activity.

JMF also reports on IRB activity. There are several IRBs that JMF knows by name and they are labelled in the report. These include:

- ATIME
- Channel End Appendage
- Abnormal End Appendage

The IRBs that JMF doesn't know by name (for example, those used by VTAM) are represented by the IRB entry point address. The pertinent information is the percent of samples where the IRB is in an OS WAIT. If the IRB is in an OS WAIT, then none of the JES3 code running under the RB is being given a chance to run.

Function control table (FCT)

The FCT and AWAIT report provides information about where an FCT is active. If sufficient FCT entries are specified, JMF will report on each FCT that exists for some portion of the interval. The state of the FCT is categorized the same way as an IATNUC and IATAUX. Some FCTs can operate under IATAUX as well as IATNUC (for example, Writers) and subsequently have activity reported under both tasks. (Only the activity under IATNUC is shown).

The information that you should look at includes:

1. FCTs which have high “posted and active” as a percentage of IATNUC. The Hot Spot analysis report will assist you in this endeavor.

2. Is the FCT on the chain longer than it should be? Many times spool performance problems begin to manifest themselves as PURGE FCTs taking a long time to process. This requires knowledge of the JES3 DSPs. For more information about JES3 DSPs, see *z/OS JES3 Customization*.
3. FCTs which are frequently in OS WAIT to determine if this is something that the installation induced. Remember, if one FCT is OS WAITed, then all of IATNUC is OS WAITed.
4. FCTs that spend a large portion of their time in a particular AWAIT (other than the standard FCT AWAIT). For example, FCTs waiting for spool I/O or AENQ resources.

You seldom go through all of the FCTs looking at these indicators. There can be several hundred FCTs; go to the summary report to see all the FCTs that JMF tracked during the interval. You will see the percentage of samples that the FCT is on and the chain in NUC mode or AUX mode. For each mode, the percentage of samples that the FCT was in and which state the FCT was in is also reported. All of the suspended states are grouped together for reporting purposes.

Scan through the summary looking for anomalies. The following example shows a portion of the summary report to give an indication of the information presented. The example shows some of the FCTs and the activity under IATAUX.

```
71  DSP NAME IS DMJA         DEVICE NAME IS **NONE**     FCT PRTY IS 004
            FCT ON FCT CHAIN                     100.00 % OF FCT
            FCT IN NUC MODE                      100.00 % OF FCT
            FCT IN AUX MODE                         .00 % OF FCT
    I/O ACTIVITY
            SRF READ I/O'S    =       85
            SRF READ BUFFERS  =       85
            SRF WRITE I/O'S   =       87
            SRF WRITE BUFFERS =       87
    ACTIVITY UNDER IATNUC TASK
       FCT POSTED - ACTIVE      8.51 % OF IATNUC    .26 % OF FCT
       FCT POSTED - NOT ACTIVE                      .20 % OF FCT
       FCT NOT POSTED                             99.46 % OF FCT
       FCT IN OS WAIT                               .00 % OF FCT
       FCT SUSPENDED-LOCAL LOCK REQ                 .06 % OF FCT
       FCT SUSPENDED-OTHER                          .00 % OF FCT
     AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT
     AWAIT IN USE                                 89.71 % OF FCT
     AWAIT POSTED - ACTIVE      2.12 % OF IATNUC    .06 % OF FCT
     AWAIT POSTED - NOT ACTIVE                      .00 % OF FCT
     AWAIT NOT POSTED                             89.65 % OF FCT
    AVERAGE AWAIT DURATION             24.25 SEC.
    TOTAL AWAIT DURATION        4 MIN. 26.80 SEC.
    MAXIMUM AWAIT DURATION      3 MIN.   .80 SEC.   IATDMJA  + 00000082
    AWAIT IS ...
     AWAIT IN USE ...
```

```
SEQ                        FCT  FCT ON      NUC    AUX   POSTED   POSTED  NOT OR IN OS  POSTED  POSTED   NOT OR IN OS
  NUM  DSPNAME   DEVICE    PRI   CHAIN     MODE   MODE   ACTIVE  NOT ACT  POSTED  WAIT  ACTIVE  NOT ACT  POSTED  WAIT

    1  CONCMD    **NONE**  254  100.00   100.00    .00      .11      .84   99.01      .02
    2  CONSERV   **NONE**  254  100.00   100.00    .00      .63     2.76   96.38      .21
    3  TIMER     **NONE**  254  100.00   100.00    .00      .00      .00  100.00      .00
    4  READYQ    **NONE**  254  100.00   100.00    .00      .00    11.30   88.69      .00
    5  JSAM      **NONE**  250  100.00   100.00    .00      .96    12.03   86.96      .04
    6  CONSDM    **NONE**  240  100.00   100.00    .00     1.07     4.69   94.01      .21
    7  RJPCONS   **NONE**  240  100.00   100.00    .00      .00      .00  100.00      .00
    8  MAINIO    C00       053  100.00   100.00    .00      .11      .02   99.85      .00
    9  MAINIO    C70       053  100.00   100.00    .00      .00      .00  100.00      .00
   10  MAINIO    A1        053  100.00   100.00    .00      .00      .00  100.00      .00
   11  MAINIO    C50       053  100.00   100.00    .00      .00      .00  100.00      .00
   12  MAINIO    CD0       053  100.00   100.00    .00      .00      .00  100.00      .00
   13  MAINIO    C20       053  100.00   100.00    .00      .00      .00  100.00      .00
   14  MAINIO    A5        053  100.00   100.00    .00      .00      .00  100.00      .00
   15  MAINIO    A3        053  100.00   100.00    .00      .00      .00  100.00      .00
   16  MAINIO    CA0       053  100.00   100.00    .00      .00      .00  100.00      .00
   17  MAINIO    C60       053  100.00   100.00    .00      .00      .00  100.00      .00
   18  MAINIO    A7        053  100.00   100.00    .00      .00      .00  100.00      .00
   19  MAINIO    A6        053  100.00   100.00    .00      .00      .00  100.00      .00
   20  MAINIO    A0        053  100.00   100.00    .00      .00      .00  100.00      .00
   21  MAINIO    C10       053  100.00   100.00    .00      .00      .00  100.00      .00
   22  MAINIO    CE0       053  100.00   100.00    .00      .00      .00  100.00      .00
   23  MAINIO    A4        053  100.00   100.00    .00      .00      .00  100.00      .00
   24  MAINIO    C30       053  100.00   100.00    .00      .00      .00  100.00      .00
   25  MAINIO    Z0        053  100.00   100.00    .00      .00      .00  100.00      .00
   26  MAINIO    A2        053  100.00   100.00    .00      .00      .00  100.00      .00
   27  MAINIO    C40       053  100.00   100.00    .00      .00      .00  100.00      .00
   28  MAINIO    CC0       053  100.00   100.00    .00      .00      .00  100.00      .00
   29  MAINIO    C80       053  100.00   100.00    .00      .00      .00  100.00      .00
   30  MAINIO    CF0       053  100.00   100.00    .00      .00      .00  100.00      .00
   31  MAINIO    CB0       053  100.00   100.00    .00      .00      .00  100.00      .00
   32  MAINIO    C90       053  100.00   100.00    .00      .00      .00  100.00      .00
   33  MAINIO    SA0       053  100.00   100.00    .00      .00      .00  100.00      .00
   34  MAINIO    SC0       053  100.00   100.00    .00      .00      .00  100.00      .00
   35  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   36  MAIN      **NONE**  051  100.00   100.00    .00      .00      .02   99.97      .00
   37  MAIN      **NONE**  051  100.00   100.00    .00      .00      .02   99.97      .00
   38  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   39  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   40  MAIN      **NONE**  051  100.00   100.00    .00      .00      .04   99.95      .00
   41  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   42  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   43  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   44  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   45  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   46  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   47  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   48  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   49  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   50  MAIN      **NONE**  051  100.00   100.00    .00      .00      .04   99.95      .00
   51  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   52  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   53  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   54  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   55  MAIN      **NONE**  051  100.00   100.00    .00      .00      .02   99.97      .00
   56  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   57  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   58  MAIN      **NONE**  051  100.00   100.00    .00      .00      .02   99.97      .00
   59  MAIN      **NONE**  051  100.00   100.00    .00      .00      .02   99.97      .00
   60  MAIN      **NONE**  051  100.00   100.00    .00      .00      .00  100.00      .00
   61  MAIN      **NONE**  051  100.00   100.00    .00      .39     3.04   96.45      .09
   62  DYNAL     DYN       035  100.00   100.00    .00      .30     1.24   98.38      .07
   63  ARMDRVR   **NONE**  034  100.00   100.00    .00      .00      .00  100.00      .00
   64  CIDRVR    **NONE**  032  100.00   100.00    .00      .04      .65   99.24      .04
   65  OUTSERV   AID       030  100.00   100.00    .00      .11      .42   99.43      .02
   66  VERIFY    **NONE**  030  100.00   100.00    .00      .00      .00  100.00      .00
   67  SETUP     S         030  100.00   100.00    .00     2.95      .96   96.03      .04
   68  OUTSERV   **NONE**  030  100.00   100.00    .00      .00      .02   99.97      .00
   69  OUTSERV   **NONE**  030  100.00   100.00    .00      .00      .02   99.97      .00
   70  OUTSERV   **NONE**  030  100.00   100.00    .00      .00      .00  100.00      .00
```

```
SEQ                        FCT  FCT ON      NUC    AUX   POSTED   POSTED  NOT OR IN OS  POSTED  POSTED  NOT OR IN OS
  NUM  DSPNAME   DEVICE    PRI   CHAIN     MODE   MODE   ACTIVE  NOT ACT POSTED    WAIT  ACTIVE  NOT ACT POSTED  WAIT

   71  OUTSERV   **NONE**  030  100.00   100.00      .00      .00      .02    99.97      .00
   72  PURGE     **NONE**  030    5.83     5.83      .00      .30      .75     4.76      .02
   73  PURGE     **NONE**  030     .49      .49      .00      .00      .04      .42      .02
   74  BDT       **NONE**  025  100.00   100.00      .00      .00      .00   100.00      .00
   75  BDTCOMM   **NONE**  025  100.00   100.00      .00      .00      .04    99.95      .00
   76  MODDRVR   **NONE**  015  100.00   100.00      .00      .02      .02    99.95      .00
   77  INQDRVR   **NONE**  014  100.00   100.00      .00      .00      .00   100.00      .00
   78  WTDDRVR   **NONE**  012  100.00   100.00      .00      .35      .44    99.03      .16
   79  PSODRVR   **NONE**  012  100.00   100.00      .00      .02      .02    99.95      .00
   80  TSODRVR   **NONE**  012  100.00   100.00      .00      .00      .00   100.00      .00
   81  PSODSP    **NONE**  011  100.00   100.00      .00      .00      .04    99.92      .02
   82  PSODSP    **NONE**  011  100.00   100.00      .00      .00      .00   100.00      .00
   83  POSTSCAN  **NONE**  007   20.37    20.37      .00      .35     2.76    17.19      .07
   84  CI        **NONE**  007    6.40     6.40      .00      .09      .53     5.74      .02
   85  POSTSCAN  **NONE**  007    4.01     4.01      .00      .09      .37     3.47      .07
   86  CICLENUP  **NONE**  007    1.21     1.21      .00      .09      .09     1.03      .00
   87  POSTSCAN  **NONE**  007    1.31     1.31      .00      .00      .16     1.14      .00
   88  POSTSCAN  **NONE**  007    1.24     1.24      .00      .00      .14     1.10      .00
   89  CICLENUP  **NONE**  007     .04      .04      .00      .00      .00      .04      .00
   90  LOCATE    **NONE**  005  100.00   100.00      .00      .00      .00   100.00      .00
   91  MSGC      **NONE**  004  100.00   100.00      .00      .14     1.66    98.14      .04
   92  DMJA      **NONE**  004  100.00   100.00      .00      .44     3.42    95.94      .18
   93  DMJA      **NONE**  004  100.00   100.00      .00      .14      .79    99.01      .04
   94  DMJA      **NONE**  004  100.00   100.00      .00      .02      .28    99.69      .00
   95  DMJA      **NONE**  004  100.00   100.00      .00      .00      .04    99.90      .04
   96  DMJA      **NONE**  004  100.00   100.00      .00      .00      .00   100.00      .00
   97  DMJA      **NONE**  004  100.00   100.00      .00      .00      .00   100.00      .00
   98  DMJA      **NONE**  004  100.00   100.00      .00      .00      .00   100.00      .00
   99  INTRDR    **NONE**  004    4.33     4.33      .00      .02      .16     4.12      .02
  100  INTRDR    **NONE**  004    8.53     8.53      .00      .02      .18     8.32      .00
  101  INTRDR    **NONE**  004    5.48     5.48      .00      .02      .23     5.20      .02
  102  INTRDR    **NONE**  004    6.40     6.40      .00      .09      .32     5.98      .00
  103  ISDRVR    **NONE**  004    3.68     3.68      .00      .02      .14     3.49      .02
  104  INTRDR    **NONE**  004   10.60    10.60      .00      .09      .25    10.24      .00
  105  INTRDR    **NONE**  004    4.90     4.90      .00      .02      .04     4.83      .00
  106  INTRDR    **NONE**  004    9.87     9.87      .00      .14      .37     9.35      .00
  107  INTRDR    **NONE**  004    1.19     1.19      .00      .02      .00     1.17      .00
  108  INTRDR    **NONE**  004    9.35     9.35      .00      .11      .23     9.00      .00
  109  INTRDR    **NONE**  004    1.96     1.96      .00      .00      .02     1.94      .00
  110  INTRDR    **NONE**  004     .77      .77      .00      .00      .02      .75      .00
  111  INTRDR    **NONE**  004   37.19    37.19      .00      .21      .30    36.67      .00
  112  ISDRVR    **NONE**  004     .25      .25      .00      .00      .00      .25      .00
  113  INTRDR    **NONE**  004    6.42     6.42      .00      .16      .25     5.98      .02
  114  INTRDR    **NONE**  004   14.28    14.28      .00      .23      .39    13.60      .04
  115  INTRDR    **NONE**  004    4.43     4.43      .00      .02      .14     4.26      .00
  116  INTRDR    **NONE**  004    6.89     6.89      .00      .04      .30     6.54      .00
  117  INTRDR    **NONE**  004    1.78     1.78      .00      .00      .09     1.68      .00
  118  INTRDR    **NONE**  004    1.36     1.36      .00      .04      .02     1.28      .00
  119  INTRDR    **NONE**  004    2.79     2.79      .00      .02      .23     2.53      .00
  120  INTRDR    **NONE**  004    9.12     9.12      .00      .04      .14     8.93      .00
  121  INTRDR    **NONE**  004    1.47     1.47      .00      .00      .00     1.47      .00
  122  INTRDR    **NONE**  004     .42      .42      .00      .00      .00      .42      .00
  123  INTRDR    **NONE**  004     .32      .32      .00      .00      .02      .30      .00
  124  INTRDR    **NONE**  004   11.30    11.30      .00      .02      .32    10.92      .02
  125  INTRDR    **NONE**  004   10.10    10.10      .00      .09      .21     9.80      .00
  126  INTRDR    **NONE**  004   35.76    35.76      .00      .46     1.07    34.09      .11
  127  INTRDR    **NONE**  004    2.53     2.53      .00      .00      .04     2.48      .00
  128  INTRDR    **NONE**  004     .53      .53      .00      .00      .07      .46      .00
  129  INTRDR    **NONE**  004     .46      .46      .00      .00      .02      .44      .00
  130  INTRDR    **NONE**  004    5.18     5.18      .00      .07      .09     5.01      .00
  131  INTRDR    **NONE**  004   11.81    11.81      .00      .09      .37    11.25      .09
  132  INTRDR    **NONE**  004    2.29     2.29      .00      .02      .09     2.18      .00
  133  INTRDR    **NONE**  004     .14      .14      .00      .00      .00      .14      .00
  134  INTRDR    **NONE**  004     .11      .11      .00      .00      .00      .11      .00
  135  JSS       **NONE**  002  100.00   100.00      .00      .39     2.25    97.30      .04
  136  GENSERV   **NONE**  002  100.00   100.00      .00      .00      .00   100.00      .00
  137  FAILSOFT  **NONE**  001  100.00   100.00      .00      .00      .00   100.00      .00
  138  WAIT      **NONE**  000  100.00   100.00      .00      .96    98.21      .00      .82
  139  WAIT      **NONE**  000  100.00      .00   100.00      .00   100.00      .00      .00
```

In the previous example, you will notice that on the summary report, DMJA (93) is seldom active (.26 % of the samples) and is AWAITing most of the time (99.46 % of the samples). The question you should ask is: Is the DSP AWAITing because there isn't any work to do or is the DSP AWAITing the completion of some other JES3 function before it can resume processing a request? To determine if the AWAITing is good or bad, you need to look at the AWAIT table.

At first glance you will notice that there are multiple AWAIT table entries for each FCT. The exact number is dependent on the activity of the FCT and the number of table entries that you specified. The number of table entries will vary from FCT to FCT that perform the same function. Most FCTs (even transient ones) do a few tasks many times during a JMF interval. The AWAIT table, if large enough, will provide you with a snapshot of the major events in the life of the FCT.

Many AWAITs have an AWAIT reason code associated with them. JMF groups these AWAITS together and displays some verbage about the AWAIT. See Description of the DSP Analysis Report on page "Description of the JMF hardcopy report" on page 325 for a description of the AWAITS.

Note: If you have enough AWAIT entries defined per FCT, then all of the times that an FCT is AWAITing or reacting to the posting of a previously issued await should be captured. In other words, if there are six AWAIT entries then the sum of the AWAIT in USE percentages of FCT should add up to 100.

Under the AWAIT IS..., you see four AWAIT items. Within each AWAIT entry, you can get the percentage of FCT activity that is related to that AWAIT. Either the FCT is waiting for a post, waiting to be dispatched after getting the post, or is active. JMF also tells you things about the AWAIT. These include the average, maximum and total duration for this AWAIT. If JMF finds the AWAIT in use (not posted) for at least two cycles in succession, it will attempt to tell the location of the AWAIT. For JES3 modules this is a load module name plus an offset into the module.

In the example, the DMJA FCT is spending most of the interval time at location X'000082' in module IATDMJA. If you assemble the module and look at location X'000082', you can see that this is the work to do AWAIT. Therefore, the answer to the question is that the DSP is doing AWAIT because there is no work to do, or the DSP is doing AWAIT for the completion of some other JES3 function (before it can resume processing a request).

The important thing is to look at the FCTs and determine if they are waiting for work to be passed through their way or if they are waiting for completion of some JES3 service. The amount of time that the FCT is doing AWAIT on its work to do ECF is an indication of the capacity remaining in that FCT. The FCT must wait at its standard AWAIT at least 25% of the time.

FCT Highlights

JMF summarizes the FCT and AWAIT analysis into four summary reports. For IATNUC and IATAUX, JMF will identify those FCTs that are the most active, posted but not active, and those most often detected in OS WAITs. In addition JMF will point out the 10 biggest JES3 AWAIT bottlenecks by name. JMF will also report which tasks were impacted. If the installation requested WAIT analysis, the WAIT analysis report will follow the FCT and AWAIT highlights.

```
THE 5 MOST ACTIVE FCT'S IN IATNUC
     SEQ NUM  DSP NAME  FCT POSTED - ACTIVE

         71   DMJA         .26 % OF SAMPLES    8.51 % OF IATNUC
         28   NJE          .20 % OF SAMPLES    6.38 % OF IATNUC
         83   JSS          .20 % OF SAMPLES    6.38 % OF IATNUC
         11   OUTSERV      .13 % OF SAMPLES    4.25 % OF IATNUC
         14   OUTSERV      .13 % OF SAMPLES    4.25 % OF IATNUC

THE 5 MOST 'POSTED AND NOT ACTIVE' FCT'S IN IATNUC
     SEQ NUM  DSP NAME  FCT POSTED - NOT ACTIVE

          4   JSAM        4.65 % OF SAMPLES
          3   READYQ      3.79 % OF SAMPLES
         28   NJE         3.20 % OF SAMPLES
          2   CONSERV      .53 % OF SAMPLES
         83   JSS          .47 % OF SAMPLES

THE 5 MOST 'IN OS WAIT' FCT'S IN IATNUC
     SEQ NUM  DSP NAME  FCT IN OS WAIT

         28   NJE          .13 % OF SAMPLES
          9   DYNAL        .06 % OF SAMPLES
         29   NJESND       .06 % OF SAMPLES
         83   JSS          .06 % OF SAMPLES
     NO MORE FCTS WERE IN OS WAIT IN IATNUC


THE 10 BIGGEST JES3 AWAIT BOTTLENECKS
     SEQ NUM  DSP NAME  TASK    TOTAL AWAIT DURATION      MAX AWAIT DURATION
         50  POSTSCAN  IATNUC          27.40 SEC.               1.60 SEC.
              WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE

          51  POSTSCAN  IATNUC          25.60 SEC.               1.40 SEC.
               WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE

          63  ISDRVR    IATNUC          23.40 SEC.               3.00 SEC.
               WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

          66  ISDRVR    IATNUC          22.20 SEC.               2.60 SEC.
               WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

          62  ISDRVR    IATNUC          21.20 SEC.               3.40 SEC.
               WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

          65  ISDRVR    IATNUC          20.20 SEC.               2.60 SEC.
               WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL
```

```
      NO MORE AWAIT BOTTLENECKS
           .
           .
           .
JES3 WAIT ANALYSIS
   DSP NAME IS CONSERV   FCT SEQUENCE NUMBER =   2    TASK = IATNUC
     FCT IN OS WAIT                  .04 %
         SVC 35 (WTO/WTOR) AT 0220EB12  IATCNWO   + 00000792 COUNT =3
         PAGE FAULT AT 02228754  IATGRSV + 0000006C          COUNT = 8
           .
           .
           .
```

These reports summarize the most active FCTs, those that have something to do but aren't able to be dispatched by MFM, and those FCTs in an OS WAIT (page fault, local lock or other). What do you look for? If you have been doing normal monitoring, you are looking for anomalies. For instance, the addition of a hundred or so logged on, active TSO users would most likely result in TSODRVR showing in the five most active list (since it handles TSO/E STATUS, CANCEL and VALIDATE requests). You might also see PSODRVR showing up on the five most posted but not active list. Changes in the list membership indicate:

- Changes in workload
- Operational changes
- Changes in the installation
- Provided “user extensions” to JES3.

Some of the more active FCTs include:

JSS - Active
Many installations with a large number of jobs in the queue will see JSS account for 20 - 25% of IATNUC activity.

TSODRVR - Active
This occurred with the split of the WTDDRVR FCT.

JSAM - Inactive
JSAM will show up as being ready most of the time if JES3 is doing anything, because most things JES3 does require I/O. JSAM is near the top of the dispatching queue and the only thing that prevents it from being dispatched are the high users of CPU, for example, TSODRVR and JSS. Again if JSAM's waiting is excessive, things will slow down and the operators should notice a degradation in performance.

Remember, there will always be five FCTs on each list regardless of what is going on in JES3. You must know enough about "your JES" to recognize whether something is amiss. An FCT can account for 25% IATNUC activity; if IATNUC CPU busy is 2%, there is not a problem.

The AWAIT bottlenecks are indications of serialization impacting the work flow through FCTs or of the unavailability of resources required by the FCT to continue processing.

SPOOL Information

The following is a list of items necessary to view to see how well JES3 Spool is performing.

- Buffer size and usage
- Spool data set and spool partition description
- Spool usage
- STT usage
- Spool I/O activity
- Buffer chaining

For JES3 to be responsive to TSO/E users and operators, good spool response is mandatory. JMF attempts to provide JES3's view of how well spool is performing.

```
SPOOL Parameters

  SDM PARAMETERS
       SPOOL BUFFER SIZE = 4084 BYTES
       NUMBER OF BUFFERS PER 4K PAGE = 1
       FILE DIRECTORY ENTRIES = 900
       NUMBER OF SPOOL DATA SETS IN USE =    6
       NUMBER OF JSAM BUFFERS = 1024
       THRESHOLD FOR JSAM MINBUF CONDITION = 128 BUFFERS
       NUMBER OF PROTECTED USAM BUFFERS =   0 IN CSA + 250 IN AUX
       NUMBER OF UNPROTECTED USAM BUFFERS PER OPEN USAM DATA SET =  2
       MAX DATA BYTES IN A USAM BUFFER = 4044
```

This section shows the information specified in the JES3 initialization stream that is relative to JES3 spool performance. A 4K spool buffer allows for more efficient use of spool space and the processor requirements necessary to retrieve information from spool. For example, a 2K spool buffer will hold four OSEs, while a 4K buffer will hold eleven OSEs. Making buffers larger reduces read or write chained spool records. Obviously, it doesn't help when accessing control blocks that reside in a single buffer (for example, JDAB, JMR). File directory entries are used in WRTCHAIN processing when dealing with OSEs, JSTs, and JDSs. If you run out of file directories, the function waits, regardless of the criticality of the function. There is no indication of how many of these entries are in use currently and there is no high water mark count.

Note: File directories are used primarily for multi-record files (MRFs). They are also used by WRTCHAIN requests for JDSs, OSEs, JSTs, and other chained single record files.

JMF reports the number of JSAM buffers defined. (In a later section, the number in use and the high water mark are reported.) You should try to avoid running out of JSAM buffers. If you do, the system tries a few recovery attempts and stops. JES3 allows 1024 buffers to be defined and they should be used.

JMF also reports the location of the protected USAM buffers. (In a later section, the usage is reported.)

```
SPOOL DATA SET DESCRIPTION
                                                  ******* RANGE *******
 DATA SET       PARTITION     DEVICE                 LOW         HIGH
 NUMBER DDNAME NAME  STATUS  NUMBER VOLSER TYPE    CYL  HEAD  CYL  HEAD
     2  SPOOL1 MAIN  IN USE  0982   SPOOL1  3390   0000009 0  000002B E
     3  SPOOL2 MAIN  BT      0483   SPOOL2  3390   0000001 0  0000008 E
     4  SPOOL3 MAIN  IN USE  0484   SPOOL3  3390   0000001 0  0000008 E
     5  SPOOL4 INISH IN USE  0485   SPOOL4  3390   0000001 0  0000008 E
           .
           .
           .
   SPOOL PARTITION DESCRIPTION
        PARTITION    SPLIM    OVERFLOW
        NAME       MIN  MARG  PARTITION
        MAIN        5%  10%               *** DEFAULT ***
        INISH       0%   0%
   SPOOL SPACE UTILIZATION SNAPSHOT
        PARTITION            *** TRACK GROUPS ***
        NAME       DDNAME    DEFINED    ALLOCATED
        DRAINED
        UNAVAIL
        MAIN       SPOOL1      2300     1146  48%
                   SPOOL2      2300     1144  48%
                   SPOOL3      2300     1144  48%
                   SPOOL5        45       45 100%
        INISH      SPOOL4        45        4   8%
```

The first report is the spool data set description. JMF reports on where the spool data sets reside, their size and organization. This may be the most obvious report in the listing and is only partially shown here. The one interesting thing that JMF reported is that one of the active spool volumes has a bad track. If you see this in a real JMF report, you should obviously investigate it and have it corrected. Purging of track groups is adversely affected by bad tracks.

In the example, there are two partitions defined: MAIN (the default partition) and INISH. INISH consists of a small spool data set that contains the initialization stream. It is only there to illustrate the report. The spool partition report also reports the installation-defined spool minimum and marginal values. The question is: What should these values be in my installation?

One of the all-time great answers is: make certain that the minimum value is large enough to be able to do a restart of JES3. However, exactly how much space this requires is not known and at the very least will be installation dependent. The percentage that you set aside is also dependent on the total spool space in the default partition.

Setting the marginal value is easier to rationalize. Most installations know what normal spool utilization is during peak periods. Set the marginal value to this amount plus 10-20% of the peak percentage. At least the operators will be notified when spool space gets low and can take the appropriate action.

Finally, we get to the spool utilization report for each of the partitions. This report should be reviewed to be certain that spool utilization is within normal limits. As the spool fills, JES3 performance begins to deteriorate. This is particularly true for the default partition, which holds the majority of the spool control blocks for a jobs. Using spool partitioning, some installations find that they can run special purpose partitions at a higher utilization rate and not adversely affect JES3 performance.

Note: This report shows the SPOOL5 data set to be 100% used. The entire data set is dedicated to a single track table extent. It also leads into the discussion about the STT.

Single Track Table (STT)

The STT is used for various spool resident JES3 control blocks. The intent is to spread the I/O activity to the STT. Loss of a pre-allocated STT extent is no longer cause for a cold start. If the preallocated STT fills, JES3 gets a track group from the default partition and makes it an STT extent.

```
SINGLE TRACK TABLE SPACE ALLOCATION SNAPSHOT
                        ****** RANGE *******
     DATA SET               LOW       HIGH     RECORDS  RECORDS
     NUMBER   DDNAME    CYL  HEAD  CYL  HEAD  DEFINED  ALLOCATED
         2    SPOOL1    000001A 7  000001A 9      24     24 100%
```

In the previous example, there is only one STT extent. It was defined in the initialization stream. There has never been an overflow of the STT. If the STT expands it never voluntarily contracts. You should pre-allocate enough STT space and enough extents to insure that the STT never expands. Having the STT placed randomly in the default partition is detrimental to good spool performance. The number of STT extents should be in the two to four range, spread across as many paths as are available. Expansion of STT is indicative of spool performance or code problems.

The STT contains:

- DJC net control blocks
- Checkpoint records for:
  - MDS
  - GMS
  - Dynamic allocation
  - Volume unavailable table
  - Online devices
  - FSS status
  - Deadline control blocks
- JESNEWS
- Control blocks for called DSPs
- JOB0 control blocks (for example, JDS and OSE)

SPOOL I/O Activity

This report is a sample version of the I/O activity to the spool as seen by JES3 and reported by JMF. The I/O presented in this report arises from USAM I/O or JSAM I/O originating in JES3, an FSS or a user address space.

```
SPOOL I/O ACTIVITY - BUFFERS READ AND WRITTEN PER SECOND
    VOLSER    DDNAME    TOTAL   LO # CYLS      2        ...    HI # CYLS
    SPOOLX    JES3JCT     2.72      2.72      .00       ...      .00
    SPOOL1    SPOOL1      3.86      1.44     2.41       ...      .00
    SPOOL2    SPOOL2      2.88       .00      .00       ...      .00
    SPOOL3    SPOOL3      3.52       .00      .00       ...      .00
    SPOOL4    SPOOL4       .00       .00      .00       ...      .00
              SPOOL5       .00       .00      .00       ...      .00
```

This example describes the number of buffers read/written per second on a spool data set and the relative location on the volume of the buffers. The volume containing the spool data set is divided into ten parts (not the spool data set). The report is based on volume not the data set. JES3 allocates spool space from the center of the data set out. To look at this report and infer anything about the activity on this volume, you must know where the spool data set resides. If the data set encompasses the entire volume and you see a great number of buffers read/written at the “ends”, the disconnect time will be high (RMF will verify this) because of increased seek distances. Also, spool response time has increased and JES3 responsiveness has decreased. You will also see that the spool data set space utilization is high (see the previous chart).

Do not confuse number of buffers read/written to spool per second with the number of I/O operations to spool per second; they are not the same. JMF will only tell you about buffers. You must consult RMF for I/O operations per second, disconnect time, and esoteric names used.

```
BUFFER CHAINING BY SPOOL DATA SET
    DATA SET      TOTAL                              # OF CHAINED BUFFERS
    NUMBER     BUFFERS        1        2        3        ...        11+
        1          748       738       10        0        ...          0
                             98%       1%       0%        ...         0%
        2        1,058       775      150      102        ...          0
                             73%      14%       9%        ...         0%
        3          790       617      138       27        ...          0
                             78%      17%       3%        ...         0%
        4          965       586      228      114        ...          0
                             60%      23%      11%        ...         0%
        5            0         0        0        0        ...          0
                              0%       0%       0%        ...         0%
        6            0         0        0        0        ...          0
                              0%       0%       0%        ...         0%
SDM EXCEPTIONAL CONDITIONS
     JSAM BUFFERS NOT AVAILABLE =   0%
     USAM BUFFERS NOT AVAILABLE =   0%
     MINIMAL/MARGINAL TRACK CONDITIONS DID NOT OCCUR IN ANY PARTITION
AWAITS FOR BUFFERS DURING MONITORING     0   EVER = 00000000
```

This example gives a distribution of the number of chained records per I/O operation on a spool data set basis. JES3 will chain multiple requests together (even order the requests to minimize the seek distances) on a spool extent basis if there are multiple requests outstanding at the termination/initiation of an I/O request. The above report is an example of what you should not see in a healthy spool environment. You should have at least 90% of the I/O requests show up in the first column. This indicates that JES3 is able to schedule the I/O on demand and that the spool is responsive to the point that the request is satisfied before JES3 can generate a subsequent request. You should see 99% of the requests being satisfied in chains of two or three. When you see a report like the one above, it is a good indication that spool is not performing well. JES3 is generating spool requests faster than the spool (for example, DASD, channels, and control units) can respond.

The spool data sets were living on VM mini-disks that were on the same physical volume. Sometimes you will notice quite a few requests to spool that were ten or more buffers. This could be an indication of spool contention. However, the writer FSS address spaces perform full track READs of the spool data sets. When 4K spool buffers are defined, a request of ten buffers will be generated each time the writer goes to the spool for data. Hence, seeing eleven or more buffers may merely reflect writer FSS activity. Therefore, you should use RMF to assess device and path contention.

Finally, JMF reports the percentage of time that the JSAM or USAM buffers were all in use and the number of times IATNUC was AWAITed for a JSAM buffer. If these numbers aren't zero, then your buffer definitions are too small, and you should increase the number.

Control Blocks

The Control Block Status report provides information about JES3 control blocks and their utilization. There are “knobs” that the installation can turn which will effect the performance of JES3. However, quite a lot of the information is merely information.

- Resqueue buffers
- FCTs
- Console buffers
- JSAM and USAM buffers
- Job Control Table (JCT) and Job Queue Element (JQE)
- Staging Areas

```
Control Block Statics

      RESQUEUE CELL POOL STATISTICS
           TOTAL NUMBER OF CI SECONDARY EXTENTS IN POOL =    0
           TOTAL NUMBER OF CI RESQUEUES IN POOL =  112
            .
            .
            .
           NUMBER  OF COMMON RESQUEUES IN PRIMARY EXTENT =  102
           NUMBER  OF COMMON RESQUEUES FOR SECONDARY EXTENT =   51


 JQE/JCT ACCESS METHOD REPORT
     JCT DATA SET INFORMATION
        JCT SIZE (WITH SRF PREFIX) =    436   BYTES
        NUMBER OF JCT READ I/O'S   =      0
        NUMBER OF JCT WRITE I/O's  =   1057
        NUMBER OF JOBS ADDED       =    185
        NUMBER OF JOBS DELETED     =    200
     JCT DATA SPACE INFORMATION
        JCT DATA SPACE SIZE        =      3.10 MEGABYTES
        READ REQUESTS                   NUMBER   PERCENT
          PAGE IN REAL STORAGE     =     1092     99.72%
          PAGE NOT IN REAL STORAGE =        3       .27%
        WRITE REQUESTS                  NUMBER   PERCENT
          PAGE IN REAL STORAGE     =     1054     99.71%
          PAGE NOT IN REAL STORAGE =        3       .28%
        PAGE ALLOCATION                 NUMBER   UTILIZATION
          MINIMUM                  =      316     19.43%
          AVERAGE                  =      316     20.09%
          MAXIMUM                  =      317     20.81%
        NUMBER OF PAGES RELEASED   =        1
     JQE INFORMATION
        JQE0 TABLE SIZE            =         .35 KILOBYTES
        JQE1 TABLE SIZE            =         .89 KILOBYTES
        JQE2 TABLE SIZE            =       20.00 KILOBYTES
        JQE3 TABLE SIZE            =       56.80 KILOBYTES
        JQE4 TABLE SIZE            =      626.46 KILOBYTES
        JQE4 ALLOCATION                 NUMBER   UTILIZATION
          MINIMUM                  =     2547     81.67%
          AVERAGE                  =     2568     82.35%
          MAXIMUM                  =     2590     83.05%
```

```
JES3 CONTROL BLOCK UTILIZATION
     FCT ENTRY USAGE
          PREALLOCATED =  200  +  24 PERMANENT FCT'S
          MINIMUM =   37
          MAXIMUM =   45
          AVERAGE =   37

CONSOLE BUFFER USAGE
  PREALLOCATED = 500
  MINIMUM =   15
  MAXIMUM =   96
  AVERAGE =   18
  SIZE OF PRIMARY EXTENT =  500 BUFFERS
  SIZE OF SECONDARY EXTENT =   60 BUFFERS
  SECONDARY EXTENT LIMIT =   3
  NUMBER OF RESERVED BUFFERS =   76
  NUMBER OF SECONDARY EXTENTS CURRENTLY IN USE =   0
  MAXIMUM NUMBER OF SECONDARY EXTENTS EVER USED =  24
  MAXIMUM NUMBER OF RESERVED BUFFERS EVER USED =    0
  SECONDARY CONSOLE BUFFER EXTENTS EXCEEDED =   0%
JSAM BUFFER USAGE
  TOTAL DEFINED = 1024
  MINIMUM =   11
  MAXIMUM =  104
  AVERAGE =   25
  SIZE OF PRIMARY EXTENT =  500 BUFFERS
  SIZE OF SECONDARY EXTENT =  250 BUFFERS
  SECONDARY EXTENT LIMIT =     4
USAM (PROTECTED) BUFFER USAGE
  TOTAL DEFINED =  104
  MINIMUM =    0
  MAXIMUM =  103
  AVERAGE =    0
STAGING AREA USAGE
  ACTIVE STAGING AREA COUNT FROM SVT(SVTSACNT) =   14
  MAXIMUM STAGING AREAS EVER USED =  689
TOTAL ACTIVE STAGING AREAS
  MINIMUM =   11
  MAXIMUM =   50
  AVERAGE =   16
```

The RESQUEUE cell pool report cannot be changed and there are no “knobs” to influence the size or number of extents in each RQ cell pool.

The JQE/JCT access method reports provides information about the:

- Size of the JCT
- Number of JCT reads/writes
- JCT data space use

JES3 will disable the JCT and use only the disk resident JCT. If JMF says that the JCT is disabled, you need to figure out why. It takes a hotstart to recover the JCT data space.

All the JCT reads were done from the data space. Look at the number of JCT reads that were satisfied without I/O to the paging subsystem. In this instance, the system performed well. Having to take a trip through the paging subsystem for some critical information may not be preferable to doing I/O to a well tuned spool. To prevent delays in accessing the JCT, use storage isolation. JES3's data space is essentially an extension of the address space with respect to its real storage requirements.

JMF also reports on the storage reference patterns for the JCT data space. You will receive the number of allocated pages and an indication of how densely packed the active JCTs are into the data space. The JCT utilization is the ratio of the space required by the in use JCTs relative to the space represented by the number of “in use pages” in the data space. Obviously, you would like this number to be close to 100. This is an interesting number, but there is no external mechanism to affect it. Only a hot start, which causes the data space to be rebuilt, will change the density of the JCTs.

The JQE information is there for informational purposes only. There is nothing you can do to influence the packing. The size of the tables is determined by the number of jobs allowed in the system and the range of defined job numbers. The JQE4 utilization numbers represent the density of the active JQE4s among those pages held in storage for JQE4s.

The control block utilization information describes the number of FCTs used and the number of pre-allocated FCTs. The number of FCTs that you specify in the initialization stream should be at least as many as, if not larger than, the average used. You have the choice of having FCT entries available for use or having IATNUC take the trip through GETMAIN each time one is required.

JMF reports on console buffers. JES3 makes all the decisions on console buffers.

Job Analysis

The job monitoring report is produced by JMF in response to specifying JOB=nn. JMF will also record MDS and GMS subqueue information for the 'nn' tracked jobs if requested. JSTAT=m requests JMF to keep 'm' of these MDS and GMS entries.

MDS and GMS Information

Main device scheduling (MDS) and generalized main scheduling (GMS) report on:

- "Tracked job's" time on SE
- Jobs in execution by processor
- Jobs in execution by job class
- Allocated JES3 devices by device class
- Allocated JES3 devices by SETNAME
- Length of each RESQUEUE index
- JSS work-to-do queue
- MDS and GMS scheduling analysis

When you run JMF with JOB=25 jobs to be tracked, you will notice that the jobs tracked are not the ones for which you have any interest. This is because JMF will track the first 25 (in this case) jobs that it finds on the resqueue chain. At the time the interval begins, chances are that none of the interesting jobs are in this set of RQs. The jobs of interest may not even have an RQ at the start of the interval.

There is some information of value which will only be produced if you invoke job monitoring. For this reason, specify JOB=1. This also reduces some of the JMF overhead.

```
JOB ANALYSIS
     JES3    (JOB00000),  RQPRTY = 15
               JES3 DSP'S                                       20.0
     SYSLOG  (JOB00001),  RQPRTY = 15, CLASS = A       , GROUP = JES
               ON MAIN                                          20.0
     DYNPARS (JOB00002),  RQPRTY = 15
               OUTPUT WTR                                       20.0
     MOUNT   (JOB00003),  RQPRTY = 11
               OUTPUT WTR                                       20.0
     IRRDPTAB(JOB00004),  RQPRTY = 15
               OUTPUT WTR                                       20.0
     INITJES3(JOB00005),  RQPRTY = 15, CLASS = A       , GROUP = JES
               ON MAIN                                          20.0
     INITJES3(JOB00006),  RQPRTY = 15, CLASS = A       , GROUP = JES
               ON MAIN                                          20.0
     JMF     (JOB00010),  RQPRTY = 15
               JES3 DSP'S                                       20.0
                 JMF                                            20.0

 JES3 FUNCTION SUMMARY
 FUNCTION           AVERAGE TIME  JOBS            MINIMUM TIME  JOB#
 JES3 DSP'S       4 MIN.   .00 SEC.    7        1 MIN. 34.00 SEC. (1370)
   OUTSERV        4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (0000)
   PURGE                 1.00 SEC.    1                1.00 SEC. (1370)
   DC             4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (1006)
   IC             4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (1005)
   INTRDR         1 MIN. 37.00 SEC.    2        1 MIN. 33.00 SEC. (1370)
   NJE            4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (1414)
   NJECONS        4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (1008)
 ALLOCATION       4 MIN. 57.00 SEC.    1        4 MIN. 57.00 SEC. (1254)
 ON MAIN          4 MIN. 57.00 SEC.    6        4 MIN. 57.00 SEC. (1349)
 OUTPUT WTR       4 MIN. 57.00 SEC.   36        4 MIN. 57.00 SEC. (1318)
 COMPLETE                2.00 SEC.    2                2.00 SEC. (1370)
 MDS AND GMS SCHEDULING ANALYSIS
       TOTAL NUMBER OF ALLOCATION RETRIES DURING JMF INTERVAL:     51
       NUMBER OF ALLOCATION ATTEMPTS REJECTED WITHOUT READING JST:    42
       NUMBER OF ALLOCATION ATTEMPTS ALLOWED TO READ JST:      9
       NUMBER OF ALLOCATION ATTEMPTS REJECTED AFTER READING JST:      1
       NUMBER OF SUCCESSFUL ALLOCATIONS:      7
  ELIGIBLE MAIN NOT ONLINE OR IPLED
    SY2              4 MIN. 57.00 SEC.    1     4 MIN. 57.00 SEC. (1254)
  REQUIRED RESOURCE NOT AVAILABLE
    SY1              4 MIN. 57.00 SEC.    1     4 MIN. 57.00 SEC. (1254)
```

Job analysis is included to exhibit the type of information that JMF will provide for the tracked jobs. JMF has included the MDS and GMS scheduling analysis for JOB01254. In this case, the job needed a tape drive that was offline to SY1. SY2 was not online forcing the job to wait. You can tell that this JMF run was from a 2.2.1 level system. The job number is four digits instead of five. You can also tell that this JMF has a problem.

The FCT function summary uses the ‘nn’ jobs tracked (in this case 50) to present the average time these jobs have spent in various phases along with the job that had the minimum and maximum (not shown) time at each point. Following this is the MDS and GMS scheduling analysis. The five lines of information about allocation retries are applicable to the entire allocation queue, not just the tracked jobs. What you are looking for, in this case, are very few allocation attempts rejected after reading the JST. If this is not the case, you should make certain that SETUP has not discontinued the use of the ARLs. This will occur if there has been some type of non-recoverable error. A message will be issued to the operator. SETUP is significantly less expensive if the ARLs are working. You should remember that this is for allocation retries only. Jobs that make it through allocation on their first attempt are not recorded.

Job Segment Scheduler (JSS) Queues

The JSS-READY queue is one that requires attention. If you observe the minimum queue length and the average queue length to be large, JSS is backlogged with work. JSS is not getting jobs from ending function on one DSP to the start of the next DSP. This is due to JSS not getting dispatched. Look at the FCT and AWAIT report to determine why.

```
JSS WORK-TO-DO QUEUE REPORT
     JSS       MINIMUM      MAXIMUM     AVERAGE
     QUEUE     QUEUE        QUEUE       QUEUE
     NAME      LENGTH       LENGTH      LENGTH
   JSS-READY       0           93          0
   CATALOG-WAIT    0            0          0
   RSQ-WAIT        0            0          0
   PROCLIB-WAIT    0            0          0
   MAIN-WAIT      69          162        161
   DSP-WAIT        9           11          9
   MPLOC-WAIT      0            0          0
   DUPNAME-WAIT    0           20         10
     CI JSAM-WAIT    0            0          0
```

In this case, the maximum value looks quite high. This occurs when a priority is released (as so happened here) or the operator entered an *S JSS command while JES3 is processing. You should seldom see any entries on RSQ-WAIT or PROCLIB-WAIT.

A job will appear on MAIN-WAIT if it cannot be scheduled for main service. This occurs when the initiator class or group is not available on any of the eligible main processors.

CATALOG-WAIT indicates the number of jobs waiting for an SMS-managed catalog to become available to schedule the job for C/I.

DSP-WAIT indicated the number of jobs waiting for DSPs. These jobs are waiting for the DSP use count to be less than the maximum.

MPLOC-WAIT indicates the number of jobs waiting for a main processor to become available to perform LOCATE processing.

DUPNAME-WAIT indicates the number of jobs waiting for the main SE because a job of the same name is already active in main. Two batch jobs with the same name cannot be in main at the same time.

CI JSAM-WAIT queue contains jobs that are waiting for JSAM buffer usage by C/I to decrease below the allowable threshold.

```
 JOBS IN EXECUTION BY MAIN PROCESSOR
   JOBS IN EXECUTION ON SY1    JES3 GLOBAL  STARTED INITIATORS = 13
          .
          .
          .
   ALLOCATED JES3 DEVICES BY SETNAME ON SY1
          .
          .
          .
   JOB QUEUE LENGTHS BY JES3 FUNCTION
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: JES3 DSP'S
                    4 +
                      |
                    8 +********************************
                      |****
                   12 +****
                      |**
                   16 +
                      |
                   20 +
                       ---+---+---+---+---+---+---+---+---+---+
                          1   2   3   4   5   6   7   8   9   1
                          0   0   0   0   0   0   0   0   0   0
                 AVERAGE=      9, MINIMUM=      8, MAXIMUM=     15
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: CI IN AN FSS ADDRESS SPACE
                 AVERAGE=      1, MINIMUM=      0, MAXIMUM=      3
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: AWAITING POSTSCAN (BATCH)
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: AWAITING POSTSCAN (DEMAND)
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: FETCH
                 AVERAGE=      1, MINIMUM=      0, MAXIMUM=      2
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: VOLWAIT
          .
          .
          .
       JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: MAX RQNDX
```

The next report is quite long and yields information about activity in each main for all the initiator classes and groups that are defined in the initialization stream.

Sample reports are not included because they are fairly easy to understand. When looking at one of these reports, observe the number of started initiators and the number in use on a processor. If they differ radically, look through the groups to see if there are a lot of empty initiators. You may have experienced a workload change that requires adjustment of the GMS work load parameters.

The job queue lengths by JES3 function information provides you with a snapshot of where the jobs are located during the interval. Sometimes it is useful detecting bottlenecks in JES3 and for detecting changes in workload.

The jobs in the system are categorized by the RQINDEX function. First, you see jobs active on some JES3 DSPs including:

- Called DSPs
- NJESND DSPs
- INTRDR DSPs
- Jobs scheduled for C/I, PURGE, etc.

The remaining RQINDEX functions are those that one normally associates with normal jobs moving through the processes of being setup to run, executing, and sysout disposal and deletion from the system. You get the minimum, maximum, and average queue lengths.

Look at those phases of processing for which you have control. Is there a large backlog for CI or POSTSCAN? Is the VOLWAIT queue large and the ALLOCATION queue empty? Is there a large queue of jobs in GMS select? If you can detect the bottlenecks, you can improve the work load flow. Most of the time, this report is useful in showing the distribution of the work in the system.

High CPU Activity

JMF has the capability of detecting and recording modules that the IATNUC and IATAUX tasks are executing during JMF sampling. This report is optional, but is extremely useful when investigating where certain FCTs or JES3 functions are using CPU resources. This report compliments the FCT and AWAIT report.

```
JES3 HOT SPOT ANALYSIS
  ENTRIES SORTED BY % BUSY
  SPOT = 255   WIDTH = 100  NAME = ALL       HFCT = ALL
  TYPE FIELD: C=CSA, J=JES3 PRIVATE, L=MLPA, M=MVS NUCLEUS, N=IATNUC, P=PLPA,
  EC=EXTENDED CSA, EJ=EXTENDED JES3 PRIVATE, EL=EXTENDED MLPA, EP=EXTENDED PLPP
                                    - % OF RUN ACTIVE  -% OF TASK ACTIVE
SECT   TYPE   START    END      OVERALL  IATNUC  IATAUX    IATNUC  IATAUX
IATGRCT    N  00000D00  00000DFF 1.20 %  1.20 %   .00 %   38.29 %   .00 %
MVS NUCL   M  000B8C00  000B8CFF  .33 %   .33 %   .00 %   10.63 %   .00 %
IATSSCM   EP  00000800  000008FF  .26 %   .26 %   .00 %    8.51 %   .00 %
IATGRSV    N  00000000  000000FF  .20 %   .20 %   .00 %    6.38 %   .00 %
IATDMNC    N  00000F00  00000FFF  .13 %   .13 %   .00 %    4.25 %   .00 %
IATGRTX   EC  00000000  000000FF  .13 %   .13 %   .00 %    4.25 %   .00 %
IATCNWO    N  00000700  000007FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATDMDS   EP  00000400  000004FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATDMNC    N  00000400  000004FF  .06 %   .06 %   .00 %    2.12 %   .00 %
              00002000  000020FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATGRCT    N  00000100  000001FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATGRPT    N  00001000  000010FF  .06 %   .06 %   .00 %    2.12 %   .00 %
              00002500  000025FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATSSCM   EP  00000000  000000FF  .06 %   .06 %   .00 %    2.12 %   .00 %
MVS NUCL   M  00044700  000447FF  .06 %   .06 %   .00 %    2.12 %   .00 %
              00130F00  00130FFF  .06 %   .06 %   .00 %    2.12 %   .00 %
FCT-CODE  EJ  N/A       N/A       .06 %   .06 %   .00 %    2.12 %   .00 %

JES3 HOT SPOT ANALYSIS
  ENTRIES SORTED BY CSECT NAME
  SPOT = 255   WIDTH = 100  NAME = ALL       HFCT = ALL
  TYPE FIELD: C=CSA, J=JES3 PRIVATE, L=MLPA, M=MVS NUCLEUS, N=IATNUC, P=PLPA,
  EC=EXTENDED CSA, EJ=EXTENDED JES3 PRIVATE, EL=EXTENDED MLPA, EP=EXTENDED PLPP
                                    - % OF RUN ACTIVE  -% OF TASK ACTIVE

SECT   TYPE   START    END      OVERALL  IATNUC  IATAUX    IATNUC  IATAUX
IATCNWO    N  00000700  000007FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATDMDS   EP  00000400  000004FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATDMNC    N  00000400  000004FF  .06 %   .06 %   .00 %    2.12 %   .00 %
              00000F00  00000FFF  .13 %   .13 %   .00 %    4.25 %   .00 %
              00002000  000020FF  .06 %   .06 %   .00 %    2.12 %   .00 %
IATGRCT    N  00000100  000001FF  .06 %   .06 %   .00 %    2.12 %   .00 %
              00000D00  00000DFF 1.20 %  1.20 %   .00 %   38.29 %   .00 %
IATGRPT    N  00001000  000010FF  .06 %   .06 %   .00 %     2.12 %  .00 %
              00002500  000025FF  .06 %   .06 %   .00 %     2.12 %  .00 %
IATGRSV    N  00000000  000000FF  .20 %   .20 %   .00 %     6.38 %  .00 %

IATGRTX   EC  00000000  000000FF  .13 %   .13 %   .00 %     4.25 %  .00 %
IATSSCM   EP  00000000  000000FF  .06 %   .06 %   .00 %     2.12 %  .00 %
              00000800  000008FF  .26 %   .26 %   .00 %     8.51 %  .00 %
MVS NUCL   M  00044700  000447FF  .06 %   .06 %   .00 %     2.12 %  .00 %
              000B8C00  000B8CFF  .33 %   .33 %   .00 %    10.63 %  .00 %
              00130F00  00130FFF  .06 %   .06 %   .00 %     2.12 %  .00 %
FCT-CODE  EJ  N/A       N/A       .06 %   .06 %   .00 %     2.12 %  .00 %
```

This report has a good deal of useful information. The report shows the hot spots sorted by percent busy, name, and the location of the hot spot. You get the percentage of time that this portion of code was being “run” during the entire interval and as a percentage of IATNUC (or IATAUX) activity.

You can have JMF monitor hot spots on the entire module basis or sections of a module by specifying a WIDTH value. In this instance, we asked for the section to be 100 (in hexadecimal) bytes in length.

Hot spot analysis can be restricted from all modules (the default, taken here) to some subset of JES3 modules. For instance, you can specify NAMES=IATGR and restrict the report to those modules which start with this string. For example, IATGRLD, IATGRCT, IATGRSV, etc.. You can further restrict the analysis by specifying HFCT=name (for example, TSODRVR). In this case, only module activity invoked under the specified FCT will be tracked.

In the process of analyzing a potential or suspected JES3 performance problem, you may have to make several JMF runs. You will need to change the hot spot parameters to determine exactly where a hot FCT is spending time and CPU resources.

Looking at the first chart, we see that IATGRCT shows that 58% of the active IATNUC time was spent in the module between locations x'00000D00' and x'00000DFF'.

Internal Reader

The internal readers manage themselves within certain bounds. The installation has control over the maximum number of active internal readers through initialization stream parameters and operator commands. The number of internal readers will range from two to the maximum (20 in this case). When an internal reader finishes a job, it will end if the number of inactive readers would exceed the active readers or if there are internal readers waiting for the DSP use count to decrease. The installation may raise the number of internal readers if enough JSAM buffers exist and internal reader activity warrants. To ensure the readers are fed work, you must make certain that the DMJA FCTs have capacity (you may need more) ; therefore, check the FCT and AWAIT analysis reports. Installations having a lot of DJC activity may find that increasing the number of internal readers does not help because of AENQs on JNCBCTL or AWAITs for generalized subtasks. In either case, JMF will tell you.

```
JES3 INTERNAL READER DSP ANALYSIS REPORT
     MAXIMUM ACTIVE INTERNAL READER DSPS ALLOWED       20
     MINIMUM  NUMBER OF ACTIVE INTRDRS        2
     MAXIMUM  NUMBER OF ACTIVE INTRDRS        5
     AVERAGE  NUMBER OF ACTIVE INTRDRS        2
     AVERAGE NUMBER OF IDLE INTERNAL READER DSPS          1
     AVERAGE LENGTH OF INTERNAL READER QUEUE         0
     % OF JMF SAMPLES ACTIVE INTRDRS COUNT AT MAXIMUM      .00 %
     % OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO         .00 %
```

SSI Response Time

```
     SSOB          NUMBER        NUMBER        MINIMUM        MAXIMUM
  FUNCTION       REQUESTS      RESPONSES      RESPONSE       RESPONSE
    CODE         RECEIVED      RECEIVED         TIME          TIME¹
 WTO/WTOR            1             1          22.868         22.868
 JOB TERM            0             0            .000           .000
 MDS DYNAL           0             0            .000           .000
 MDS UNALLOC         0             0            .000           .000
 MDS CHGDD           0             0            .000           .000
 MDS CHGNQ           0             0            .000           .000
 JDS ACCESS          0             0            .000           .000
 SPOOL ALLOC         0             0            .000           .000
 ENDREQ              0             0            .000           .000
 DYNAL DYN           0             0            .000           .000
 DYNAL UNAL          0             0            .000           .000
 DYNAL CHGDD         0             0            .000           .000

¹An asterisk character (*) indicates that the longest possible response time is displayed, because the
total
 response time (current time minus start time) would have caused a register overflow during the
calculation.
```

Figure 23. SSI RESPONSE REPORT

The SSI response report gives you an indication of how well JES3 is processing requests for JES3 global services. You get the number of requests that JES3 sees and the amount of time it takes to process the staging area. The number is in milliseconds and the information is only for requests originating on the global processor.

Outstanding Requests

```
DESTQ
-----

SSI DESTINATION QUEUE REPORT
    DESTINATION                 FSS      FSA   MINIMUM MAXIMUM AVERAGE
       QUEUE                    NAME     NAME  QUEUE   QUEUE   QUEUE
       NAME                                    LENGTH  LENGTH  LENGTH
    MAIN SERVICE                                  00      04      00
    GENERALIZED MAIN SCHEDULING                   05      05      05
    VERIFY                                        00      01      00
    LOCATE                                        00      01      00
    JES DATA MANAGEMENT                           00      00      00
    USER TRACK ALLOCATION                         00      02      00
    SVC 34                                        00      21      00
    WTO                                           00      16      00
    RESERVED                                      00      00      00
    DYNAMIC ALLOCATION                            00      00      00
    COMMON ALLOCATION                             00      00      00
    COMMON UNALLOCATION                           00      03      00
    VERIFY RESPONSE                               00      01      00
    CHANGE DDNAME                                 00      00      00
    WORK TO DO DRIVER                             00      00      00
    SSICS QUEUE 1                                 00      00      00
    SSICS QUEUE 2                                 00      00      00
    MODIFY DRIVER                                 00      00      00
    INQUIRY DRIVER                                00      00      00
    CHANGE ENQUEUE USE ATTRIBUTE                  00      01      00
    PROCESS SYSOUT                                00      03      00
    TAPE DDR PROCESSING                           00      00      00
    RESERVED                                      00      00      00
    RESERVED                                      00      00      00
    DYNAL - ALLOCATION                            00      03      00
    DYNAL - UNALLOCATION                          00      13      00
    DYNAL - CHANGE DDNAME                         00      01      00
    DASD DDR PROCESSING                           00      00      00
    COMMUNICATION FROM AN FSS
                              GBLCIFSS            00      04      00
                              PR910               00      00      00
                                       PR910      00      04      00

    CI DRIVER                                     00      01      00
    SPOOL WRITE ERROR                             00      00      00
    BDT SUBSYSTEM                                 01      01      01
    BDT SHUTTLE STARS                             01      01      01
    ARM PJCL                                      00      00      00
    SYSOUT APPL PROG INTERFACE                    00      01      00
    ENHANCED STATUS                               00      00      00
```

JMF will report on the outstanding requests that JES3 must process that have arrived through staging areas. This report is useful when diagnosing problems where JES3 is “not responding”. Without this information, you cannot determine if JES3 is not responding because it is hung somewhere or there is no work to do. For example, TSO/E logons may be slow because MSGC cannot process the outstanding requests or the logon request is does not get to the global for processing because of some other delay. To the TSO/E user, there is no difference in the symptoms. Without this report, you may not be able to determine where the problem lies.

This report should be used in conjunction with the FCT - AWAIT and hot spot reports to assist in determining where the bottleneck lies.

There is some misleading information in this report. The remaining queue values reflect real work that JES3 must do. It takes considerable JES3 knowledge to know which FCT, which queue, or why a request is placed on one queue versus another. Start by looking at queues that seem to have a high residency and determine which FCT is not processing the requests and why.

Chapter 6. Reading a JMF hardcopy report

The job monitor facility (JMF) hardcopy report is divided into the following six major reports:

- **System Report** consists of the:
  - General Information Section
  - Working Set Section
  - JES3 Subtask Section
  - Global Processor Description Section

  You can use these sections to obtain information on the CPU utilization of the nucleus and auxiliary task. It also describes JES3's real storage requirements and configuration information for your installation.
- **FCT and AWAIT Report** consists of the:
  - FCT and AWAIT Report Section
  - DSP Analysis Report
  - FCT and AWAIT Highlight Report Section
  - DMJA FCT Summary Section
  - JES3 WAIT Analysis Section

  You can use these sections to obtain information on the workload distribution in your installation.
- **Spool Data Management Report** consists of the:
  - SDM Parameters Section
  - Spool Data Set Description Section
  - Spool Partition Description Section
  - Spool Space Utilization Snapshot Section
  - Single Track Table Space Allocation Section
  - Spool I/O Activity Section
  - Buffer Chaining by Spool Data Set Section
  - SDM Exceptional Conditions Section

  You can use these sections to determine if JES3 is accessing your installation's spool environment efficiently.
- **Resqueue Cell Pool Usage Report** describes the utilization of your installation's resqueue cell pools.
- **JES3 Control Block Utilization Report** contains information on the status of your installation's buffer, staging area, and FCT usage.
- **JQE/JCT Access Method Report** contains information on the JCT cache and the JCT data set.
- **Job Analysis Report** consists of the:
  - Job Analysis Section
  - JSS Work-to-Do Queue Report
  - JES3 Function Summary Section
  - Jobs in Execution by Main Processor Section
  - Jobs in Execution by Job Class Section
  - Allocated JES3 Devices by SETNAMEs Section
  - Job Queue Lengths Section

  You can use these sections to determine the distribution of work in your installation.

- **SSI Report** consists of the:
  - SSI Response Report Section
  - SSI Destination Queue Report Section

  You can use the SSI Report to determine if JES3 is handling requests from other address spaces efficiently.
- **Workload Manager Information** consists of the:
  - Service class information
  - SYSPLEX/SYSTEM level job eligibility information

  You can use the SSI Report to determine if JES3 is handling requests from other address spaces efficiently.

Usage

To get the results you expect from JMF, you will need to determine:

- The number of reports and samples you need to ensure the results of your analysis are correct.
- The number of functional control tables (FCTs) you need to monitor to either obtain information for the appropriate FCT or give enough information for analysis.

Determining the Number of Reports

JMF generates one or more reports depending on the values specified in the INTERVAL and TIME parameters on the modify command. To determine the number of reports that will be generated, use the following formula:

```
Number of reports = TIME/INTERVAL
```

If a remainder exists, JMF will round up. For example, if a *X JMF,TIME=70,INTERVAL=15 command is entered, the number of reports that JMF generates equals 70 divided by 15; five reports will be generated. The final report is generated even though an entire interval has not been completed.

Determining the Number of Samples

JMF generates one or more samples for a report depending on the values specified in the INTERVAL and CYCLE parameters on the modify command. IBM suggests generating at least 1000 samples for each report. To determine values to specify on the INTERVAL and CYCLE parameters, use the following formula:

```
Number of samples = INTERVAL*60/CYCLE
```

For example, if 1000 samples and 4 reports should be generated in 60 minutes, the operator should enter a *CALL JMF,CYCLE=.9,TIME=60,INTERVAL=15 command to generate the results.

Note: The formula provides a method for estimating the number of samples. It is not an exact calculation and varies based upon your system overhead.

Determining the Number of FCTs

JMF can report on its use of FCTs and use an FCT report to identify how the work is distributed across JES3 functions. An FCT report contains information on the first 250 FCTs in the FCT chain. If you require information for a specific FCT, you will need to determine the number of FCTS on the FCT chain that precede the required FCT. The last entry in the report will be the requested FCT. Use the following formula to approximate the number of FCTs in your installation.

```
Number of FCTs=

      Number of permanently resident FCTs
```

```
        + 2 * the number of MAINPROC statements
        + the number of FCTs for every active device
        + the number of RJP lines that are started
        + the number of BSC NJE lines that are started
```

JMF obtains the SYSOUT class for a printed report from the DBGCLASS=parameter on the STANDARDS initialization statement.

Description of the JMF hardcopy report

```
                                          DATE = 01/01/09     TIME = 112507


      SAMPLING CYCLE =   .20 SECONDS           SAMPLES TAKEN = 00008794


             JMF CALL COMMAND: *X JMF,FCT=400,SPOT=999,TIME=120,INTER=30,WTR=Y,WIDTH=50,HFCT=ALL


IATNUC POSTED - ACTIVE                5.39 %          IATAUX POSTED - ACTIVE                 .00 %
IATNUC POSTED - NOT ACTIVE            5.32 %          IATAUX POSTED - NOT ACTIVE             .00 %
IATNUC NOT POSTED                    84.61 %          IATAUX NOT POSTED                   100.00 %
IATNUC IS NONSTANDARD WAIT             .00 %          IATAUX IN NONSTANDARD WAIT             .00 %
IATNUC SUSPENDED - LOCAL LOCK REQ     4.67 %          IATAUX SUSPENDED - LOCAL LOCK REQ      .00 %
IATNUC SUSPENDED - OTHER               .00 %          IATAUX SUSPENDED - OTHER               .00 %
```

The General Information Section provides you with a description of:

- The job monitor facility (JMF) command you issued to generate the report
- The nucleus (NUC) and auxiliary (AUX) task

It allows you to evaluate the activity in the nucleus and auxiliary task.

Notes for the General Information Section:

Work in the JES3 address space can be processed under the NUC or AUX task. The work processed under each task causes the task to be placed in one of six mutually exclusive states. The task can be one of the following:

- Posted and using the CPU
- Posted but not using the CPU
- In a normal MVS wait state
- In a nonstandard MVS wait
- In a suspended state because a local lock is required
- In a suspended state for some other reason

The nucleus or auxiliary task can be in only one of the states at a time. For the NUC and AUX task associated with JES3, JMF reports the percentage of sample time the task was in a state.

Description of the General Information Section:

DATE = mm/dd/yy - the date JMF generated the report.

TIME = hhmmss - the time of day that JMF generated the report.

SAMPLING CYCLE = nn.nn SECONDS - is the time that elapsed between samples.

SAMPLES TAKEN = nnnnnnnn - is the number of samples that JMF took before generating the report.

JMF CALL COMMAND: *CALL JMF ... - is the *CALL command that you issued to generate the report.

task POSTED - ACTIVE nn.nn% - is the percentage of time the NUC or AUX task was using the CPU during the JMF sampling period.

task POSTED - NOT ACTIVE nn.nn% - is the percentage of time the NUC or AUX task was posted but was not using the CPU during the JMF sampling period.

task NOT POSTED nn.nn% - is the percentage of time the NUC or AUX task spent in a normal MVS WAIT state during the sampling period. The nucleus or auxiliary task is not posted when none of the JES3 functions under the nucleus or auxiliary task are ready to use the CPU.

task IN NONSTANDARD WAIT nn.nn% - is the percentage of time the NUC or AUX task spent in a wait state other than the normal MVS WAIT state during the sampling period. Page faults is an example of a nonstandard wait.

task SUSPENDED - LOCAL LOCK REQUIRED nn.nn% - is the percentage of time the NUC or AUX task was suspended while waiting for a local lock during the sampling period.

task SUSPENDED - OTHER nn.nn% - is the percentage of time the task was suspended for a reason other than waiting for a local lock during the sampling period.

Tuning Information:

The task information allows you to determine how much JES3 is utilizing the CPU. Use the percentage provided in POSTED - ACTIVE to determine the CPU utilization for the task.

The amount of CPU utilization for the NUC task should not exceed 60%. The amount of CPU utilization for the AUX task should not exceed 75%. If the CPU utilization goes over the recommended percentages, it may lead to performance degradation. If your installation is over the recommended amount of CPU utilization, you can:

- Use multi-tasking to offload some of the responsibilities of the NUC task
- Offload CI processing to a CI FSS address space
- Reduce the number of jobs in the system
- Avoid using dynamic writers.

```
JES3 WORKING SET


      8600K +
            |
      8800K +
            |****
      9000K +*******
            |*****
      9200K +**********
            |*****
      9400K +**********
            |*
      9600K +
            |
      9800K +
            |
     10000K +
            |
     10200K +
     10299K +
             ---+---+---+---+---+---+---+---+---+---+
                1   2   3   4   5   6   7   8   9   1
                0   0   0   0   0   0   0   0   0   0
                                                    0

     AVERAGE WORKING SET SIZE =  9236K

     MINIMUM WORKING SET SIZE =  8888K

     MAXIMUM WORKING SET SIZE = 10028K

     NUMBER OF FIXED PAGES  =  33 =   132K

     AUXILIARY SLOT COUNT =     0 =     0K

     THE ALLOCATED STORAGE FOR JMF IS       331K

JES3 PAGING COUNTS DURING JMF MONITORING

     PAGE-IN'S =           0

     PAGE-OUT'S =          0

     PAGE-RECLAIM'S =      0

     PAGING RATE =    .00 PAGES/SECOND

SYSTEM PAGING RATE (NON-SWAP, NON VIO)

     PAGING RATE =    .00 PAGES/SECOND
```

The Working Set Section provides you with information on the real storage requirements of the JES3 global address space. The Working Set Section gives you an approximation of JES3's real storage requirement.

Notes for the Working Set Section:

JMF illustrates how real storage is used in a histogram. Each asterisk in the histogram represents 2.5 % of the sampling time JMF found JES3 using the specified amount of real storage. The amount of time JES3 used real storage should total 100%. For example, for the graph shown above:

- 10% of the time JMF was taking samples, JES3 used 8900 kilobytes of real storage.
- 15% of the time JMF was taking samples, JES3 used 9000 kilobytes of real storage.
- 12.5% of the time JMF was taking samples, JES3 used 9100 kilobytes of real storage.
- 22.5% of the time JMF was taking samples, JES3 used 9200 kilobytes of real storage.
- 12.5% of the time JMF was taking samples, JES3 used 9300 kilobytes of real storage.
- 22.5% of the time JMF was taking samples, JES3 used 9400 kilobytes of real storage.
- 2.5% of the time JMF was taking samples, JES3 used 9500 kilobytes of real storage.

The JES3 Monitoring Facility (JMF) histogram for the JES3 WORKING SET can map working set sizes in the range of 1000K to 999999K. Working set sizes larger than 999999K are included in the maximum value on the histogram.

Description of the Working Set:

AVERAGE WORKING SET SIZE = nnnn K - is the average of amount of real storage JES3 used

MINIMUM WORKING SET SIZE = nnnn K - is the least amount of real storage JES3 used

MAXIMUM WORKING SET SIZE = nnnn K - is the largest amount of real storage JES3 used

NUMBER OF FIXED PAGES = nn = nn K - the number of fixed pages of real storage JES3 used.

AUXILIARY SLOT COUNT = nn = nn K FOR JMF - is the number of slots that JES3 used on your installation's auxiliary paging devices.

THE ALLOCATED STORAGE FOR JMF nnn K - indicates the amount of storage JMF used while monitoring JES3. This number is based on the amount of virtual storage used instead of the amount of real storage.

JES3 PAGING COUNTS DURING JMF MONITORING indicates the number of times JES3 pages were paged in and out of storage.

- PAGE-IN'S = nn - indicates the number of times the system brought a JES3 page from auxiliary storage into real storage.
- PAGE-OUT'S = nn - indicates the number of times the system moved a page of real storage to auxiliary storage.
- PAGE-RECLAIMS = nn - indicates the number of JES3 pages in real storage that were either marked to be release or released and later reclaimed by JES3.
- PAGING-RATE = .nn % PAGE/SECOND - indicates the number of JES3 pages that were paged in and out per second. See the tuning information for this section if the paging rate is above 5%.
- SYSTEM PAGING RATE = nn PAGES/SECOND - indicates the number of pages of storage the system paged per second.

Tuning Information:

If the paging rate is less than 5 pages/second, JES3 is able to obtain enough real storage. If the paging rate is above 5 pages/second, JES3 cannot obtain enough real storage and you may be experiencing a degradation in JES3's performance.

If you are experiencing a problem with the amount of real storage JES3 is able to use, use storage isolation to ensure JES3 has enough real storage for its operation. See *z/OS MVS Initialization and Tuning Guide* for additional information on storage isolation.

```
JES3 SUBTASKS POSTED CONCURRENTLY
     NUMBER OF SUBTASKS      1        2        3       4 OR MORE
     CONCURRENTLY POSTED   15.11 %    .68 %    .03 %    .00 %

JES3 SUBTASKS IN DISPATCHING SEQUENCE
         SUBTASK          % POSTED
        1  IATNUC            14.90 %
        2  IATGSC1             .28 %
        3  IATGSC1             .00 %
        4  IATIISB             .00 %
        5  IATIIST             .04 %
        6  IATIIST             .00 %
        7  IATAUX              .00 %
        8  IATGSC1             .02 %
        9  IATLVLC            1.23 %
       10  IATGSC1             .00 %
       11  IATGSC1             .00 %
       12  IATGSC1             .00 %
       13  IATGSC1             .03 %
       14  IATIIST             .00 %
       15  IATIIST             .02 %
       16  IATIIST             .02 %
       17  IATIIST             .00 %
       18  IATIIST             .00 %
 IATNUC POSTED BUT NO FCT POSTED =  30.67 %
 IATAUX POSTED BUT NO FCT POSTED =    .00 %
```

The JES3 Subtask Section contains information that describes the number of times JMF found a JES3 subtask posted during the JMF sampling period. The JES3 Subtask Section does not contain any information that you can use to diagnose or tune JES3, it provides only information.

Notes for the JES3 Subtask Section:

A subtask exists for each of the following JES3 functions:

- Processing that occurs under the JES3 main (Nuc) task
- Processing that occurs under the JES3 auxiliary (Aux) task
- Converter/Interpreter processing
- General routines for JES3 processing
- Locate processing used during C/I processing
- Main device scheduler (MDS) processing
- JESXCF communication
- SNA/RJP processing.

Description of the JES3 Subtask Section:

JES3 SUBTASKS POSTED CONCURRENTLY - indicates the number of JES3 subtasks that were found posted at the same time.

JES3 SUBTASKS IN DISPATCHING SEQUENCE - identifies the JES3 subtasks that run in the JES3 global address space. Each JES3 subtask is listed in the dispatching order with the percentage of time JMF found the subtask posted during the sampling time.

IATNUC POSTED BUT NO FCT POSTED = nn.nn% - provides the percentage of time JMF found the nucleus task posted but could not find an FCT posted that runs under the nucleus task.

IATAUX POSTED BUT NO FCT POSTED = nn.nn% - provides the percentage of time JMF found the auxiliary task posted but could not find an FCT posted that runs under the auxiliary task.

```
JES3 GLOBAL PROCESSOR DESCRIPTION

     CPU MODEL = 3090                                        REAL STORAGE SIZE = 63.5 MEGS

     GLOBAL PROCESSOR CPU SERIAL NUMBER:  140410  (1)

                                          240410  (2)

     JES3 CPU ID (FROM MAINPROC CARD):  JULLIET

     MVS RELEASE = SP3.1.0

     JES3 RELEASE = SP311

     JES3 IS NOT IN THE APG PRIORITY LEVEL

     JES3 IS NON-SWAPPABLE

     JES3 DISPATCHING PRIORITY = 255


JMF OVERHEAD

     MINIMUM =    .001232 SEC.

     MAXIMUM =    .026496 SEC.

     AVERAGE =    .004736 SEC.    2.36 % OF JMF CYCLE TIME


MVS OVERHEAD

     MINIMUM =    .000224 SEC.

     MAXIMUM =    .012176 SEC.

     AVERAGE =    .000368 SEC.     .18 % OF JMF CYCLE TIME
```

The JES3 Global Processor Description section contains information for JES3 running on the global in your installation. It also describes the attributes of the JES3 global address space.

Notes for the JES3 Global Processor Section:

The amount of real storage available on the global is provided in this section. JMF describes the amount of real storage JES3 uses in the Working Set Section. The amount of real storage JES3 uses should not approach the amount of storage allocated to the global.

Description of the JES3 Global Processor Section:

CPU MODEL = modelno - identifies the model number of the central processing unit (CPU).

REAL STORAGE SIZE = nnnnn.n MEGS (or nnnnn.n GIGS) - is the amount of real storage for the CPU.

GLOBAL PROCESSOR CPU SERIAL NUMBER: sernum -identifies the serial number of the CPU.

JES3 CPU ID: sysname - provides the identifier your installation assigned to the global.

MVS RELEASE n.n - identifies the release level of MVS that is running on this main.

JES3 RELEASE SPnnn - identifies the release level of JES3 that is running on the main.

JES3 {IS NOT | IS } IN THE APG PRIORITY LEVEL - JES3 should be in the APG priority level. If it is not in the APG priority level, your installation may experience a performance degradation problem.

JES3 IS { SWAPPABLE | NON-SWAPPABLE } - indicates whether the JES3 address space is swappable.

JES3 DISPATCHING PRIORITY nnn - gives the dispatching priority MVS assigns to JES3.

JMF OVERHEAD provides the percentage of CPU time required by JMF to take samples.

- MINIMUM= .nnnn SEC - is the minimum amount of time JMF took to take a sample.
- MAXIMUM= .nnnn SEC - is the maximum amount of time JMF took to take a sample.
- AVERAGE= .nnnn SEC - is the average amount of time JMF took to take a sample.
- nn.nn% OF JMF INTERVAL TIME - is the percentage of time of the interval you specified on the *CALL JMF command.

MVS OVERHEAD gives the percentage of CPU time required by MVS to dispatch JMF. The amount of time required by MVS to dispatch JMF is from the time JMF is posted to the time MVS dispatches JMF.

- MINIMUM .nnnn SEC - is the minimum amount of time MVS took to dispatch JMF.
- MAXIMUM .nnnn SEC - is the maximum amount of time MVS took to dispatch JMF.
- AVERAGE .nnnn SEC - is the average amount of time MVS took to dispatch JMF.
- nn.nn% OF JMF CYCLE TIME - is the percentage of time MVS took to dispatch JMF. If the percentage of JMF cycle time is above 10%, you should adjust the cycle time and interval level on the *CALL JMF command so that it is within the acceptable range.

Tuning Information:

The amount of overhead for JMF and MVS should be less than 10%. If the amount of overhead for either MVS or JES3 is greater than 10%, you should adjust the INTERVAL and CYCLE parameter on the *CALL JMF command so that the amount of overhead is within the acceptable range.

```
FCT AND AWAIT REPORT
     IATNUC
           MULTI-FUNCTION MONITOR
                ACTIVE                          .28 % OF SAMPLES      1.13 % OF IATNUC
                SUSPENDED                       .00 % OF SAMPLES
                IN OS WAIT                      .00 % OF SAMPLES
           JES3 IRB'S
                IRB NAME           ACTIVE          SUSPENDED           OS WAIT

                                 % OF SAMPLES    % OF SAMPLES        % OF SAMPLES

                ATIME               .14 %           .00 %               .00 %

                TOTAL               .14 %           .00 %               .00 %
     IATAUX
           MULTI-FUNCTION MONITOR
                ACTIVE                          .00 % OF SAMPLES       .00 % OF IATAUX
                SUSPENDED                       .00 % OF SAMPLES
                IN OS WAIT                      .00 % OF SAMPLES
           JES3 IRB'S
                IRB NAME           ACTIVE          SUSPENDED           OS WAIT
                                 % OF SAMPLES    % OF SAMPLES       % OF SAMPLES

                NO IRB INFORMATION WAS FOUND.
```

The FCT and AWAIT Report provides information for CPU utilization of the IATNUC and IATAUX task. For each task, JMF reports on the multi-function monitor (MFM) and timer interrupt task (IRB) activity for each task.

Description of the FCT and AWAIT Report:

MULTI-FUNCTION MONITOR - provides information for JES3's dispatcher the multi-function monitor (MFM).

- ACTIVE nn.nn% of SAMPLES nn.nn% - provides the percentage of time during the JMF run that the MFM was active.

- nn.nn% of IATNUC - provides the amount of CPU time the MFM used.
- SUSPENDED nn.nn% OF SAMPLES - is the percentage of time during the JMF run that the MFM was suspended.
- IN OS WAIT nn.nn% OF SAMPLES - provides the percentage of time during the JMF run that the MFM was waiting to be posted.

JES3 IRB's - provides a table of information for the interrupt request blocks (IRB's) that JES3 uses.

IRB NAME - identifies the name of the IRB. JES3 uses the following IRBs:

- ATIME - is the ATIME service
- CE APG - is the channel-end appendage
- AE APG - is an abnormal appendage
- An address - indicates JMF was unable to identify the IRB

ACTIVE % OF SAMPLES - is the percentage of time the IRB was using the CPU during the JMF sampling period.

SUSPENDED % OF SAMPLES - is the percentage of time the IRB spent in a normal MVS WAIT state during the JMF sampling period.

OS WAIT % OF SAMPLES - is the percentage of time the IRB spent in a wait state other than a normal MVS WAIT period.

```
             NO IRB INFORMATION WAS FOUND.
1  DSP NAME IS CONCMD       DEVICE NAME IS **NONE**     FCT PRTY IS 254
          FCT ON FCT CHAIN                100.00 % OF SAMPLES
          FCT IN NUC MODE                 100.00 % OF SAMPLES
          FCT IN AUX MODE                    .00 % OF SAMPLES
  ACTIVITY UNDER IATNUC TASK
          FCT POSTED - ACTIVE                .00 % OF SAMPLES      .00 %
          FCT POSTED - NOT ACTIVE            .00 % OF SAMPLES
          FCT NOT POSTED                  100.00 % OF SAMPLES
          FCT IN OS WAIT                     .00 % OF SAMPLES
          FCT SUSPENDED-LOCAL LOCK REQ       .00 % OF SAMPLES
          FCT SUSPENDED-OTHER                .00 % OF SAMPLES
       AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT
        AWAIT IN USE                      100.00 % OF SAMPLES
        AWAIT POSTED - ACTIVE                .00 % OF SAMPLES      .00 %
        AWAIT POSTED - NOT ACTIVE            .00 % OF SAMPLES
        AWAIT NOT POSTED                  100.00 % OF SAMPLES
       AVERAGE AWAIT DURATION                       6.93 SEC.
       TOTAL AWAIT DURATION                        20.80 SEC.
       MAXIMUM AWAIT DURATION                      14.40 SEC.

----------------------------------------------------------------------------------------------------

2  DSP NAME IS CONSERV      DEVICE NAME IS **NONE**     FCT PRTY IS 254
          FCT ON FCT CHAIN                100.00 % OF SAMPLES
          FCT IN NUC MODE                 100.00 % OF SAMPLES
          FCT IN AUX MODE                    .00 % OF SAMPLES
 ACTIVITY UNDER IATNUC TASK
         FCT POSTED - ACTIVE               .05 % OF SAMPLES     1.05 % OF IATNUC    .05 % OF FCT
         FCT POSTED - NOT ACTIVE           .50 % OF SAMPLES                         .50 % OF FCT
         FCT NOT POSTED                  99.40 % OF SAMPLES                       99.40 % OF FCT
         FCT IN OS WAIT                    .00 % OF SAMPLES                         .00 % OF FCT
         FCT SUSPENDED- LOCAL LOCK REQ     .03 % OF SAMPLES                         .03 % OF FCT
         FCT SUSPENDED- OTHER              .00 % OF SAMPLES                         .00 % OF FCT

       AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT
        AWAIT IN USE                      99.96 % OF SAMPLES                       99.96 % OF FCT
        AWAIT POSTED - ACTIVE               .05 % OF SAMPLES     1.05 % OF IATNUC    .05 % OF FCT
        AWAIT POSTED - NOT ACTIVE           .50 % OF SAMPLES                         .50 % OF FCT
        AWAIT NOT POSTED                  99.40 % OF SAMPLES                       99.40 % OF FCT
       AVERAGE AWAIT DURATION                        .25 SEC.
       TOTAL AWAIT DURATION               29 MIN. 17.20 SEC.
       MAXIMUM AWAIT DURATION                       7.80 SEC.
```

The DSP Analysis Report detailed CPU utilization information for each DSP that runs under control of the JES3 or auxiliary task.

Notes for the DSP Analysis Report:

The DSP Analysis Report provided information for resident and nonresident DSPs on the FCT chain. JMF reports on each DSP as it is found on the FCT chain. The activity for resident DSPs should be 100%. Because nonresident DSPs are not always on the FCT chain, JMF reports on a nonresident DSPs only while the DSP is on the FCT chain.

Description of the DSP Analysis Report:

seq number - is a number JMF assigns to the DSP.

DSP NAME IS dspname - is the name of the DSP.

DEVICE NAME IS devname - is the name of the device that the DSP controls. If **NONE** appears as the device name, the DSP is not used to control a device.

FCT PRTY IS nnn - specifies the priority number assigned to the FCT that the DSP runs under.

FCT ON FCT CHAIN nnn.nn% - identifies the amount of time JMF found the FCT on the FCT chain during the sampling time.

FCT IN NUC MODE nnn.nn% - identifies the amount of time JMF found the DSP executing under control of the nucleus task.

FCT IN AUX MODE nnn.nn% identifies the amount of time JMF found the DSP executing under control on the auxiliary task.

ACTIVITY UNDER IATNUC TASK provides information on the FCT that the DSP runs under.

- FCT POSTED - ACTIVE nn.nn% OF SAMPLES - identifies the amount of time JMF found the FCT posted and processing work.
- FCT POSTED - NOT ACTIVE nn.nn % OF SAMPLES - identifies the amount of time JMF found the FCT not processing any work. This represents the amount of time the FCT may have be waiting for a resource or it may be an indication the FCT is in an infinite loop.
- FCT NOT POSTED nn.nn% OF SAMPLES - is the amount of time JMF found the FCT not posted for work.
- FCT IN OS WAIT nn.nn% OF SAMPLES - identifies the amount of time JMF found the FCT to be waiting for the completion of a request. The FCT could have been for waiting for spool I/O to complete or for a resource to be obtained.
- FCT SUSPENDED-LOCAL LOCK REQ nn.nn% OF SAMPLES - is the percentage of time the FCT was suspended while waiting for a local lock during the JMF sampling period.

JMF provides an AWAIT description when a JES3 DSP enters a wait state. JMF identifies each wait state and provides the percentage of samples JMF found the DSP to be in that wait state. The following is a list of some of the AWAIT descriptions that can appear in a JMF report. Macro IATYAWR contains a complete list of AWAIT reason codes and their associated descriptions.

AWAIT IS WAIT FOR WORK OR STANDARD FCT AWAIT

This AWAIT indicates the FCT is waiting for work. An FCT is busy when a FCT issues an AWAIT macro that causes the FCT to enter a wait state and the MFM to scan the FCT chain for a posted FCT. If an FCT is waiting for some event to complete, such as I/O completion, the FCT is considered to be busy because the FCT cannot process other requests.

If you subtract this percentage from 100%, the resulting percentage is the amount of time the FCT was busy processing a request or job.

AWAIT IS WAITING FOR JESREAD I/O COMPLETION - blockid
AWAIT IS WAITING FOR AWRITE I/O COMPLETION - blockid
AWAIT IS WAITING FOR WRTCHAIN I/O COMPLETION - blockid

These AWAITS indicate that the FCT is waiting for I/O activity for a single record file (SRF) to complete. It is the result of a JESREAD, AWRITE, or WRTCHAIN request. The JESREAD macro is used to read an SRF; the AWRITE and WRTCHAIN macro are used to write SRF's. If a control block id was specified on the JESREAD, AWRITE, or WRTCHAIN request, it will appear in the "blockid" portion of the description text.

AWAIT IS WAITING FOR MULTI-RECORD FILE (MRF) INPUT I/O TO COMPLETE
AWAIT IS WAITING FOR MULTI-RECORD FILE (MRF) OUTPUT I/O TO COMPLETE

These AWAITs indicate that the FCT is waiting for I/O activity for a multi-record file (MRF) to complete. It is the result of an AOPEN, ALOCATE, ABLOCK, ADEBLOCK, ACLOSE, or ABACKR request.

AWAIT IS WAITING FOR A JOBTAT READ TO COMPLETE (FDBCLOSE)
AWAIT IS WAITING FOR A JOBTAT WRITE TO COMPLETE (FDBCLOSE)

These AWAITs indicate that the FCT is waiting for the JOBTAT to be read or written because of a spool space allocation request.

AWAIT IS WAITING FOR SPOOL SPACE TO BECOME AVAILABLE

This AWAIT indicates that there is not enough spool space available to process a spool space allocation request. If the TOTAL AWAIT DURATION is high, you may need to make more spool space available. This can be accomplished as follows:

- Use the AGE parameter on the *MODIFY,U command to cancel jobs that have held output on the queue for a specified number of days.
- Use the *MODIFY,Q,DD= to assign another volume to the spool partition that does not have enough spool space available.
- Use the *MODIFY,Q,SP= to assign an overflow spool partition to the spool partition that does not have enough spool space available.
- Perform a warm start and add a new spool data set.

AWAIT IS WAITING FOR A GENERALIZED SUBTASK TO BECOME AVAILABLE OR TO FINISH PROCESSING A REQUEST - function

This AWAIT indicates that the FCT is waiting for a generalized subtask to become available or for it to finish processing a request. There are only a limited number of generalized subtasks available. When they are all busy, the FCT will have to wait for its request to be processed. An FCT uses the IATXCSF macro to perform a function under a generalized subtask. The DESC parameter on the IATXCSF macro specifies a description of the function being subtasked. If the DESC was specified on the IATXCSF macro, it will appear in the "function" portion of the description text.

The following are examples of some of the functions that may appear in the AWAIT description:

- ALOAD-modname - The FCT is waiting for the specified module to be ALOADed.
- IATXSEC-index - The FCT is waiting for an IATXSEC (security) request to complete. The index value that appears after "IATXSEC" is the hexadecimal SSXINDEX value (from macro IATYSSX) that was specified on the IATXSEC request. The index value helps to determine what type of security related request was being performed. See macro IATYSSX for the meanings of the different SSXINDEX values.
- SYNCH IATXSMF - The FCT is writing an SMF record through the IATXSMF macro. The request is synchronous. That is, control will not be returned to the FCT until the subtask has processed the request.

AWAIT IS WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - resource
AWAIT IS WAITING FOR SHARED USE OF AN AENQ RESOURCE - resource

These AWAITs indicate that the FCT has issued an AENQ macro and is waiting for shared or exclusive use of the specified resource. One of the following resources will appear in the description:

- RQ
- DLQ
- JNCBCTL
- SYSUNIT
- CHKPNT
- WTD
- FCT
- PRO
- SNARMVCB

- ICT
- LCLJNEWS
- RJPJNEWS
- TSOJNEWS
- FSSCKPT

AWAIT IS WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE
This AWAIT indicates the FCT is waiting because JES3 is attempting to locate information in the catalog for a data set. If the AVERAGE AWAIT DURATION is high, you may have not set up your installation's catalogs efficiently. See *z/OS JES3 Initialization and Tuning Guide* for information on setting up catalogs for JES3-managed data sets.

AWAIT IS WAITING FOR JOB NUMBERS TO BECOME AVAILABLE FOR AN AJOBNUM REQUEST (TVTJNMSK)
This AWAIT indicates that the FCT has issued an AJOBNUM macro to allocate a job number and there are no job numbers available.

AWAIT IS WAITING FOR A JDS TO BECOME AVAILABLE FOR A JDS RELATED MACRO REQUEST (RQJDSFCT)

AWAIT IS WAITING FOR ANOTHER FCT TO RELEASE CONTROL OF A JDS ENTRY (JDSDSPH)
These AWAITs indicate that the FCT has issued a JDS related macro such as JDSGET, JDSHOLD, or JESMSG and another FCT has control of the JDS.

AWAIT IS WAITING FOR A CELL WITHIN A CELLPOOL TO BECOME AVAILABLE
This AWAIT indicates that the FCT has issued an IATXGCL request to obtain a cell from a cellpool, but there are no cells available.

AWAIT IS WAITING FOR FILE DIRECTORY ENTRIES TO BECOME AVAILABLE
This AWAIT indicates that there are no file directory entries available for the FCT to perform a spool I/O request. A file directory entry is needed typically when an FCT issues an AOPEN or WRTCHAIN request. If the TOTAL AWAIT DURATION is high, you may need to increase the number of file directory entries on the FD parameter of the BUFFER statement.

AWAIT IS WAITING FOR JSAM BUFFERS TO BECOME AVAILABLE
This AWAIT indicates that are no JSAM buffers available for the FCT to perform a spool I/O request. A JSAM buffer is needed anytime an FCT wants to read or write a Single Record File or Multi-Record File. If the TOTAL AWAIT DURATION is high, you may need to increase the number of JSAM buffers on the PAGES parameter of the BUFFER statement.

AWAIT IS WAITING FOR ANOTHER FCT TO FINISH USING THE JNC B FOR A JNCBHLD REQUEST
This AWAIT indicates that a JNCBHLD request was issued to hold the JNCB for a DJC net, but another FCT has control of the JNCB. A JNCBHLD request is issued before accessing the information associated with the DJC net.

AWAIT IS FCT IS IN SPECIALIZED RESCHEDULE AND IS WAITING FOR DEVICES TO BECOME AVAILABLE OR TO BE CANCELLED
This AWAIT indicates that the DSP is waiting because it was put into a specialized rescheduling state. For example, if the operator issues a command to start an unavailable device as a writer, JES3 places the writer in a specialized rescheduling state.

AWAIT IS X'nn' AT address
This AWAIT indicates JMF could not identify why the FCT is AWAITing.

- X'nn' identifies the ECF mask for the AWAIT
- address provides the address of the AWAIT

For each AWAIT description, JMF provides the following:

- AWAIT IN USE nn.nn% OF SAMPLES nn.nn% OF FCT - is the percentage of time the DSP was in a JES3 wait state.
- AWAIT POSTED - ACTIVE nn.nn% OF SAMPLES nn.nn% of IATNUC nn.nn% OF FCT - is the percentage of time the DSP was using the CPU during the JMF sampling period.

- AWAIT POSTED - NOT ACTIVE nn.nn% OF SAMPLES nn.nn% OF FCT - is the percentage of time the DSP was posted by not using the CPU during the JMF sampling period.
- AWAIT NOT POSTED nn.nn% OF SAMPLES nn.nn% OF FCT - is the percentage of time the DSP spent in a JES3 wait state during the sampling period.
- AVERAGE AWAIT DURATION nn MIN. nn.nn SEC. - is the average amount of time the FCT waited for each JES3 wait state to end.
- TOTAL AWAIT DURATION nn MIN. nn.nn SEC. - is the total amount of time the FCT waited for all the JES3 wait states to complete.
- MAXIMUM AWAIT DURATION nn MIN. nn.nn SEC. - is the longest amount of time the FCT waited for a JES3 wait state to end.
- mod + adr ECF - identifies the module that issued the AWAIT macro and the displacement into the module to the AWAIT return address.

```
                                       ALL VALUES ARE % OF SAMPLES
 SEQ                         FCT  FCT ON    NUC     AUX     POSTED    POSTED     NOT OR IN OS  POSTED  POSTED NOT OR IN OS
 NUM  DSPNAME    DEVICE      PRI   CHAIN    MODE    MODE    ACTIVE   NOT ACT  POSTED     WAIT  ACTIVE NOT ACT POSTED  WAIT

   1  CONCMD     **NONE**    254  100.00   100.00    .00       .11       .84    99.01       .02
   2  CONSERV    **NONE**    254  100.00   100.00    .00       .63      2.76    96.38       .21
   3  TIMER      **NONE**    254  100.00   100.00    .00       .00       .00   100.00       .00
   4  READYQ     **NONE**    254  100.00   100.00    .00       .00     11.30    88.69       .00
   5  JSAM       **NONE**    250  100.00   100.00    .00       .96     12.03    86.96       .04
   6  CONSDM     **NONE**    240  100.00   100.00    .00      1.07      4.69    94.01       .21
   7  RJPCONS    **NONE**    240  100.00   100.00    .00       .00       .00   100.00       .00
   8  MAINIO     C00         053  100.00   100.00    .00       .11       .02    99.85       .00
   9  MAINIO     C70         053  100.00   100.00    .00       .00       .00   100.00       .00
  10  MAINIO     A1          053  100.00   100.00    .00       .00       .00   100.00       .00
  11  MAINIO     C50         053  100.00   100.00    .00       .00       .00   100.00       .00
  12  MAINIO     CD0         053  100.00   100.00    .00       .00       .00   100.00       .00
  13  MAINIO     C20         053  100.00   100.00    .00       .00       .00   100.00       .00
  14  MAINIO     A5          053  100.00   100.00    .00       .00       .00   100.00       .00
  15  MAINIO     A3          053  100.00   100.00    .00       .00       .00   100.00       .00
  16  MAINIO     CA0         053  100.00   100.00    .00       .00       .00   100.00       .00
  17  MAINIO     C60         053  100.00   100.00    .00       .00       .00   100.00       .00
  18  MAINIO     A7          053  100.00   100.00    .00       .00       .00   100.00       .00
  19  MAINIO     A6          053  100.00   100.00    .00       .00       .00   100.00       .00
  20  MAINIO     A0          053  100.00   100.00    .00       .00       .00   100.00       .00
  21  MAINIO     C10         053  100.00   100.00    .00       .00       .00   100.00       .00
  22  MAINIO     CE0         053  100.00   100.00    .00       .00       .00   100.00       .00
  23  MAINIO     A4          053  100.00   100.00    .00       .00       .00   100.00       .00
  24  MAINIO     C30         053  100.00   100.00    .00       .00       .00   100.00       .00
  25  MAINIO     Z0          053  100.00   100.00    .00       .00       .00   100.00       .00
  26  MAINIO     A2          053  100.00   100.00    .00       .00       .00   100.00       .00
  27  MAINIO     C40         053  100.00   100.00    .00       .00       .00   100.00       .00
  28  MAINIO     CC0         053  100.00   100.00    .00       .00       .00   100.00       .00
  29  MAINIO     C80         053  100.00   100.00    .00       .00       .00   100.00       .00
  30  MAINIO     CF0         053  100.00   100.00    .00       .00       .00   100.00       .00
  31  MAINIO     CB0         053  100.00   100.00    .00       .00       .00   100.00       .00
  32  MAINIO     C90         053  100.00   100.00    .00       .00       .00   100.00       .00
  33  MAINIO     SA0         053  100.00   100.00    .00       .00       .00   100.00       .00
  34  MAINIO     SC0         053  100.00   100.00    .00       .00       .00   100.00       .00
  35  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  36  MAIN       **NONE**    051  100.00   100.00    .00       .00       .02    99.97       .00
  37  MAIN       **NONE**    051  100.00   100.00    .00       .00       .02    99.97       .00
  38  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  39  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  40  MAIN       **NONE**    051  100.00   100.00    .00       .00       .04    99.95       .00
  41  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  42  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  43  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  44  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  45  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  46  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  47  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  48  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  49  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  50  MAIN       **NONE**    051  100.00   100.00    .00       .00       .04    99.95       .00
  51  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  52  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  53  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  54  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  55  MAIN       **NONE**    051  100.00   100.00    .00       .00       .02    99.97       .00
  56  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  57  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  58  MAIN       **NONE**    051  100.00   100.00    .00       .00       .02    99.97       .00
  59  MAIN       **NONE**    051  100.00   100.00    .00       .00       .02    99.97       .00
  60  MAIN       **NONE**    051  100.00   100.00    .00       .00       .00   100.00       .00
  61  MAIN       **NONE**    051  100.00   100.00    .00       .39      3.04    96.45       .09
  62  DYNAL      DYN         035  100.00   100.00    .00       .30      1.24    98.38       .07
  63  ARMDRVR    **NONE**    034  100.00   100.00    .00       .00       .00   100.00       .00
  64  CIDRVR     **NONE**    032  100.00   100.00    .00       .04       .65    99.24       .04
  65  OUTSERV    AID         030  100.00   100.00    .00       .11       .42    99.43       .02
  66  VERIFY     **NONE**    030  100.00   100.00    .00       .00       .00   100.00       .00
  67  SETUP      S           030  100.00   100.00    .00      2.95       .96    96.03       .04
  68  OUTSERV    **NONE**    030  100.00   100.00    .00       .00       .02    99.97       .00
  69  OUTSERV    **NONE**    030  100.00   100.00    .00       .00       .02    99.97       .00
```

```
  70  OUTSERV   **NONE**  030  100.00   100.00    .00      .00      .00  100.00      .00
  71  OUTSERV   **NONE**  030  100.00   100.00    .00      .00      .02   99.97      .00
  72  PURGE     **NONE**  030    5.83     5.83    .00      .30      .75    4.76      .02
  73  PURGE     **NONE**  030     .49      .49    .00      .00      .04     .42      .02
  74  BDT       **NONE**  025  100.00   100.00    .00      .00      .00  100.00      .00
  75  BDTCOMM   **NONE**  025  100.00   100.00    .00      .00      .04   99.95      .00
  76  MODDRVR   **NONE**  015  100.00   100.00    .00      .02      .02   99.95      .00
  77  INQDRVR   **NONE**  014  100.00   100.00    .00      .00      .00  100.00      .00
  78  WTDDRVR   **NONE**  012  100.00   100.00    .00      .35      .44   99.03      .16
  79  PSODRVR   **NONE**  012  100.00   100.00    .00      .02      .02   99.95      .00
  80  TSODRVR   **NONE**  012  100.00   100.00    .00      .00      .00  100.00      .00
  81  PSODSP    **NONE**  011  100.00   100.00    .00      .00      .04   99.92      .02
  82  PSODSP    **NONE**  011  100.00   100.00    .00      .00      .00  100.00      .00
  83  POSTSCAN  **NONE**  007   20.37    20.37    .00      .35     2.76   17.19      .07
  84  CI        **NONE**  007    6.40     6.40    .00      .09      .53    5.74      .02
  85  POSTSCAN  **NONE**  007    4.01     4.01    .00      .09      .37    3.47      .07
  86  CICLENUP  **NONE**  007    1.21     1.21    .00      .09      .09    1.03      .00
  87  POSTSCAN  **NONE**  007    1.31     1.31    .00      .00      .16    1.14      .00
  88  POSTSCAN  **NONE**  007    1.24     1.24    .00      .00      .14    1.10      .00
  89  CICLENUP  **NONE**  007     .04      .04    .00      .00      .00     .04      .00
  90  LOCATE    **NONE**  005  100.00   100.00    .00      .00      .00  100.00      .00
  91  MSGC      **NONE**  004  100.00   100.00    .00      .14     1.66   98.14      .04
  92  DMJA      **NONE**  004  100.00   100.00    .00      .44     3.42   95.94      .18
  93  DMJA      **NONE**  004  100.00   100.00    .00      .14      .79   99.01      .04
  94  DMJA      **NONE**  004  100.00   100.00    .00      .02      .28   99.69      .00
  95  DMJA      **NONE**  004  100.00   100.00    .00      .00      .04   99.90      .04
  96  DMJA      **NONE**  004  100.00   100.00    .00      .00      .00  100.00      .00
  97  DMJA      **NONE**  004  100.00   100.00    .00      .00      .00  100.00      .00
  98  DMJA      **NONE**  004  100.00   100.00    .00      .00      .00  100.00      .00
  99  INTRDR    **NONE**  004    4.33     4.33    .00      .02      .16    4.12      .02
 100  INTRDR    **NONE**  004    8.53     8.53    .00      .02      .18    8.32      .00
 101  INTRDR    **NONE**  004    5.48     5.48    .00      .02      .23    5.20      .02
 102  INTRDR    **NONE**  004    6.40     6.40    .00      .09      .32    5.98      .00
 103  ISDRVR    **NONE**  004    3.68     3.68    .00      .02      .14    3.49      .02
 104  INTRDR    **NONE**  004   10.60    10.60    .00      .09      .25   10.24      .00
 105  INTRDR    **NONE**  004    4.90     4.90    .00      .02      .04    4.83      .00
 106  INTRDR    **NONE**  004    9.87     9.87    .00      .14      .37    9.35      .00
 107  INTRDR    **NONE**  004    1.19     1.19    .00      .02      .00    1.17      .00
 108  INTRDR    **NONE**  004    9.35     9.35    .00      .11      .23    9.00      .00
 109  INTRDR    **NONE**  004    1.96     1.96    .00      .00      .02    1.94      .00
 110  INTRDR    **NONE**  004     .77      .77    .00      .00      .02     .75      .00
 111  INTRDR    **NONE**  004   37.19    37.19    .00      .21      .30   36.67      .00
 112  ISDRVR    **NONE**  004     .25      .25    .00      .00      .00     .25      .00
 113  INTRDR    **NONE**  004    6.42     6.42    .00      .16      .25    5.98      .02
 114  INTRDR    **NONE**  004   14.28    14.28    .00      .23      .39   13.60      .04
 115  INTRDR    **NONE**  004    4.43     4.43    .00      .02      .14    4.26      .00
 116  INTRDR    **NONE**  004    6.89     6.89    .00      .04      .30    6.54      .00
 117  INTRDR    **NONE**  004    1.78     1.78    .00      .00      .09    1.68      .00
 118  INTRDR    **NONE**  004    1.36     1.36    .00      .04      .02    1.28      .00
 119  INTRDR    **NONE**  004    2.79     2.79    .00      .02      .23    2.53      .00
 120  INTRDR    **NONE**  004    9.12     9.12    .00      .04      .14    8.93      .00
 121  INTRDR    **NONE**  004    1.47     1.47    .00      .00      .00    1.47      .00
 122  INTRDR    **NONE**  004     .42      .42    .00      .00      .00     .42      .00
 123  INTRDR    **NONE**  004     .32      .32    .00      .00      .02     .30      .00
 124  INTRDR    **NONE**  004   11.30    11.30    .00      .02      .32   10.92      .02
 125  INTRDR    **NONE**  004   10.10    10.10    .00      .09      .21    9.80      .00
 126  INTRDR    **NONE**  004   35.76    35.76    .00      .46     1.07   34.09      .11
 127  INTRDR    **NONE**  004    2.53     2.53    .00      .00      .04    2.48      .00
 128  INTRDR    **NONE**  004     .53      .53    .00      .00      .07     .46      .00
 129  INTRDR    **NONE**  004     .46      .46    .00      .00      .02     .44      .00
 130  INTRDR    **NONE**  004    5.18     5.18    .00      .07      .09    5.01      .00
 131  INTRDR    **NONE**  004   11.81    11.81    .00      .09      .37   11.25      .09
 132  INTRDR    **NONE**  004    2.29     2.29    .00      .02      .09    2.18      .00
 133  INTRDR    **NONE**  004     .14      .14    .00      .00      .00     .14      .00
 134  INTRDR    **NONE**  004     .11      .11    .00      .00      .00     .11      .00
 135  JSS       **NONE**  002  100.00   100.00    .00      .39     2.25   97.30      .04
 136  GENSERV   **NONE**  002  100.00   100.00    .00      .00      .00  100.00      .00
 137  FAILSOFT  **NONE**  001  100.00   100.00    .00      .00      .00  100.00      .00
 138  WAIT      **NONE**  000  100.00   100.00    .00      .96    98.21     .00      .82
 139  WAIT      **NONE**  000  100.00      .00 100.00      .00   100.00     .00      .00
```

The FCT Summary Report summarizes the information provided in DSP Analysis Report in a chart. You can use this chart to obtain an overview of the work distribution in your complex.

The FCT Summary Report contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Notes for the FCT Summary Report:

You can use this report with the FCT and AWAIT Highlight Report to get a quick overview of the distribution of the JES3's work and potential problem areas in your installation. For more detailed information on each DSP, see to the DSP Analysis Report.

Description of the FCT Summary Report:

SEQ NUM nn - is the sequence number assigned by JMF to the FCT on the FCT chain. This sequence number matches the DSP sequence number in the DSP Analysis Report.

DSPNAME dspname - is the name of DSP that runs under the control of the FCT.

DEVICE dev - is the device or main associated with the FCT.

FCTPRI nnn - is the priority of the FCT on the FCT chain.

FCT ON CHAIN nnn.nnn - is the amount of time the FCT remained on the FCT chain. 100.00% should appear for all the permanently resident FCTs in your installation.

NUC MODE nnn.nn - is the percentage of time the FCT executed in the JES3 nucleus task.

AUX MODE nnn.nn - is the percentage of time the FCT executed in the auxiliary task.

IATNUC and IATAUX ACTIVITY nn.nn - provides detailed summary information of the processing in the nucleus (IATNUC) or auxiliary (IATAUX) task.

- POSTED ACTIVITY nnn.nn - is the percentage of time the FCT was using the CPU while executing in the nucleus or auxiliary task during the JMF sampling period.
- POSTED NOT ACT nnn.nn - is the percentage of time the FCT was posted by not using the CPU while running under the nucleus or auxiliary task during the JMF sampling period.
- NOT POSTED nnn.nn - is the percentage of time the FCT spent in a normal MVS wait while running under the nucleus or auxiliary task during the JMF sampling period.
- SUSPENDED OR IN OS WAIT nnn.nn is the percentage of time the FCT was spent in a wait state other than the normal MVS wait state while running under the nucleus or auxiliary task during the JMF sampling period.

```
FCT AND AWAIT HIGHLIGHTS

     THE 5 MOST ACTIVE FCT'S IN IATNUC

          SEQ NUM  DSP NAME  FCT POSTED - ACTIVE

                5   CONSDM       .60 % OF SAMPLES  11.18 % OF IATNUC
                4   JSAM         .51 % OF SAMPLES   9.49 % OF IATNUC
                2   CONSERV      .42 % OF SAMPLES   7.80 % OF IATNUC
               19   MAIN         .29 % OF SAMPLES   5.48 % OF IATNUC
               64   DMJA         .25 % OF SAMPLES   4.64 % OF IATNUC

     THE 5 MOST ACTIVE FCT'S IN IATAUX

          SEQ NUM  DSP NAME  FCT POSTED - ACTIVE

          NO FCTS WERE EVER ACTIVE IN IATAUX

     THE 5 MOST 'POSTED AND NOT ACTIVE' FCT'S IN IATNUC

          SEQ NUM  DSP NAME  FCT POSTED - NOT ACTIVE

                3   READYQ      3.59 % OF SAMPLES
                4   JSAM        3.20 % OF SAMPLES
                5   CONSDM      1.41 % OF SAMPLES
               64   DMJA        1.19 % OF SAMPLES
               19   MAIN        1.09 % OF SAMPLES

     THE 5 MOST 'POSTED AND NOT ACTIVE' FCT'S IN IATAUX

          SEQ NUM  DSP NAME  FCT POSTED - NOT ACTIVE

          NO FCTS WERE EVER POSTED - NOT ACTIVE IN IATAUX

     THE 5 MOST 'IN OS WAIT' FCT'S IN IATNUC

          SEQ NUM  DSP MANE  FCT IN OS WAIT

          NO FCTS WERE EVER IN OS WAIT IN IATNUC

     THE 5 MOST 'IN OS WAIT' FCT'S IN IATAUX

          SEQ NUM  DSP NAME  FCT IN OS WAIT

          NO FCTS WERE EVER IN OS WAIT IN IATAUX
```

```
   THE 10 BIGGEST JES3 AWAIT BOTTLENECKS

        SEQ NUM  DSP NAME  TASK    TOTAL AWAIT DURATION      MAX AWAIT D

             50  POSTSCAN  IATNUC          27.40 SEC.              1.60 SEC.
                 WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE

             51  POSTSCAN  IATNUC          25.60 SEC.              1.40 SEC.
                 WAITING FOR A CATALOG LOCATE REQUEST TO COMPLETE

             63  ISDRVR    IATNUC          23.40 SEC.              3.00 SEC.
                 WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

             66  ISDRVR    IATNUC          22.20 SEC.              2.60 SEC.
                 WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

             62  ISDRVR    IATNUC          21.20 SEC.              3.40 SEC.
                 WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

             65  ISDRVR    IATNUC          20.20 SEC.              2.60 SEC.
                 WAITING FOR EXCLUSIVE USE OF AN AENQ RESOURCE - JNCBCTL

      NO MORE AWAIT BOTTLENECKS
```

The FCT and AWAIT Highlight section quickly identifies for you the FCTs that potentially cause problems in your installation. JMF identifies at the most 5 FCTs that:

- Were the most active
- Were posted but were in a normal MVS wait state
- Were posted but in a state other than a normal MVS wait state

The FCT and AWAIT Highlight Report also identifies the ten areas that might be experiencing a backlog of jobs.

Notes for the FCT AWAIT Highlight Report:

You can use this report with the FCT and AWAIT Highlight Report to get a quick overview of the distribution of the JES3's work and potential problem areas in your installation. For more detailed information on each DSP, see the DSP Analysis Report.

Description of the FCT and AWAIT Highlight Report:

SEQ NUM nn - is the sequence number JMF assigned to the DSP. This is the same number that identifies the DSP in the DSP Analysis Report and the FCT Summary Report.

DSP NAME dspname - identifies the DSP by its name.

FCT POSTED - ACTIVE nn.nn % OF SAMPLES nn.nn% OF TASK - is the percentage of time the FCT used the CPU during the JMF sampling period. nn.nn% OF SAMPLES is the percentage of time the FCT was using the CPU while running under the nucleus or auxiliary task during the JMF sampling period. nn.nn% of TASK is the percentage of time the FCT was using the CPU while running under the nucleus or auxiliary task while the task was active.

FCT POSTED - NOT ACTIVE nn.nn % OF SAMPLES nn.nn% OF TASK - is the percentage of time the FCT spent in a normal MVS wait state during the JMF sampling period. nn.nn% OF SAMPLES is the percentage of time the FCT spent in a normal MVS wait state while running under the nucleus or auxiliary task during the JMF sampling period. nn.nn% of TASK is the percentage of time the FCT spent in a wait state while running under the nucleus or auxiliary task while the task was active.

Description for The 10 Biggest JES3 AWAIT Bottlenecks Section:

SEQ NUM nn - is the sequence number JMF assigned to the DSP. This is the same number that identifies the DSP in the DSP Analysis Report and the FCT Summary Report.

DSP NAME dspname - identifies the DSP by its name.

TASK taskname - identifies either the nucleus or auxiliary task as the task the FCT was running under.

REASON rsn - identifies the resource that caused the FCT to be in a normal MVS wait state.

TOTAL AWAIT DURATION nn.nn SECS - is the total amount of time the FCT spent in a normal MVS wait state before JES3 obtained the resource for the FCT.

MAX WAIT DURATION nn MIN. nn.nn SEC. - is the maximum amount of time the FCT spent in a normal MVS wait state before JES3 obtained the resource for the FCT.

```
DMJA FCT SUMMARY

     MAXIMUM ACTIVE DMJA FCTS ALLOWED                 10

     MINIMUM NUMBER OF ACTIVE DMJA FCTS               10

     MAXIMUM NUMBER OF ACTIVE DMJA FCTS               10

     AVERAGE NUMBER OF ACTIVE DMJA FCTS               10
```

The DMJA FCT Summary provides information on the activity of the DMJA FCTs in your installation. The DMJA FCT receives control to process a job's SYSIN or SYSOUT data sets.

Description of the DMJA FCT Summary Report:

MAXIMUM ACTIVE DMJA FCTS ALLOWED nn - is the maximum number of DMJA FCTs that can be active concurrently in your system. The maximum number of FCTs allowed in your installation is defined in the DSP dictionary, IATGRPT. You can issue a *I,X,D=DMJA command to determine the maximum number of DMJA FCTs that can be active concurrently in your system.

If you need to increase the number of DMJA FCTs that can run concurrently in your system, you can use the *F,X,D=DMJA,MC=nn to increase the maximum count for the DMJA FCT.

MINIMUM NUMBER OF ACTIVE DMJA FCTS nn - is the least number of DMJA FCTs that were active concurrently in your system.

MAXIMUM NUMBER OF ACTIVE DMJA FCTS nn - is the most number of DMJA FCTs that were active concurrently in your system.

AVERAGE NUMBER OF ACTIVE DMJA FCTS nn - is the average number of DMJA FCTs that were active concurrently in your system.

Tuning Information:

If the average number of active DMJA FCTs is close to the maximum number of DMJA FCTs allowed in your installation, your installation may be experiencing a bottleneck processing the SYSIN and SYSOUT data sets created in your installation. You may want to:

- Locate any jobs that are creating large number of SYSOUT data sets and determine if the data sets are necessary.
- Consider altering the maximum number of DMJA FCTs allowed in your installation. You can alter the number of DMJA FCTs that can run concurrently in your system by entering an *F,X,D=DMJA,MC=nn command.

```
JES3 WAIT ANALYSIS

     DSP NAME IS CONSERV     FCT SEQUENCE NUMBER =    2        TASK = IATNUC
            FCT IN OS WAIT                        .02 %
              SVC  56 (ENQ      ) AT 00E56F34  UNKNOWN  + 00E56F34  COUNT =     1
```

The JES3 WAIT Analysis Section identifies the reasons for a nonstandard MVS wait occurrences for each DSP within JES3. The DSP Analysis Report contains summary information for the DSP's wait occurrences. You may find a JES3 formatted dump useful when using this section of the JMF report.

Description of the JES3 Wait Analysis Section:

DSP NAME IS dspname - identifies the DSP that encountered a nonstandard MVS WAIT.

FCT SEQUENCE NUMBER = nn - identifies the FCT that the DSP was running under. The FCT sequence number matches the sequence number JMF assigned to the FCT in the DSP Analysis Report.

TASK = {IATNUC | IATAUX } - identifies the task the FCT was running under.

FCT IN OS WAIT nn% - provides the percentage of time the DSP caused the FCT to enter a nonstandard MVS wait state for a required resource.

PAGE FAULT AT adr1 module + adr2 - identifies the location in JES3 where the nonstandard MVS wait state occurred. adr1 is the base address of the module. module identifies the name of the module that was running under the FCT when the nonstandard MVS wait state occurred. If JMF is unable to identify where the module resides, it assigns a base address of X'00'. adr2 is the offset into the module.

COUNT= nn - indicates the number of times the DSP entered a nonstandard MVS wait state at that point in JES3 processing.

```
JES3 SPOOL DATA MANAGEMENT REPORT


     SDM PARAMETERS

          SPOOL BUFFER SIZE = 4084 BYTES

          NUMBER OF BUFFERS PER 4K PAGE = 2

          FILE DIRECTORY ENTRIES = 256

          NUMBER OF SPOOL DATA SETS IN USE =   21


          NUMBER OF JSAM BUFFERS =    768

          THRESHOLD FOR JSAM MINBUF CONDITION =  24 BUFFERS


          NUMBER OF PROTECTED USAM BUFFERS =    512 IN CSA +  1024 IN AUX

          NUMBER OF UNPROTECTED USAM BUFFERS PER OPEN USAM DATA SET = 8

          MAX DATA BYTES IN A USAM BUFFER = 4044
```

The SDM Parameters Section summarizes all the spool-related information that your installation specified in the JES3 initialization stream.

The SDM Parameters Section contains information for your installation. It does not contain any information you can use to tune or diagnose your system.

Description of the SDM Parameters Section:

SPOOL BUFFER SIZE = nnnn BYTES - is the size of the JSAM and USAM spool buffers. Your installation specifies the buffer size by using the BUFFER statement.

NUMBER OF BUFFERS PER 4K PAGE = n - is the number of buffers that can be contained in a page of memory. JES3 calculates this number. 2 or 1 are the only acceptable values.

FILE DIRECTORY ENTRIES = nnn - is the number of file directory entries that your installation has allocated. File directories are used to represent any open multi-record files (MRFs). Your installation specifies the number of file directory entries on the FD parameter of the BUFFER statement.

NUMBER OF SPOOL DATA SETS IN USE = n - is the number of spool data sets JES3 has opened to perform spool I/O. 0 and 1 are unacceptable values because JES3 always opens the JCT data set.

NUMBER OF JSAM BUFFERS = nnn - is the number of JSAM buffers allocated in your installation.

THRESHOLD FOR JSAM MINBUF CONDITION = nn BUFFERS - is the number of buffers your installation specified as the minimal buffer condition. Your installation specifies this number on the MINBUF initialization statement.

NUMBER OF PROTECTED USAM BUFFERS = nn IN CSA + nn IN AUX - specifies the number of buffers JES3 has allocated for the installation in CSA and the JES3 auxiliary address space. You used the PRTPAGE parameter on the MAINPROC statement to identify the number of protected USAM buffers to allocate in CSA and in the auxiliary address space.

NUMBER OF UNPROTECTED USAM BUFFERS PER OPEN USAM DATA SET = nn - is the number of unprotected USAM buffers that are opened for each SYSIN and SYSOUT data set.

MAX DATA BYTES IN A USAM BUFFER = nnnn - is the number of bytes of the user's data that can be placed in a USAM buffer. JES3 always reserves some space in a USAM buffer for single record file (SRF) prefix.

```
                                           SPOOL DATA SET DESCRIPTION

                                                                   ******* RANGE *******                   BUFFER
DATA SET            PARTITION          DEVICE             DEVICE       LOW          HIGH     RECS PER   RECS  PER  SIZE
NUMBER    DDNAME    NAME        STATUS  ADDRESS  VOLSER    TYPE      CYL    HEAD  CYL    HEAD  TRACK     TRK GROUP  BYTES)

    2    SPOOL1    PART1      IN USE    0982   SPOOL1    3390     0000009  0  000002B  E     12          12        40

    3    SPOOL2    PART2      IN USE    0483   SPOOL2    3390     0000001  0  0000008  E     12          12        40

    4    SPOOL3    PART3      IN USE    0484   SPOOL3    3390     0000001  0  0000008  E     12          12        40

    5    SPOOL4    PART1      IN USE    0485   SPOOL4    3390     0000001  0  0000008  E     12          12        40

    6    SPOOL5    PART5      IN USE    0486   SPOOL5    3390     0000001  0  0000008  E     12          12        40
```

The Spool Data Set Description Section provides information on all the open data sets in JES3 spool except for the JCT data set.

The Spool Data set Description Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

Description of the Spool Data set Description Section:

DATA SET NUMBER nn - is the number JES3 assigned to identify the data set.

DDNAME ddname - is the name your installation assigned to the data set.

PARTITION NAME partname - is the name of the partition that contains the data set.

STATUS status - provides the status of the data set. Possible states for the data set are IN USE or UNAVAIL.

DEVICE ADDRESS adr - is the address assigned to DASD.

VOLSER volser - is the serial identifier of the spool data set.

DEVICE TYPE devtype - is the device type of the spool data set.

RANGE - identifies the valid range of CCHH addresses for the spool data set. JMF expresses the CCHH addresses in hex.

RECS PER TRACK nn - identifies the number of records that can be contained on a track on the spool volume.

RECS PER TRACK GROUP nn - identifies the number of records that can be contained in a track group.

BUFFER SIZE (BYTES) nnnn - identifies the size of the spool buffer. This number should be the same as the number specified in SPOOL BUFFER SIZE in the SDM Parameters section.

```
SPOOL PARTITION DESCRIPTION

     PARTITION    SPLIM    OVERFLOW
     NAME       MIN  MARG  PARTITION

     PART1       3%   5%              *** DEFAULT ***

     PART2       3%   5%   PART3

     PART3       3%   5%   PART1

     PART5       3%   5%   PART1

     PART6       3%   5%   PART1
```

Spool Partition Description Section provides information for each spool partition in the spool environment. Your installation defines the characteristics of each spool partition by using the SPART initialization statement.

The Spool Partition Description Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

Description of the Spool Partition Description Section:

PARTITION NAME cccccccc - specifies the name of the spool partition. You used the NAME= parameter on the SPART statement to assign a name to the spool partition.

SPLIM - specifies the minimal and marginal percentage of spool space. You used the SPLIM= parameter to assign the minimal and marginal percentages to the spool partition. JES3 uses these percentages to

- Alert the operator a spool partition is reaching the limits you set.
- Determine when data should be written to a overflow partition.

OVERFLOW PARTITION cccccccc - identifies the spool partition that data will be written to if the specified partition becomes full or reaches the marginal condition. You used the OVRFL= parameter to specify the overflow partition.

```
SPOOL SPACE UTILIZATION SNAPSHOT

      PARTITION                          **** TRACK GROUPS****
      NAME       DDNAME          DEFINED     ALLOCATED

      DRAINED

      UNAVAIL

      PART1      SPOOL1          525         61   11%

                 SPOOL4          525          0    0%

      PART2      SPOOL2          120          0    0%

      PART3      SPOOL3          120          0    0%

      PART4      SPOOL4          120          0    0%

      PART5      SPOOL5          120          0    0%

      PART6
```

The Spool Space Utilization Snapshot Section provides information on how the spool space is being used in each spool partition.

The Spool Space Utilization Snapshot Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

Description of the Spool Space Utilization Snapshot Section:

PARTITION NAME cccccccc - is the name of the spool partition. You used the NAME= parameter on the SPART initialization statement to name the spool partition.

DDNAME ddname - is the name of the spool data set associated with the spool partition.

TRACK GROUPS - indicates the:

- Amount of a amount of available spool space assigned to the spool data set.
- Amount of spool space allocated.
- Percentage of spool space allocated in the partition.

```
SINGLE TRACK TABLE SPACE ALLOCATION SNAPSHOT

                  ***** RANGE *****

DATA SET           LOW         HIGH     RECORDS    RECORDS
NUMBER  DDNAME  CYL   HEAD  CYL   HEAD  DEFINED   ALLOCATED

   2    SPOOL1  000001A  7  000001A  9    24      24   100%

   2    SPOOL1  000001A  D  000001A  E    12      12   100%  *** EXPANSION ***

   2    SPOOL1  000001A  1  000001A  2    12      12   100%  *** EXPANSION ***

   2    SPOOL1  0000018  9  0000018  A    12       9    75%  *** EXPANSION ***
```

The Single Track Table Space Allocation Snapshot Section describes JES3's use of the single track allocation tables. The single track tables (STTs) maintain a record of the space allocated to single record files (SRF). An example of an SRF is a JES3 control block. Spool space for the STT is defined on the STT or STTL parameter of the TRACK or FORMAT statement.

The Single Track Table Space Allocation Snapshot Section contains information that you can use to tune JES3.

Description of the Single Track Table Space Allocation Snapshot Section:

DATA SET NUMBER nn - identifies the spool data set where the SST spool space is allocated.

DDNAME cccccccc - is the name of the data set.

RANGE CCHH - is the spool address allocated for the STT.

RECORDS DEFINED nnnn - is the number of records allocated as STT records.

RECORDS ALLOCATED nnnn nn% - is the number of records already allocated and the percentage of allocated records.

```
SPOOL I/O ACTIVITY - BUFFERS READ AND WRITTEN PER SECOND

  VOLSER   DDNAME    TOTAL   LO # CYLS    2      3      4      5      6      7      8      9    HI # CYLS

  SPOOL1   JES3JCT    4.96      .00      .00    .00    .00   4.96    .00    .00    .00    .00       .00
           SPOOL1    11.02      .00      .00    .00   3.04   7.97    .00    .00    .00    .00       .00
  SPOOL2   SPOOL2     9.90      .00      .00    .00   4.92   4.97    .00    .00    .00    .00       .00
  SPOOL3   SPOOL3      .00      .00      .00    .00    .00    .00    .00    .00    .00    .00       .00
  SPOOL4   SPOOL4    12.34      .00      .00    .00   6.82   5.51    .00    .00    .00    .00       .00
  SPOOL5   SPOOL5      .00      .00      .00    .00    .00    .00    .00    .00    .00    .00       .00
```

The Spool I/O Activity Section contains information on how JES3 distributed the data across spool.

The Spool I/O Activity Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

Notes for the Spool I/O Activity Section:

The Spool I/O Activity Section describes the amount of spool I/O JES3 performs to the installation's spool data sets. JMF sections the available portion of the spool data set into ten sections. JMF reports the spool I/O activity for each section of the spool data set. Additional information is also provided for the data sets in the Buffers Chaining By Spool Data Set Section.

Description of the Spool I/O Activity Section:

VOLSER volser - is the serial name given to the spool volume.

DDNAME ddname - is the name of the data set.

TOTAL nn.nn - is the number of buffers read or written to the data set per second.

LO # CYLS nn.nn - is the amount of time JES3 spent writing to the data set on extents numbered 0-1.

2 - 9 nn.nn - is the amount of time JES3 spent writing to the data set on extents numbered 2, 3, 4, ...

HI # CYLS nn.nn - is the amount of time JES3 spent writing to the data set on extents numbered 10 or higher.

```
BUFFER CHAINING BY SPOOL DATA SET

DATA SET      TOTAL
NUMBER       BUFFERS         1        2         3         4      5      6      7      8      9      10
11 OR M

   1          8,955      8,891       54         6         4      0      0      0      0      0
0       0
                           99%       0%        0%        0%     0%     0%     0%     0%     0%
0%      0%

   2         19,896     15,433    2,866       828       356    115     72     28     16     27      10
145
                           77%      14%        4%        1%     0%     0%     0%     0%     0%
0%      0%

   3         17,878     13,521    2,800       798       276    110     66     35     40     18      10
204
                           75%      15%        4%        1%     0%     0%     0%     0%     0%
0%      1%

   4              0          0        0         0         0      0      0      0      0      0
0       0
                            0%       0%        0%        0%     0%     0%     0%     0%     0%
0%      0%

   5         22,275     17,638    2,766       912       440    130     84     42      0     36      10
217
```

The Buffers Chaining by Spool Data set Section provides the number of buffers that were written to a spool data set.

Description of the Buffers Chaining By Spool Data set Section:

DATA SET NUMBER nn - is the number JMF assigns to identify a spool data set.

TOTAL BUFFERS nn - is the number of buffers that were written to or read from the spool data set.

1 - 11 or M n and n% - each number indicates the number of buffers on the chain that were written to the spool data set.

```
SDM EXCEPTIONAL CONDITIONS

   JSAM BUFFERS NOT AVAILABLE = 0%

   USAM BUFFERS NOT AVAILABLE = 0%

   MINIMAL/MARGINAL TRACK CONDITIONS DID NOT OCCUR IN ANY PARTITION

   AWAITS FOR BUFFERS DURING MONITORING   0   EVER = 00000000
```

The SDM Exceptional Conditions Section identifies the percentages of times a resource required to perform spool I/O was not available.

The SDM Exceptional Conditions Section contains information for your installation. It does not contain any information that you can use to tune or diagnose JES3.

Description of the SDM Exceptional Conditions Section:

JSAM BUFFERS NOT AVAILABLE = nn% - is the percentage of time during a JMF interval that a JSAM buffer was not available for spool I/O.

USAM BUFFERS NOT AVAILABLE = nn% - is the percentage of time during a JMF interval that a USAM buffer was not available for spool I/O.

MINIMAL/MARGINAL CONDITION = nn% - is the percentage of time during a JMF interval that JES3 could not perform spool I/O because the spool partition was in a minimal or marginal condition.

```
RESQUEUE CELL POOL STATISTICS

   TOTAL NUMBER OF CI SECONDARY EXTENTS IN POOL       =     0
   TOTAL NUMBER OF CI RESQUEUES IN POOL               =   104
   TOTAL NUMBER OF CI RESQUEUES USED IN POOL          =     1
   NUMBER OF CI RESQUEUES IN PRIMARY EXTENT           =   104
   NUMBER OF CI RESQUEUES FOR SECONDARY EXTENT        =    52

   TOTAL NUMBER OF MAIN SECONDARY EXTENTS IN POOL     =     0
   TOTAL NUMBER OF MAIN RESQUEUES IN POOL             =   309
   TOTAL NUMBER OF MAIN RESQUEUES USED IN POOL        =   150
   NUMBER OF MAIN RESQUEUES IN PRIMARY EXTENT         =   309
   NUMBER OF MAIN RESQUEUES FOR SECONDARY EXTENT      =   106

   TOTAL NUMBER OF OUTSERV SECONDARY EXTENTS IN POOL  =     4
   TOTAL NUMBER OF OUTSERV RESQUEUES IN POOL          =  1049
   TOTAL NUMBER OF OUTSERV RESQUEUES USED IN POOL     =   732
   NUMBER OF OUTSERV RESQUEUES IN PRIMARY EXTENT      =   409
   NUMBER OF OUTSERV RESQUEUES FOR SECONDARY EXTENT   =   160
   NUMBER OF OUTSERV RESQUEUES FOR SECONDARY EXTENT   =   160
   NUMBER OF OUTSERV RESQUEUES FOR SECONDARY EXTENT   =   160
   NUMBER OF OUTSERV RESQUEUES FOR SECONDARY EXTENT   =   160
   NUMBER OF OUTSERV RESQUEUES FOR SECONDARY EXTENT   =   160

   TOTAL NUMBER OF COMMON SECONDARY EXTENTS IN POOL   =     0
   TOTAL NUMBER OF COMMON RESQUEUES IN POOL           =   110
   TOTAL NUMBER OF COMMON RESQUEUES USED IN POOL      =     2
   NUMBER OF COMMON RESQUEUES IN PRIMARY EXTENT       =   110
   NUMBER OF COMMON RESQUEUES IN SECONDARY EXTENT     =    55
```

The RQ Cellpool Usage Section summarizes the status of JES3's resqueue cell pools.

Each scheduler element (SE) that processes jobs requires its own resqueues to process a job. During initialization, JES3 builds the C/I resqueue, MAIN resqueue, OUTSERV resqueue, and the COMMON resqueue cell pools. To process a job an SE obtains a resqueue from one or more of the resqueue cell pools. For example, if a job is being processed by the C/I SE, a resqueue is obtained from the CI, OUTSERV, and COMMON resqueue cell pools. If JES3 uses all the available resqueues in a resqueue cell pool, JES3 allocates another resqueue cell pool. JMF summarizes extending the cell pools in the secondary extents description.

The RQ Cellpool Usage Section provides your installation with information. You cannot use the information in the RQ Cellpool Usage Section to tune or diagnose JES3.

Description of the RQ Cellpool Usage Section:

TOTAL NUMBER OF name SECONDARY EXTENTS IN POOL = nn - identifies the number of times JES3 had to extend the cell pool so that additional RESQUEUE could be obtained.

TOTAL NUMBER OF name RESQUEUEs IN POOL = nn - specifies the total number of RESQUEUEs in the pool.

TOTAL NUMBER OF name RESQUEUEs USED IN POOL = nn - is the number of RESQUEUEs that have been allocated from the cell pool.

NUMBER OF name RESQUEUEs IN PRIMARY EXTENT = nn - is the number of RESQUEUEs in the primary extent.

NUMBER OF name RESQUEUEs FOR SECONDARY EXTENT = nn - is the number of RESQUEUEs in the secondary extent.

```
JQE/JCT ACCESS METHOD REPORT

   JCT DATA SET INFORMATION

      JCT SIZE (WITH SRF PREFIX)  =   736   BYTES

      NUMBER OF JCT READ I/O'S    =     0
      NUMBER OF JCT WRITE I/O'S   =  8955
      NUMBER OF JOBS ADDED        =  1544
      NUMBER OF JOBS DELETED      =  1115

   JCT CACHE INFORMATION

      JCT CACHE SIZE         = 13.64 MEGABYTES

      PAGE ALLOCATION              NUMBER     PERCENT
         MINIMUM                 =     61        .04%
         AVERAGE                 =    101      76.08%
         MAXIMUM                 =    120      99.99%
```

The JQE/JCT Access Method Report provides information for the storage used by the JQE/JCT access method and is divided into the following sections:

- JCT Data Set Information
- JCT Data Space Information
- JQE Information

The JQE/JCT provides you with information that you can use to tune your installation.

Notes for the JQE/JCT Access Method Report:

JES3 obtains information from the JCT data space if the data space is active. If JES3 is not using the JCT data space, **THE JCT DATA SPACE IS DISABLED** appears under the heading for JCT Data Space Information. If JES3 is using the JCT data space, the number of read requests for the JCT data set is 0, and JCT data set write operations occur continually to synchronize the JCT data between the JCT data space and the JCT data set.

See the Spool I/O Activity Report for information on the amount of I/O activity JMF recorded for the JCT data set.

Description of the JQE/JCT Access Method Report:

JCT DATA SET INFORMATION - provides information for your installation's JCT data set.

- JCT SIZE (WITH SRF PREFIX) = nn BYTES - is the size of the fixed portion of a job control block (JCT) including the single record file (SRF) for the JCT.
- NUMBER OF JCT READ I/O'S = nn - is the number of times JES3 has read from the JCT data set during the JMF interval. If JES3 is using the JCT data space, the value should be 0 because JES3 should be reading JCTs from the JCT data space.
- NUMBER OF JCT WRITE I/O'S = nn - is the number of times JES3 has updated the JCT data set during the JMF sample interval.
- NUMBER OF JOBS ADDED = nnnnnn - is the number of jobs that JES3 accepted into the system during the sample interval. When JES3 accepts a job into the system it creates a JCT for the job by issuing an IATXJCT TYPE=ADD macro. The number of jobs added indicates the number of times JES3 issued an IATXJCT TYPE=ADD macro.
- NUMBER OF JOBS DELETED = nnnnnn - is the number of jobs that were removed from the system. When JES3 removes a job from the system issuing an IATXJCT TYPE=DEL macro. The number of jobs deleted indicates the number of times JES3 issued a IATXJCT TYPE=DEL macro.

JCT DATA SPACE INFORMATION - provides information on your installation's JCT data space. JMF provides information for the JCT data space only if the JCT data space is being used.

- JCT DATA SPACE SIZE = .nn MEGABYTES - is the size of the JCT data space. See *z/OS JES3 Initialization and Tuning Guide* for information on how JES3 calculates the size of the JCT data space.
- READ REQUESTS - summarizes the number and the percentage of times JES3 read a JCT from the JCT data space during the JMF sample time.
  - PAGE IN REAL STORAGE - is the number and percentage of times during a JMF sampling period that JES3 could obtain information from a page in real storage.
  - PAGE NOT IN REAL STORAGE - is the number and percentage of times during a JMF sampling period that JES3 could not obtain information from a page in real storage.
- WRITE REQUESTS - summarizes the number and the percentage JES3 wrote a JCT to the JCT data space during the JMF sample time.
  - PAGE IN REAL STORAGE - is the number and percentage of times during a JMF sampling period that JES3 was able to write information to a page in real storage.
  - PAGE NOT IN REAL STORAGE - is the number and percentage of times during a JMF sampling period that JES3 was unable to write information to a page in real storage.
- PAGE ALLOCATION - indicates, by a number and a percentage, how well JES3 utilizes the pages allocated for the JCT data space.
  - MINIMUM - is the least number of pages JES3 allocated for the JCT data space.
  - AVERAGE - is the average number of pages JES3 allocated for the JCT data space.
  - MAXIMUM - is the greatest number of pages JES3 allocated for the JCT data space.
- NUMBER OF PAGES RELEASED = nn - is the number of pages of the JCT data space that were released from real storage.

JQE INFORMATION - describes the storage requirements for the job queue elements (JQE).

- JQEm TABLE SIZE = nnn.nn KILOBYTES - is the amount of real storage allocated for the JQE table. m is a number between 0 and 4 that identifies the JQE table.
- JQE4 ALLOCATION - is the amount of storage allocated for the JQE4. The JQE4 table contains summary information from each job's JCT.
  - MINIMUM - is the least amount of storage allocated for JQE4.
  - AVERAGE - is the average amount of storage allocated for JQE4.
  - MAXIMUM - is the most amount of storage allocated for JQE4.

```
JES3 CONTROL BLOCK UTILIZATION

   FCT ENTRY USAGE

      PREALLOCATED = 50 + 35 PERMANENT FCT'S
      MINIMUM =   55
      MAXIMUM =   87

      AVERAGE =   58
   CONSOLE BUFFER USAGE
      PREALLOCATED = 100
      MINIMUM =   0
      MAXIMUM = 412
      AVERAGE =  80
      SIZE OF PRIMARY EXTENT = 100 BUFFERS
      SIZE OF SECONDARY EXTENT = 100 BUFFERS
      SECONDARY EXTENT LIMIT = 0
      NUMBER OF RESERVED BUFFERS = 20
      NUMBER OF SECONDARY EXTENTS CURRENTLY IN USE = 1, 0, 0
      MAXIMUM NUMBER OF SECONDARY EXTENTS EVER USED = 4
      MAXIMUM NUMBER OF RESERVED BUFFERS EVER USED = 0
      SECONDARY CONSOLE BUFFER EXTENTS EXCEEDED = 0%

   JSAM BUFFER USAGE

      TOTAL DEFINED = 768
      MINIMUM =   7
      MAXIMUM = 117
      AVERAGE =  14

   USAM (PROTECTED) BUFFER USAGE

      TOTAL DEFINED = 1536
      MINIMUM =   0
      MAXIMUM =  53
      AVERAGE =   3
```

The JES3 Control Block Utilization Section provides information for your installation's FCT, buffer, and staging area usage.

You can use the information in this section to tune your installation. It does not contain any information you can use to diagnose JES3.

Description of the JES3 Control Block Utilization Section:

FCT Entry Usage - provides information for your installation's FCT chain.

- PREALLOCATED = nn + nn PERMANENT FCT's - identifies the number of nonresident and resident FCT's that your installation uses.
- MINIMUM = nn - is the lowest number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.
- MAXIMUM = nn - is the highest number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.
- AVERAGE = nn - is the average number of resident and nonresident FCTs JMF found on the FCT chain during the JMF sampling period.

CONSOLE BUFFER USAGE - identifies the number of console buffers JES3 used during the JMF sampling period.

- MINIMUM = nn - is the lowest number of console buffers JMF was using during the JMF sampling period.
- MAXIMUM = nn - is the highest number of console buffers JMF was using during the JMF sampling period.
- AVERAGE = nn - is the average number of console buffers JMF used during the JMF sampling period.
- SIZE OF PRIMARY EXTENT = nnnn BUFFERS - is the number of buffers that are defined in the primary extent.
- SIZE OF SECONDARY EXTENT = nnnn BUFFERS - is the number of buffers that are defined in the secondary extent.

- SECONDARY EXTENT LIMIT = nn - is the number of times JES3 can expand the buffer pool.
- NUMBER OF RESERVED BUFFERS = nn - is the number of reserved console buffers in real storage.
- NUMBER OF SECONDARY EXTENTS CURRENTLY IN USE = nn, nn, nn - identifies the number of secondary extents JES3 had to use.
- MAXIMUM NUMBER OF SECONDARY EXTENTS EVER USED = nn - identifies the number of secondary extents JES3 had to use.
- MAXIMUM NUMBER OF RESERVED BUFFERS EVER USED = nn - identifies the number of reserved buffers JES3 had to use.

JSAM BUFFER USAGE - describes how your installation utilizes JSAM buffers.

- TOTAL DEFINED = nnn - is the total number of JSAM buffers that are defined to your installation.
- MINIMUM = nn - is the least number of JSAM buffers JES3 used during the JMF sampling period.
- MAXIMUM = nn - is the most number of JSAM buffers JES3 used during the JMF sampling period.
- AVERAGE = nn - is the average number of JSAM buffers JES3 used during the JMF sampling period.

USAM (PROTECTED) BUFFER USAGE - describes how your installation utilizes USAM buffers.

- TOTAL DEFINED = nnn - is the total number of USAM buffers that are defined to your installation.
- MINIMUM = nn - is the least number of USAM buffers JES3 used during the JMF sampling period.
- MAXIMUM = nn - is the most number of USAM buffers JES3 used during the JMF sampling period.
- AVERAGE = nn - is the average number of USAM buffers JES3 used during the JMF sampling period.

```
STAGING AREA USAGE

   ACTIVE STAGING AREA COUNT FROM SVT(SVTSACNT) = 28

   MAXIMUM STAGING AREAS EVER USED = 144

TOTAL ACTIVE STAGING AREAS

   MINIMUM =  24

   MAXIMUM =  62

   AVERAGE =  33
```

STAGING AREA USAGE - describes the JES3's utilization of your installation's staging areas. Staging areas are used to send requests to other subsystems defined to your installation.

Description of the Staging Area Usage Section:

- ACTIVE STAGING AREA COUNT FROM SVT(SVTSACNT) = nnn - is the number of staging areas JES3 is currently using. The number is obtained from SVTSACNT in IATYSVT.
- MAXIMUM STAGING AREAS EVER USED = nnn - is the most staging areas JES3 used during the JMF sampling period.
- TOTAL ACTIVE STAGING AREAS - describes the number of staging areas JES3 used during the JMF sampling period.
  - MINIMUM = nn - is the least number of staging areas JES3 used during the JMF sampling period.
  - MAXIMUM = nn - is the most number of staging areas JES3 used during the JMF sampling period.
  - AVERAGE = nn - is the average number of staging areas JES3 used during the JMF sampling period.

```
JOB ANALYSIS
      LOG90J1 (JOB01482), RQPRTY = 15
                OUTPUT WTR                                     18 MIN. 46.00 SEC.

      VTAM    (JOB00163), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      LOG90J1 (JOB01481), RQPRTY = 15
                OUTPUT WTR                                     18 MIN. 46.00 SEC.

      LOG90J1 (JOB01497), RQPRTY = 15
                OUTPUT WTR                                     18 MIN. 46.00 SEC.

      SYSLOG  (JOB00160), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00168), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00170), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00174), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00176), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00172), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00179), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00180), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00171), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00181), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      JES3CI  (JOB00173), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00175), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00177), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      INITJES3(JOB00178), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      TCAS    (JOB00203), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
                ON MAIN                                        29 MIN. 18.00 SEC.

      RTXA    (JOB00193), RQPRTY = 15, CLASS = A              , GROUP = JES3TEST
```

The Job Analysis Section identifies the jobs JES3 was processing during the JMF sampling period. The Job Analysis Section provides summary information on the amount of time each job spent in each scheduler element (SE) during the JMF sampling period.

The Job Analysis Sections provides you information for the jobs in your system. It does not contain information that you can use to tune or diagnose your system.

Notes for the Job Analysis Section:

JMF obtains the information for the Job Analysis Section from the resqueue. JMF reports on the first 50 jobs in the system if you did not change the default value for the JOB= parameter when you called JMF. Because the jobs at the top of the resqueue are the oldest jobs in the complex and are typically the longest running jobs, such as RMF and initiators, the Job Analysis Report provides information that you cannot use to tune JES3. To make the report more useful, you should specify a larger number of jobs on the JOB= parameter when you invoke JMF.

The Job Analysis Section uses the term JES3 DSP's throughout the JMF Job Report Section. When an operator issues a command to call a DSP, JES3 assigns a job number to the DSP. JMF identifies job's that are callable DSP's as JES3 DSP's.

Description of the Job Analysis Section:

jobname - is the name assigned to the job.

(JOBnnnn) - is the job identifier JES3 assigned to the job.

RQPRTY = nnnnn - is the resqueue priority which is obtained from the priority assigned to the job.

CLASS = c - is the class assigned to the job.

GROUP = c - is the group assigned to the job.

state nnn.nn SEC. - identifies the amount of time the job spent in a JES3 state during the JMF sampling period. state identifies the scheduler element (SE) that was processing the job when JMF took the sample. The term JES3 DSP's identifies the amount of time the callable DSP was active under the task. nn.nn SEC. identifies the amount of time JES3 spent in the state.

```
JSS WORK-TO-DO QUEUE REPORT

      JSS              MINIMUM          MAXIMUM          AVERAGE
      QUEUE            QUEUE            QUEUE            QUEUE
      NAME             LENGTH           LENGTH           LENGTH

   JSS-READY              0               10                0
   CATALOG-WAIT           0                0                0
   RSQ-WAIT               0                0                0
   PROCLIB-WAIT           0                0                0
   MAIN-WAIT             18               44               30
   DSP-WAIT              18               41               22
   MPLOC-WAIT             0                0                0
   DUPNAME-WAIT           0               20               10
```

The JSS Work-to-do Queue Report provides information for the queues the job segment scheduler (JSS) uses to keep track of the jobs JES3 needs to process. If JES3 is not processing a job, JES3 places the job on one of several queues. JSS uses the following queues to keep track of the jobs JES3 needs to process:

- JSS-Ready queue contains jobs that are ready for JES3 to schedule them for their scheduler element (SE).
- Catalog-wait queue contains jobs that are waiting for an SMS-managed catalog to become available before JES3 can schedule the jobs for C/I.
- RSQ-Wait queue contains jobs that are waiting for a resqueue. These jobs require a resqueue or a DSP before JES3 can schedule them for additional processing.
- Proclib-Wait queue contains jobs that require access to a proclib but cannot gain access because another job is using the proclib.
- Main-Wait queue contains jobs that are waiting for a main, class or a group to become available.
- DSP-Wait queue contains the jobs that are waiting for a SE to become available.
- MPLOC-wait queue contains jobs that are waiting for a main processor to become available to perform LOCATE processing.
- Dupname-wait queue contains jobs that are waiting for a job with a duplicate name to end so that these jobs can be scheduled for main.

The JSS Work-To-Do Queue Report does not contain any tuning information but it can help you to diagnose a problem your installation may experiencing scheduling jobs.

Description for the JSS Work-to-do Queue Report:

JSS QUEUE NAME cccccccc - identifies the name of the queue used by JSS.

MINIMUM QUEUE LENGTH nnn - is the minimum number of jobs JES3 placed on the queue during the JMF sampling period.

MAXIMUM QUEUE LENGTH nnn - is the maximum number of jobs JES3 placed on the queue during the JMF sampling period.

AVERAGE QUEUE LENGTH nnn - is the average of the minimum and maximum number of jobs JES3 placed on the queue during the JMF sampling period.

Diagnostic Information:

Examine the average queue length for each queue in the JSS Work-To-Do Queue Report. If there are a large number of jobs on the:

- CATALOG-WAIT queue, an SMS catalog volume might have been varied offline or its SMS storage group might have been disabled.
- RSQ-WAIT queue, your installation may be experiencing a problem obtaining a resqueue from a resqueue cell pool for the job. Your installation may not have enough available virtual storage. The Resqueue Cell Pool Statistics Section of the JMF report may provide you with more information on the availability of the resqueues in your installation.
- PROCLIB-WAIT queue, your installation may be experiencing accessing a proclib. Enter a *I,PROCLIB command to obtain additional information for the status of your installation's proclibs.
- MAIN-WAIT queue
  - A main has been varied offline or has disconnected
  - A group has been disabled (*F,G,main,G,group,OFF)
  - A class has been disabled (*F,G,main,C,class,OFF)
- DSP-WAIT queue, one or more of JES3's DSPs may have reached the maximum number of copies of the DSP that can run concurrently in your installation. Identify the DSP that has reached its maximum use count and issue a *F,X,D=dspname,MC=nn to increase the number of copies that your installation can run concurrently in your installation. Also the FCT Summary Report may provide your with additional helpful information.
- MPLOC-WAIT queue, a main might have been varied offline or disconnected.
- DUPNAME-WAIT queue, this might indicate a problem; for example a loop could cause jobs with the same name to be submitted. Use the *I J=jobname command to list all jobs of a specified name.

```
JES3 FUNCTION SUMMARY

FUNCTION            AVERAGE TIME      JOBS         MINIMUM TIME       JOBID              MAXIMUM
TIME        JOBID

JES3 DSP'S        29 MIN. 18.00 SEC.    1        29 MIN. 18.00 SEC.  (JOB00307)        29 MIN. 18.00
SEC.  (J0B00307)
  DEADLINE        29 MIN. 18.00 SEC.    1        29 MIN. 18.00 SEC.  (JOB00307)        29 MIN. 18.00
SEC.  (JOB00307)
ON MAIN           29 MIN. 18.00 SEC.   42        29 MIN. 18.00 SEC.  (JOB00163)        29 MIN. 18.00
SEC.  (JOB00163)
OUTPUT WTR        18 MIN. 46.00 SEC.    7        18 MIN. 46.00 SEC.  (JOB01482)        18 MIN. 46.00
SEC.  (JOB01482)
```

The JES3 Function Summary Section summarizes the information JMF provided in the Job Analysis Section. It provides a list of the jobs that were active during the JMF sampling period and the maximum, minimum, and average amount of time required by each job.

The JES3 Function Summary Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Description of the JES3 Function Summary Section:

JES3 FUNCTION SUMMARY SECTION - provides summary information for each active job in your installation.

- FUNCTION cccccccc - identifies the state of the job.save This name matches the RQ index value. If the RQ index value is RQNOSUB then the DSP name is formatted and is displayed under "JES3 DSP's".

- AVERAGE TIME nnn.nn SEC. - is the least amount of time one of the jobs took to execute in the JES3 function during the JMF sampling period.
- JOBS nnnn - is the average number of jobs that the SE processed during the JMF sampling period.
- MINIMUM TIME nnn.nn SEC. - is the least amount of time one of the jobs took to execute in the JES3 function during the JMF sampling period.
- JOBID (JOBnnnn) - is the job identifier of the job that took the least amount of time to execute in the JES3 function.
- MAXIMUM TIME nnn.nn SEC. - is the most amount of time one of the jobs took to execute in the function during the JMF sampling period.
- JOBID (JOBnnnn) - is the job identifier of the job that took the most amount of time to execute in the JES3 function.

MDS AND GMS SCHEDULING ANALYSIS - Main device scheduling (MDS) is the JES3 function responsible for scheduling resources to a job. All the resources required by a job must be available in order for JES3 to schedule the job for execution. It may take MDS one or several attempts to allocate the required resources to a job. Resources required by a job are kept in a job summary table (JST). Any resources that MDS cannot allocate to a job are kept in an list called the allocation resource list (ARL). The ARL is provided in the in the MDS Allocate section of the JES3 formatted dump. See Chapter 4, “JES3 Formatted dump,” on page 167 for additional information.

After the first attempt to allocate resources to a job, MDS must obtain the list of resources from the ARL and JST to ensure all the resources required by the job are available. During subsequent attempts to schedule a job for execution, MDS reads the ARL that contains a list of resources it was previously unable to allocate from storage.

1. If resources that were previously unavailable are still unavailable, MDS fails the allocation attempt.
2. If all the previously unavailable resources are available, MDS reads the JST to determine if resources that were previously available can still be allocated to the job.
    a. If the previously available resources are no longer available MDS fails the allocation attempt and later attempts to reschedule the job for execution.
    b. If the previously available resources are still available, MDS allocates the resources to the job and allows JES3 to schedule the job for execution.

Description for the MDS and GMS Scheduling Analysis Report:

TOTAL NUMBER OF ALLOCATION RETRIES DURING JMF INTERVAL: nnn - is the total number of attempts MDS made to allocate the required resources to a job. See steps “1” on page 355 and “2” on page 355 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS REJECTED WITHOUT READING JST: nnn - is the number of times MDS attempted to allocation when previously unavailable resources were still unavailable. See step “1” on page 355 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS ALLOWED TO READ JST: nnn - is the number of times MDS found previously unavailable resources were available and MDS read the JST to determine if previously available resources were still available. See step “2” on page 355 for a description of the processing for this number.

NUMBER OF ALLOCATION ATTEMPTS REJECTED AFTER READING JST: nnn - is the number of times MDS found a job could not be scheduled for execution because resources that were previously available were no longer available. See step “2.a” on page 355 for a description of the processing for this number.

NUMBER OF SUCCESSFUL ALLOCATIONS: nnn - is the number of times MDS successfully allocated all the resources to a job so that JES3 could schedule the job for execution during the JMF sampling period. See step “2.b” on page 355 for a description of the processing for this number.

```
JOBS IN EXECUTION BY MAIN PROCESSOR

   JOBS IN EXECUTION ON JULLIET     JES3 GLOBAL     STARTED INITIATORS = 30

              6 +
                |
              8 +
                |
             10 +
                |
             12 +
                |
             14 +
                |***************************************
                 ---+---+---+---+---+---+---+---+---+---+
                    1   2   3   4   5   6   7   8   9   1
                    0   0   0   0   0   0   0   0   0   0
                                                        0

                 AVERAGE =    19, MINIMUM =    8, MAXIMUM =    22

   JOBS IN EXECUTION ON ECHO        JES3 LOCAL       STARTED INITIATORS =  0

   JOBS IN EXECUTION ON INDIA       JES3 LOCAL       STARTED INITIATORS =  0

   JOBS IN EXECUTION ON LIMA        JES3 LOCAL       STARTED INITIATORS =  0

   JOBS IN EXECUTION ON GOLF        JES3 LOCAL       STARTED INITIATORS =  0

   JOBS IN EXECUTION ON CHARLIE      JES3 LOCAL       STARTED INITIATORS =  0

   JOBS IN EXECUTION ON BRAVO        JES3 LOCAL       STARTED INITIATORS =  0
```

The Jobs in Execution Section By Main Processor Section identifies the number of initiators are active on each main in your complex. An initiator creates an environment so that the job can execute.

The Jobs in Execution Section By Main Processor can be used to help tune your installation.

Description of the Jobs in Execution Section:

JOBS IN EXECUTION on main - identifies the main JMF is describing.

{JES3 GLOBAL | JES3 LOCAL } - indicates whether the main is a JES3 global or local.

STARTED INITIATORS = nn - indicates the number of initiators JES3 has started.

Tuning Information:

Use the Jobs In Execution By Main Processor Section to determine if the workload is correctly distributed across your installation. Compare the number of initiators JES3 has started on the global and each of the locals. The global typically has the largest number of started initiators, however, it can vary based on the configuration of your installation.

```
JOBS IN EXECUTION BY JOB CLASS GROUP ON JULLIET

   JOBS IN EXECUTION ON JULLIET     IN GROUP JES3TEST     STARTED INITIATORS = 15


              2 +
                |
              4 +
                |
              6 +
                |
              8 +
                |
             10 +
                |
             12 +*
                |**
             14 +****
                |********************************
                 ---+---+---+---+---+---+---+---+---+---+
                    1   2   3   4   5   6   7   8   9   1
                    0   0   0   0   0   0   0   0   0   0
                                                        0

                 AVERAGE =    15, MINIMUM =    5, MAXIMUM =    15

   JOBS IN EXECUTION ON JULLIET     IN GROUP JES3HOLD     STARTED INITIATORS =  0
```

The Jobs in Execution by Job Class Group on main Section identifies the number of initiators JES3 has started for each job class group for each main in your complex. in your complex. An initiator creates an environment so that the job can execute.

The Jobs in Execution Section By Main Processor can be used to help tune your installation.

Description of the Jobs in Execution by Job Class Group Section:

JOBS IN EXECUTION on main - identifies the main JMF is describing.

IN GROUP group - is the job class group. You assigned job class groups to the specified main by using GROUP statement in your JES3 initialization stream.

STARTED INITIATORS = nn - indicates the number of initiators JES3 has started.

Tuning Information:

Use the Jobs in Execution by Job Class Group Section with reports generated by the Resource Measurement Facility (RMF) to determine if the jobs are evenly distributed across the job classes defined to your installation.

```
ALLOCATED JES3 DEVICES BY SETNAME ON JULLIET

   LEGEND FOR GLOBAL PROCESSOR DEVICE PLOTS:

      J = SETUP DEVICES ALLOCATED BY JES3
      X = SETUP DEVICES IN EXECUTION ON MAIN (CLASS 1 DEVICES ONLY)
      M = SETUP DEVICES ALLOCATED BY MVS

   ALLOCATED JES3 DEVICES ON JULLIET FOR SETNAME XTYPE:  DISK4         TOTAL DEVICES = 516

             AVERAGE =      1, MINIMUM =      0, MAXIMUM =      1  J

             AVERAGE =      1, MINIMUM =      0, MAXIMUM =      1  M

   ALLOCATED JES3 DEVICES ON JULLIET FOR SETNAME XTYPE:  TAPE1         TOTAL DEVICES =   6

   ALLOCATED JES3 DEVICES ON JULLIET FOR SETNAME XTYPE:  TAPE2         TOTAL DEVICES =  16

   ALLOCATED JES3 DEVICES ON JULLIET FOR SETNAME XTYPE:  PRT002        TOTAL DEVICES =   1
```

The Allocated JES3 Devices by SETNAME on main describes the number of devices are currently allocated for each SETNAME group defined to the specified main. During initialization, you use the SETNAME initialization statement to group device types together.

The Allocated JES3 Devices by SETNAME Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Description of the Allocated JES3 Devices by SETNAME Section:

ALLOCATED JES3 DEVICES ON main - identifies the main JMF is describing.

FOR SETNAME XTYPE: xtype - is the name for the group of devices with compatible characteristics. You assigned the name to the group by using the XTYPE parameter on the DEVICE statement.

TOTAL DEVICES = nnn - is the total number of devices assigned to the specified XTYPE.

AVERAGE = nn - is the average number of devices that JES3 has started in the specified group.

MINIMUM = nn - is the least number of devices JES3 started in the specified group.

MAXIMUM = nn - is the most number of devices JES3 started in the specified group.

{J | X | M } - indicates the device class.

```
JOB QUEUE LENGTHS BY JES3 FUNCTION

   JOB QUEUE LENGTHS FOR RQINDEX FUNCTION:   JES3 DSP'S

                |
              0 +*************************************
                |****
             16 +*
                |
             32 +
                |
             48 +
                |
                 ---+---+---+---+---+---+---+---+---+---+
                    1   2   3   4   5   6   7   8   9   1
                    0   0   0   0   0   0   0   0   0   0
                                                        0

                 AVERAGE =     6, MINIMUM =    3, MAXIMUM =    34

   JOB QUEUE LENGTHS FOR RQINDEX FUNCTION:   CI IN AN FSS ADDRESS SPACE

                 AVERAGE =     1, MINIMUM =    0, MAXIMUM =     6

   JOB QUEUE LENGTHS FOR RQINDEX FUNCTION:   AWAITING POSTSCAN (BATCH)

                 AVERAGE =     1, MINIMUM =    0, MAXIMUM =     4

   JOB QUEUE LENGTHS FOR RQINDEX FUNCTION:   AWAITING POSTSCAN (DEMAND SELECT)
```

The Job Queue Lengths by JES3 Function Section summarizes the number of jobs found on each resqueue index.

The Job Queue Lengths by JES3 Function Section contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Notes for the Job Queue Lengths by JES3 Function Section:

JMF produces a histogram when there are jobs on the queue. If the queue does not contain any jobs, JMF does not produce a histogram.

Description of the Job Queue Lengths by JES3 Function Section:

JOB QUEUE LENGTHS FOR RQINDEX FUNCTION: rqindex - identifies the name of the resqueue index.

histogram - is present only if JMF found jobs waiting on the resqueue index during the JMF sampling period.

AVERAGE = nn - is the average number of jobs JMF found on the resqueue index during the JMF sampling period.

MINIMUM = nn - is the lowest number of jobs JMF found on the resqueue index during the JMF sampling period.

MAXIMUM = nn - is the largest number of jobs JMF found on the resqueue index during the JMF sampling period.

```
JES3 HOT SPOT ANALYSIS

   ENTRIES SORTED BY % BUSY

   SPOT = 999   WIDTH = 50   NAME = ALL   HFCT = ALL

   TYPE FIELD:  C=CSA, J=JES3 PRIVATE, L=MLPA, M=MVS NUCLEUS, N=IATNUC, P=PLPA,
R=IATRJMN
                EC=EXTENDED CSA, EJ=EXTENDED JES3 PRIVATE, EL=EXTENDED MLPA,
EP=EXTENDED PLPA

                                                  ------- % OF RUN ACTIVE
-------      -- % OF TASK ACTIVE --

           CSECT    TYPE    START       END       OVERALL   IN IATNUC   IN
IATAUX      IATNUC           IATAUX

          IATGRTX    EC    00000000   0000004F      .42 %       .42 %       .00
%      7.80 %           .00 %

          MVS NUCL    M    00120930   0012097F      .38 %       .38 %       .00
%      7.17 %           .00 %

          IATGRSV     N    00000050   0000009F      .28 %       .28 %       .00
%      5.27 %           .00 %

          IATGRCT     N    00000D20   00000D6F      .20 %       .20 %       .00
%      3.79 %           .00 %

          MVS NUCL    M    00074EF0   00074F3F      .20 %       .20 %       .00
%      3.79 %           .00 %

          IATSSCM    EL    00000820   0000086F      .17 %       .17 %       .00
%      3.16 %           .00 %

          IATCNWO     N    00000820   0000086F      .15 %       .15 %       .00
%      2.95 %           .00 %

          IATGRCT     N    000000F0   0000013F      .14 %       .14 %       .00
%      2.74 %           .00 %

          IATGRSV     N    000000A0   000000EF      .13 %       .13 %       .00
%      2.53 %           .00 %

          MVS NUCL    M    0022B500   0022B54F      .13 %       .13 %       .00
%      2.53 %           .00 %

          IATSSCM    EL    000000A0   000000EF      .10 %       .10 %       .00
%      1.89 %           .00 %

          IATGRCT     N    000001E0   0000022F      .07 %       .07 %       .00
%      1.47 %           .00 %

          IATDMNC     N    00000F50   00000F9F      .06 %       .06 %       .00
%      1.26 %           .00 %

          IATGRQC     N    00000B90   00000BDF      .06 %       .06 %       .00
%      1.26 %           .00 %

          IATGRSV     N    00000000   0000004F      .06 %       .06 %       .00
%      1.26 %           .00 %

          IATGRSV     N    000000F0   0000013F      .05 %       .05 %       .00
%      1.05 %           .00 %

          FCT-CODE   EJ    N/A        N/A           .04 %       .04 %       .00
%       .84 %           .00 %

          IATDMDK    EL    000005A0   000005EF      .04 %       .04 %       .00
```

```
%        .84 %            .00 %

           IATGRCT     N    000000A0   000000EF      .04 %       .04 %       .00
%        .84 %            .00 %
                            00000230   0000027F      .04 %       .04 %       .00
%        .84 %            .00 %
                            00000E60   00000EAF      .04 %       .04 %       .00
%        .84 %            .00 %

           IATGRPT     N    00000000   0000004F      .04 %       .04 %       .00
%        .84 %            .00 %

           IATSSCM    EL    00000A00   00000A4F      .04 %       .04 %       .00
%        .84 %            .00 %
```

The Hot Spot Analysis Report Section provides the percentage of CPU time JES3 spent in each csect while JMF was executing.

The Hot Spot Analysis Report Section contains information for your installation. It does not contain any information you can use to tune or diagnose JES3.

Notes for the Hot Spot Analysis Report Section:

Generally, the csect name refers to a JES3 module. JMF creates two hot spot reports. In the first report, JMF orders the entries by the csects where JMF reported csects that had the highest percentage of CPU time. In the second report, JMF orders the entries by csect name. For each csect name, JMF may generate more than one entry. An entry under a csect name represents an instance where JMF found JES3 executing. The percentages revel the number of occurrences for each instance.

The start and end addresses of FCT-code are not meaningful, because FCT-code entries indicate that JES3 is processing in MFM (Multi Function Monitor). MFM dispatches code that is resident in each FCT (IATYFCT) control block.

Description for the Hot Spot Analysis Report Section:

CSECT csect name - provides the name of the csect. The csect name generally refers to a JES3 module. FCT-code refers to code in any of the JES3 FCTs. MFM executes code in an FCT when the MFM dispatches an FCT. MVS NUCL refers to the number of instances JMF found the system executing in an MVS module. UNKNOWN refers to an instance where JMF could not categorize the location that had control when the sample was taken.

TYPE type - indicates where the csect resides. A type of:

C
: indicates the csect resides in CSA.

N
: indicates the csect resides in the JES3 nucleus (IATNUC).

P
: indicates the csect resides in pageable link pack area (PLPA).

L
: indicates the csect resides in the modified link pack area (MLPA).

J
: indicates the csect resides in the JES3 private area.

M
: indicates the csect resides in the MVS nucleus.

R
: indicates the csect is a RJP load module.

EC
: indicates the csect resides in extended CSA.

EJ
: indicates the csect resides in extended JES3 Private.

EP
indicates the csect resides in the extended PLPA.

EL
indicates the csect resides in extended MLPA.

START adr - specifies the beginning address of the monitored section in the csect.

END adr - specifies the end of the monitored section in the csect.

% OF RUN ACTIVE -

- OVERALL nn.nn% - is the percentage of JMF samples that JMF found the csect active.
- IN IATNUC nn.nn% - is the percentage of JMF samples that JMF found the csect active in the nucleus.
- IN IATAUX nn.nn% - is the percentage of JMF samples that JMF found the csect active in the auxiliary address space.

% OF TASK ACTIVE -

- IATNUC nn.nn% - is the percentage of JMF samples that JMF found the csect active in the nucleus.
- IATAUX nn.nn% - is the percentage of JMF samples that JMF found the csect active in the auxiliary address space.

```
JES3 INTERNAL READER DSP ANALYSIS REPORT

     MAXIMUM ACTIVE INTERNAL READER DSPS ALLOWED        20

     MINIMUM NUMBER OF ACTIVE INTRDRS                   18

     MAXIMUM NUMBER OF ACTIVE INTRDRS                   20

     AVERAGE NUMBER OF ACTIVE INTRDRS                   18

     AVERAGE NUMBER OF IDLE INTERNAL READER DSPS         1

     AVERAGE LENGTH OF INTERNAL READER QUEUE            24

     % OF JMF SAMPLES ACTIVE INTRDRS COUNT AT MAXIMUM   38.20 %

     5 OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO      38.20 %
```

The JES3 Internal Reader DSP Analysis Report provides information on the internal readers that are active in your system. JES3 automatically starts INTRDR DSPs to process data sets that contain job streams. After JES3 starts an internal reader, input service can process the data set as an input stream.

The JES3 Internal Reader DSP Analysis Report contains information for your installation. It does not contain any information that you can use to tune or diagnose your system.

Description of the JES3 Internal Reader DSP Analysis Report:

MINIMUM NUMBER OF ACTIVE INTRDRS nn - is the minimum number of INTRDR DSPs that JMF found active during the JMF sampling period.

MAXIMUM NUMBER OF ACTIVE INTRDRS nn - is the maximum number of INTRDR DSPs that JMF found active during the JMF sampling period.

AVERAGE NUMBER OF ACTIVE INTRDRS nn - is the average number of INRDR DSPs that JMF found active during the JMF sampling period.

AVERAGE NUMBER OF IDLE INTERNAL READER DSPS nn - is the average number of INRDR DSPs that were posted but were not processing any work during the JMF sampling period.

AVERAGE LENGTH OF INTERNAL READER QUEUE nn - is the average number of INRDR DSPs that JMF found on the internal reader queue during the JMF sampling period.

% OF JMF SAMPLES ACTIVE INTRDRS COUNT AT ZERO n.nn% - is the percentage of times that the internal reader count was found to be at zero during the JMF sampling period.

```
   SSOB         NUMBER        NUMBER        MINIMUM       MAXIMUM
 FUNCTION      REQUESTS      RESPONSES      RESPONSE      RESPONSE
   CODE        RECEIVED      RECEIVED        TIME          TIME¹
WTO/WTOR          1             1           22.868        22.868
JOB TERM          0             0             .000          .000
MDS DYNAL         0             0             .000          .000
MDS UNALLOC       0             0             .000          .000
MDS CHGDD         0             0             .000          .000
MDS CHGNQ         0             0             .000          .000
JDS ACCESS        0             0             .000          .000
SPOOL ALLOC       0             0             .000          .000
ENDREQ            0             0             .000          .000
DYNAL DYN         0             0             .000          .000
DYNAL UNAL        0             0             .000          .000
DYNAL CHGDD       0             0             .000          .000
```

[1]An asterisk character (*) indicates that the longest possible response time is displayed, because the total response time (current time minus start time) would have caused a register overflow during the calculation.

Figure 24. SSI RESPONSE TIME

The SSI Response Report identifies the number of requests for JES3 global services.

You can use the SSI Response Report diagnostic information to determine if your installation is efficiently processing messages and commands.

Notes for the SSI Response Report:

The SSI Response Report provides information on the amount of time it took JES3 to process a request for JES3 global service.

Description of the SSI Response Report:

SSOB FUNCTION CODE cccccccc - identifies the type of SSI request.

NUMBER REQUESTS RECEIVED nnnn - is the number of requests the main processed during the JMF sampling period.

NUMBER RESPONSES RECEIVED nnnn - is the number of responses the main sent to other mains during the sampling period.

MINIMUM RESPONSE TIME nnnn - is the least amount of time in milliseconds JES3 took to process the request during the JMF sampling period.

MAXIMUM RESPONSE TIME nnnn - is the greatest amount of time in milliseconds JES3 it took to process the request during the JMF sampling period.

AVERAGE RESPONSE TIME nnnn - is the average amount of time in milliseconds JES3 took to process the request during the JMF sampling period.

```
SSI DESTINATION QUEUE REPORT

     DESTINATION                         FSS        FSA        MINIMUM        MAXIMUM        AVERAGE
        QUEUE                            NAME       NAME        QUEUE          QUEUE          QUEUE
        NAME                                                   LENGTH         LENGTH         LENGTH

     MAIN SERVICE                                                00             29             00

     GENERALIZED MAIN SCHEDULING                                 07             07             07

     VERIFY                                                      00             00             00

     LOCATE                                                      00             01             00

     JES DATA MANAGEMENT                                         00             00             00

     USER TRACK ALLOCATION                                       00             03             00

     SVC 34                                                      00             01             00

     WTO                                                         00             14             00

     RESERVED                                                    00             00             00

     DYNAMIC ALLOCATION                                          00             00             00

     COMMON ALLOCATION                                           00             00             00

     COMMON UNALLOCATION                                         00             01             00

     VERIFY RESPONSE                                             00             00             00

     CHANGE DDNAME                                               00             00             00

     WORK TO DO DRIVER                                           00             01             00

     SSICS QUEUE 1                                               00             00             00

     SSICS QUEUE 2                                               00             00             00
```

The SSI Destination Queue Report identifies the number of staging areas JMF processed during the JMF sampling period. MVS uses a staging area to pass a request for information between address spaces in your system. JES3 on the global receives the staging area and places it on an SSI destination queue. JES3 has a destination queue for each type of request it processes.

The SSI Destination Queue Report provides information for the number of staging areas JMF processes during the JMF sampling period. It does not provide you with information you can use to diagnose or tune JES3.

Description of the SSI Destination Queue Report:

DESTINATION QUEUE NAME cccccccc - specifies the name of the destination queue.

FSSID nnnn - identifies the address space id of the FSS address space.

FSAID nnnn - identifies the FSAID of the FSA.

MINIMUM QUEUE LENGTH nnnn - is the lowest number of staging areas JMF found on the destination queue during the JMF sampling period.

MAXIMUM QUEUE LENGTH nnnn - is the greatest number of staging areas JMF found on the destination queue during the JMF sampling period.

AVERAGE QUEUE LENGTH nnnn - specifies the average number of staging areas JMF found on the destination queue during the JMF sampling period.

Description of the Workload Manager Information: When WLM information is requested, the following information will be reported for each service class that is detected during the sampling interval. Information will be reported only for those jobs in WLM managed groups.

The number of jobs waiting to be scheduled for main service.

The number of jobs is MDS processing.

The number of jobs waiting to be selected by an initiator (GMS Select).

The number of jobs that were eligible to execute somewhere in the SYSPLEX.

The number of jobs that were not eligible to execute anywhere in the SYSPLEX because of operator hold, resource delay, class/group unavailable etc.

The number of jobs that were not eligible to execute anywhere in SYSPLEX because of class limits (e.g. TDEPTH, TLIMIT, MDEPTH, MLIMIT).

The number of jobs in the SYSPLEX that are using the service class that are in execution and are in a WLM managed group.

For each system, the number of jobs that were eligible to execute on a particular system.For each system, the number of jobs that were not eligible to execute on a particular system.

For each system, the number of jobs in the service class that are in execution and are in a WLM managed group.

For each system, the number of jobs in the service class that are eligible only on this system when this system is constrained.

For each system, the percentage of time system is constrained. This is calculated by the following formula:

Constraint Count: Each time JMF sampling is done, if the system is found to be constrained, the count is incremented.

```
(Constraint Count*100)/(No. of JMF Samples)
```

Chapter 7. JES3 Recovery

Recovery procedures minimize system reinitialization time that may result from hardware and software failures. The following recovery procedures are discussed:

- JES3 and C/I Functional Subsystem Failsoft
- Alternate CPU Recovery
- Reconfiguring a Processor Complex
- Checkpoint/Restart
- Restarting JES3 After a Failure
- JES3 Checkpoint Data Sets
- Dynamic System Interchange
- BSC RJP Recovery
- Recovering from Output Writer Functional Subsystem Failures
- Recovering from SAPI Failures
- Recovering from Spool I/O Errors
- Recovering from C/I Functional Subsystem Address Space Failures

JES3 and C/I Functional Subsystem Failsoft

JES3 failsoft provides recovery facilities to avoid JES3 restarts whenever possible. JES3 failsoft in C/I functional subsystem (FSS) address spaces provides the same facilities to avoid C/I FSS abnormal ending whenever possible.

- For jobs, the process of restarting is determined by installation- and programmer-supplied restart parameters.
- For failing functions or DSPs, the system recovery facility and the JES3 JESTAE and failsoft facilities allow the function or DSP to recover, if possible, or be ended. The failure is recorded in the logrec data set. The values specified for the DUMP parameter and the WANTDUMP parameter on the OPTIONS initialization statement determine when and where JES3 takes a dump. When a critical function cannot recover, JES3 or the C/I FSS address space terminates.

JES3 retains the Failsoft Logout across a JES3 restart. You can retrieve the Failsoft Logout using the MVS D R command. This applies only to the JES3 address space (not for C/I or Output Service FSSs. JES3 retains only the most recent logout on subsequent failures.

Job Recovery

Jobs active on processors at the time of system failure are restarted according to installation- and programmer-supplied restart parameters. The action that JES3 takes for jobs affected by the failure depends upon the options specified on the FAILURE parameter. The user can specify the FAILURE parameter on the //*MAIN JES3 control statement. You (the system programmer) can specify it on the CLASS or STANDARDS initialization statements.

The order of overrides for the FAILURE parameter are: //*MAIN overrides CLASS or STANDARDS; CLASS overrides STANDARDS.

Valid options for the FAILURE parameter and the action JES3 takes for each affected job are:

- **CANCEL:** Print any job output that is in a SYSOUT class that is specified as TYPE=PRINT. After printing the output, JES3 cancels the job.
- **HOLD:** Place the job into the hold queue.

- **PRINT:** Print any job output that is in a SYSOUT class that is specified as TYPE=PRINT. Then place the job into the hold queue.
- **RESTART:** Restart the job from the first job step. The job will be restarted on the processor on which it was active.

Whenever a processor fails in an MVS system, the MVS checkpoint/restart facility (or warm start facility, if applicable) is invoked before the failure options are examined:

- The checkpoint/restart facility is used to record information about a job at programmer-designated checkpoints so that, if necessary, the job can be restarted at one of these checkpoints or at the beginning of a job step. Restarts can take place immediately (initiated by the console operator) or be deferred until the job is resubmitted.
- Any job with a journal data set will attempt warm start. The warm-start facility will ensure cleanup of any scratch VIO data sets for the job.

Job Journal Data Set Usage

The job journal is a sequential data set that resides on a spool volume of JES3. Unique to MVS, its function is to contain a set of selected job-related control blocks that are critical to automatic restart processing.

The job journal is necessary because MVS maintains its scheduler control blocks in the scheduler work area (SWA) in pageable storage, rather than on a job queue on external storage. When a job or the system fails, there is a resultant loss of the address space that contains the SWA and its job control blocks. Because it preserves up-to-date copies of certain critical control blocks, the job journal makes it possible to reconstruct the SWA. SWA control blocks will be reconstructed to their state just before the failing step for automatic step restart. For automatic checkpoint restart they will be reconstructed as they appeared at the most recently issued CHKPT macro in the job step. This capability is available for the following kinds of restart:

- Automatic step restart
- Automatic checkpoint restart
- System restart (including completion of job or step ending)

Therefore, if a job does not have job journaling, automatic restarts cannot be used.

Job journaling is provided to a job in JES3 in one of three ways:

1. The job class of the job has requested journaling (JOURNAL=YES on the CLASS initialization statement).
2. The job has a //*MAIN statement with JOURNAL=YES overriding the job class table.
3. The job's JCL has either RESTART= on the JOB statement or RD= on the JOB or EXEC statement.

After a system failure and JES3 restart of the failing main processor, those jobs in execution that had requested job journaling will be MVS system restarted (or warm started). If a job is eligible for MVS automatic restart, the system will issue message IEF225D asking if the job should restart. If the job is not eligible for restart, or the operator indicates that restart should not be attempted, any scratch or VIO data sets the job had allocated will be deleted and the job will be terminated. Therefore it may be desirable for certain classes of jobs which make a significant use of scratch or VIO data sets to request job journaling.

Function or DSP Recovery

When JES3 or a C/I FSS address space abnormally terminates, the JES3 ESTAE recovery processing routines in the terminating address space are given control. These routines examine the function control table active at the time of termination to determine which function or DSP has failed.

JES3 uses two levels of ESTAE recovery processing. The lower level ESTAE receives control whenever JES3 abnormally terminates. The higher level ESTAE is entered only if ESTAE percolation occurs, either because of a failure in the lower level ESTAE or because the lower level ESTAE returned to the control program indicating that termination continue. When the higher level ESTAE is given control, JES3 will be ended.

The JES3 ESTAE retry routines pass control to the JESTAE exit routine of the failing function or DSP. JESTAE then diagnoses the error, starts end processing, and informs JES3 whether the failing function or DSP can recover or has to be ended (quiesced). All other functions or DSPs remain in execution.

If a function or DSP has to be terminated, system resources are returned, all units listed in the function control table for the failing function or DSP are returned, and the function or DSP is placed in a permanent (nondispatchable) AWAIT state.

There are certain functions that are critical to JES3 operation:

- Console service
- Spool space allocation (in a JES3 local address space or a C/I FSS address space)
- Initialization
- Job segment scheduler (in the JES3 global address space)
- FSSDRVR (in a C/I FSS address space)
- JES3 lower level ESTAE

If one of these functions fails, the ESTAE routine abnormally ends JES3. It is then the responsibility of the operator to restart JES3.

For a JES3 local address space or a C/I FSS address space, the spool space allocation function is critical. If that function fails, the address space terminates and the operator must restart it.

Alternate CPU Recovery

Alternate CPU recovery (ACR) provides a tightly-coupled multiprocessing system with the ability to recover system operation on the operational processor after one processor fails. ACR recovers as much work from the failing processor as possible, and ends work it cannot recover.

If JES3 was active on the failing processor, JES3 analyzes the function active at the time of the hardware failure (for example, the device path might be analyzed):

- If a critical JES3 function was active and cannot recover, JES3 is ended. The operator must restart JES3.
- If a noncritical JES3 function was active and cannot recover, the function is either ended or quiesced.

If the global processor is a tightly-coupled multiprocessor and a failure occurs on one of the processors, ACR attempts recovery on the other processor.

Reconfiguring a Processor Complex

Reconfiguring a processor complex without restarting JES3 is possible if you initially define your JES3 complex to permit partitioning. During initialization, MAINPROC statements should be included for all configurations of mains that your complex might choose to use. A processor complex can be reconfigured from a single-image main into two partitioned mains; or the reverse, two partitioned mains into a single-image main. A single-image main also can have one side partitioned off, while still maintaining its single image name. The partitioned side can then be IPLed as a separate main.

Reconfiguration requires careful planning of your hardware environment. For information about planning an I/O configuration that supports reconfiguring and for instructions on the reconfiguration process, see *z/OS JES3 Commands*.

With the appropriate main definitions, you can use partitioning and reconfiguration to:

- Remove a failed partition
- Perform scheduled preventive maintenance on a partition
- Reinstate a previously inactive partition
- Provide a backup main for another system in the JES3 complex or a system outside the JES3 complex

Adding or removing a JES3 main affects the job selection environment. When a processor complex is running in single-image mode, more processing power and storage resources are available than when running in partitioned mode. Consider the resources available for each main that will be active in the complex, and define your job selection modes appropriately. You may need to dynamically modify the selection modes for a main by using the *F,G,main,S,selectname command.

With the //*MAIN SYSTEM= facility, users can specify the mains on which they want their jobs to execute. Also, users can specify the job class or group (which may be associated with a certain main) in which they want their jobs to be processed. Jobs directed to a main that is removed will not execute. Similarly, jobs requiring resources only attached to a partitioned-off main will not run. If the main is not going to be returned to the complex, these jobs should be restarted in the SETUP phase.

Checkpoint/Restart

The checkpoint/restart technique provided under MVS/ESA is supported by JES3.

Checkpoint/restart is a technique for recording information about a job at programmer-designated checkpoints so that, if necessary, the job can be restarted at one of these checkpoints or at the beginning of a job step.

A checkpoint is taken when a user program issues the CHKPT macro instruction. For more information concerning the CHKPT macro, see *MVS/DFP Checkpoint/Restart.* This macro causes the contents of the program's virtual-storage area and certain system control information to be written as a series of records in a checkpoint data set. These records can then be retrieved from the data set if the job ends abnormally or produces erroneous output, and the job can be restarted. Restart can take place immediately (initiated by the operator at the console) or be deferred until the job is resubmitted. In either case, the time-consuming alternative of rerunning an entire job is eliminated.

Restarting A Job

There are three types of restarts:

1. *Step restart:* from the beginning of a step.
2. *Checkpoint restart:* from a checkpoint within a job step. Checkpoints are established in a job step by coding the CHKPT macro for each checkpoint required. This macro writes the contents of the virtual storage area and specific system control information of the program, as a series of records, to a data set. These records can be retrieved from the data set if the job ends abnormally or produces erroneous output, and the job can be restarted. Restart can take place immediately (initiated by the operator) or be deferred until the job is resubmitted.
3. *System failure restart:* by specifying the FAILURE=RESTART parameter on the //*MAIN control statement. In the event that the job cannot complete execution because of a system failure and the job is not eligible for automatic restart, JES3 will automatically reschedule the job from the beginning. See *z/OS MVS JCL User's Guide* for more information on the //*MAIN statement.

Automatic Restart: To use automatic restart, code the RD (restart definition) parameter on the JOB or EXEC control statement. JES3 creates a job journal for any job specifying the RD parameter. A job journal is established to hold restart information for each program in execution.

When a system failure occurs or a job step abnormally ends and RD=R is specified on the JOB or EXEC statement, MVS attempts to restart the job. If checkpoints are taken, an automatic restart is attempted at the last checkpoint regardless of the RD parameter. When a job step abnormally ends or a system failure occurs while the job is executing, and the installation has not implemented job journaling, these jobs are ineligible for automatic restart.

You can also use automatic restart management to automatically restart batch jobs and started tasks. If the job is registered with automatic restart management, it will be restarted when either:

- The executing job unexpectedly ends.
- The system on which the job is executing unexpectedly ends or leaves the sysplex.

Any jobs registered with automatic restart management can be restarted only within a single complex (we recommend only one complex within a sysplex). See *z/OS MVS Setting Up a Sysplex* for information about setting up and using automatic restart management.

Deferred Restart: To use deferred restart, the RESTART parameter on the JOB statement must be specified. This parameter causes the job to restart at the beginning of the specified step of checkpoint. The SYSCHK DD statement is required when a job is submitted for deferred checkpoint restart. This statement must immediately follow the JOBLIB DD statement.

Operator Restart Considerations

A job may abnormally end as a result of a hardware, programming, or system error. Such an error can occur any time during execution and could cost the loss of valuable machine time. The checkpoint/restart feature of the system is provided to allow a restart of an abnormally ended job either at the beginning of a job or at a checkpoint within a step. The programmer determines whether an automatic restart or a deferred restart is to be performed.

Automatic Restart

If the programmer provides for an automatic restart and the job abnormally ends, message IEF255D is issued asking if the indicated job should restart. The message may indicate the checkpoint id, thus allowing you to prevent repeated restarts at the same checkpoint or job step. When requested to authorize an automatic restart, the operator should reply YES, HOLD, or NO.

- Reply YES if the restart is to be performed at a specific checkpoint or job step for the first time. If a step restart is to occur and the step to be restarted used a card input data set that was not part of the SYSIN stream, you must return all cards read by the job step before it ended abnormally to the appropriate card readers. If a checkpoint restart is to occur, follow the programmer's instructions for replacing the input cards.
- Reply HOLD to defer the restart; for example, to permit another job to be run first. Enter the *MODIFY command with the release operand when you are ready to restart the job. Also, if desired, you may cancel the job. However, canceling the job may result in unrecoverable paging space or the failure of certain data sets to be deleted if virtual I/O is being used.
- Reply NO if no restart is to be performed. When you reply NO, and the programmer wants a restart to be performed, the job must be resubmitted for a deferred restart.

When V=R is specified, the restart may be delayed by the system waiting for the allocation of storage. If another job is using the required storage, you will not receive a message--only a delay. Enter a DISPLAY A command to see if a system task or other job is using the storage required by a job with a V=R region. You may stop or cancel the conflicting task or job. The system may ask you to mount data volumes other than those required at the beginning of the job. The job's I/O will be set up by JES3 for the first job step, not the step being restarted. Canceling a job in a dependent network will prevent successor jobs from running if they are dependent upon successful completion of the canceled job.

Note: Any operator commands in the input stream of the job step being restarted will not be executed.

Deferred Restart

If the programmer provides for a deferred restart and the job abnormally ends, the job must be resubmitted to have this restart performed. To restart the job, the programmer must provide a restart stream for submission to the system through the system input reader. The JCL statements to be included are described in detail in the publication *z/OS MVS JCL User's Guide*.

The device configuration of the system at the time of restart need not be the same as it was when the job abnormally ended. However, enough devices must be available to satisfy the needs of the job step being restarted. The system under which a step restart is run need not be the same as it was for the job's original execution. However, a checkpoint/restart should be run under the original system unless the alternate system can meet the following restrictions:

- The release number is the same.

- The link pack area modules in use at the checkpoint must reside in the same storage locations.
- Jobs specifying V=R require an area of storage identical to the original area.

If the required storage is not available, the system will cancel the restart and you will receive message IEF2091 which states that virtual storage is unavailable for the job.

If the required storage is not available, it is for one of the following reasons:

- The link pack area expands into the required storage. This may occur if an initial program loading (IPL) has been performed after the original execution of the job and before the restart. If this does occur, contact the system programmer for a respecification of the system parameters and repeat initial program loading using the new values.
- The system queue area expands into the required storage. When this occurs, contact the system programmer for a respecification parameter and repeat initial program loading using the new SQA value.

When a job restarts correctly, you will receive two messages: IHJ0061 and IHJ0081. If, for V=R jobs, these messages do not appear, enter the DISPLAY A command to see if a system task or other job is using the required storage. You can then stop or cancel the conflicting job.

The system may ask that you mount volumes other than those required at the beginning of the job. The job's I/O will be initially set up by JES3 for the first job step, not the step being restarted. In addition, any card input data sets that have been used by the failing job step must again be made available to the system.

Restart of JES3-controlled jobs may be accompanied by messages IAT2006, IAT2575, or both. See *z/OS JES3 Messages* for responses to the messages.

Restarting JES3 After a Failure

After an MVS failure or a JES3 failure, you must restart JES3. After an MVS failure, you must also perform an MVS IPL. When restarting JES3, use the type of JES3 start that causes the least amount of disruption to your system.

Restarting the Global Processor

After an MVS failure on the global processor, you must perform an MVS IPL before restarting JES3. For a JES3 failure including abnormal ending of the JES3 address space, you need not perform the IPL, just restart JES3.

To restart JES3, if you do not suspect problems with the job queue, perform a hot start. If, however, you suspect problems with the job queue, perform a hot start with analysis.

If either type of hot start fails, perform a warm start. If you suspect problems with the job queue, perform a warm start with analysis. You should also perform a warm start with analysis, after an equipment failure causes JES3 to terminate.

If a permanently damaged spool data set or spool device causes a JES3 failure, you can reallocate the spool data set on the same device or on a different device. After reallocating the spool data set, you must perform a warm start to replace a spool data set.

If you also suspect problems with the JES3 job queue, perform a warm start with analysis to replace a spool data set. For an explanation of how to replace a spool data set, see "Recovering from Spool I/O Errors" on page 376.

If you cannot restart JES3 with any type of hot start or warm start, perform an MVS IPL and then a cold start.

After any type of warm start or a cold start, you must perform an MVS IPL and then a local start on each local processor.

For additional information about each type of start and to determine the disposition of jobs after a restart, see *z/OS JES3 Initialization and Tuning Reference*. For information about the sequence of commands you must specify to restart JES3, see *z/OS JES3 Commands*.

Assigning Global Processor Functions to a Local Processor

If you cannot restart the global processor, assign the functions of the global processor to a local processor. This local processor then becomes the global processor. For information on how to assign the global processor functions to a local processor, see "Dynamic System Interchange".

Restarting a Local Processor

You must restart a local processor after an MVS failure or a JES3 failure on the local processor. You must restart all local processors after performing a cold start or any type of warm start on the global processor.

After an MVS failure on a local processor, perform an MVS IPL and then a local start. After a JES3 failure, you need not perform the IPL, just the local start.

After an IPL on a local processor, JES3 processes jobs that were previously running on the local processor according to their failure options.

If JES3 cannot be restarted on a local processor, logically remove the processor from the complex. To do this, the operator must enter the command *S,main,FLUSH.

JES3 Checkpoint Data Sets

The JES3 checkpoint data sets, allocated using the JES3 cataloged procedure, provide the capability to warm start or hot start the JES3 system with minimum or no loss of system information.

The JES3 checkpoint facility writes job-related control block information to the one or more JES3 checkpoint data sets at appropriate points in time during system processing; that is, as information changes in the system. This control block information is restored to the system after performing a hot or warm start. All other information is lost.

The JES3 checkpoint data set contains the information required to initialize either a global or local JES3 processor. This information consists of the following data areas:

- **JES3 complex status record (IATYCSR)**, containing the last known status of each processor in the JES3 complex.
- **Initialization dynamic allocation checkpoint record (IATYS99)**, identifying the data sets that must be dynamically allocated during JES3 initialization.
- **Spool volume checkpoint record (IATYVOL), spool partition checkpoint record (IATYSPR), BADTRACK checkpoint record (IATYBTR), partition track allocation table checkpoint record (IATYPTC)**, containing the initialization data required for accessing the JES3 spool.
- **Initialization checkpoint record (IATYICP)**, containing other initialization data and the spool record addresses of multirecord files that contain the remaining initialization data.
- **Checkpoint data area (IATYCKP)**, containing the spool record addresses of single record files and multirecord files that checkpoint the status of individual functions within JES3. These individual functions and the files related to them (whose addresses are contained in IATYCKP) are described below.
  - *Main Device Scheduler (MDS):* the MDS volume unavailable table, which contains the volume serial numbers of volumes unavailable to MDS processing, and the data areas indicating the online/offline status of real devices eligible for setup.
  - *Output Service:* the job data accounting block (IATYJDA or JDAB), job data set control block (IATYJDS), and output scheduling element (IATYOSE) data areas, which contain the checkpoint data for the output service driver module.
  - *Deadline Scheduling:* the deadline scheduling queue data areas.
  - *JESNEWS:* the JESNEWS data set.
  - *TSONEWS:* the TSONEWS data set.
  - *RJPNEWS:* the RJPNEWS data set.

- *Generalized Main Scheduling:* data areas containing information about GMS selection modes, execution resources and various GMS parameters.
- *Device Fencing:* the device fencing data areas.
- *Dependent Job Control (DJC):* the checkpointed net control block (IATYNCK), which contain entries for each DJC network in the complex.
- *Functional Subsystems:* the FSS/FSA table checkpoint (IATYFCK) data area, which checkpoints functional subsystem and functional subsystem applications information.
- *JES3 Dump Suppression:* the JES3 dump suppression record (IATYDMP) that contains the list of JES3 failsoft codes whose dumps are suppressed automatically when the WANTDUMP=YES parameter is coded on the OPTIONS initialization statement.
- *TCP/IP Checkpoint:* checkpointed TCP/IP information (IATYTCK) that contains information about Netservs, sockets, and nodes defined with TYPE=TCPIP.

IATYCKP also contains the range of job numbers assigned in the system and the JCT priority hold flags.

The JES3 checkpoint area is allocated to either one unique data set or two duplicate data sets. You can cause information to be checkpointed in the IATYCKP control block by issuing the JESCKPNT macro.

Recovering from Permanent Errors on the JES3 Checkpoint Data Sets

If a permanent I/O error occurs on one of the JES3 checkpoint data sets, your recovery options depend on whether you have allocated one or both checkpoint data sets. If you have allocated only one checkpoint data set and it develops a permanent I/O error, you must perform a cold start. If you have allocated both checkpoint data sets, then you may replace the data set having the I/O error over a hot or warm start.

If you replace one checkpoint data set with a new checkpoint data set during a warm or hot start, JES3 copies the checkpoint records it finds on the older checkpoint data set over to the new checkpoint data set. When the hot or warm start is finished, JES3 has two complete checkpoint data sets once again.

When you replace a checkpoint data set, be sure that the checkpoint data set you are *not* replacing contains a complete copy of all active checkpoint records. If you are not sure whether that data set is complete, use the MVS display command to see if there are any messages indicating problems with it. If it has any problems, you may have to perform a cold start.

Recovering from a Checkpoint Data Set Out-of-Space Condition

If either checkpoint data set runs out of space, the data set must be replaced. Recalculate the amount of space the checkpoint data set needs and allocate a new checkpoint data set that is larger than the old one. See *z/OS JES3 Initialization and Tuning Reference* for the method to calculate checkpoint data set size.

Dynamic System Interchange

Dynamic system interchange (DSI) is a process by which the JES3 global function can be assigned to a JES3 local processor, which then becomes the new JES3 global processor. DSI can be used when:

- The global processor is not active.
- The installation wants a local processor to assume the role of the global processor.

If the global processor is not active, the operator can invoke DSI to keep the complex running. When DSI is complete, JES3 on the old global processor can be reinitialized as a local processor without an intervening IPL, when it becomes available for reinitialization.

If the global processor is active but the installation requires that another processor be assigned as the global processor, the operator can invoke DSI. This procedure could be used for such reasons as scheduled preventive maintenance or for alternate processor utilization.

Disabling the Old Global Processor

When your global is inactive and you need to perform a DSI, you should disable the global by performing a system reset. A system reset causes MVS and JES3 to terminate. All jobs that were executing on the global are lost; JES3 will reschedule them.

All FSS address spaces on the global are also lost. You must restart all FSS address spaces that were executing at the time of the system reset. (For instructions on how to restart FSS address spaces, see *z/OS JES3 Commands*.)

If your global is active but you want another main to become the global, you must disable the old global by entering a *CALL,DSI and *START,DSI command on the MCS console attached to the old global. Before entering the *CALL,DSI command, you must complete all reconfiguration tasks that require JES3, such as stopping RJP to disable communication lines.

If you disable the global using a *CALL,DSI command, then any output writer FSSs that were active on the old global remain active when the new global attempts to connect to the old global. However, if the old global fails as a result of an IPL or system reset, all output writer FSSs that were active on the old global terminate.

When you complete the DSI, you can reinitialize the old global as a local main, without an intervening IPL.

Starting a Local Processor as a Global Processor

DSI is started by entering the *CALL,DSI command on the master console of the local main that you want to make the new global. All FSSs that were executing on local mains at the time of the DSI, including the local that is to become the new global, continue processing during and after the DSI.

If you disable the global using a *CALL,DSI command, then any output writer FSSs that were active on the old global remain active when the new global attempts to connect to the old global. However, if the old global fails as a result of an IPL or system reset, all output writer FSSs that were active on the old global end.

If a failure occurs during DSI, you must perform a warm start.

Defining Dynamic System Interchange Procedures

During DSI, messages are issued calling for review of the installation-defined local and global processor DSI procedures. When defining these procedures, you should take the following restrictions and recommendations into consideration:

- The old global processor must be disabled. If it is not, job spool damage may occur and a cold start may be required. Your procedures should indicate the way in which the global processor is to be disabled.
- DSPs that were called from a console on the old global processor and issue input commands to that console should be canceled if the calling console will not be valid on the new global processor.
- Those global devices (devices defined through the JUNIT parameter on the DEVICE statement) that the user requires on the new global processor must be switched from the old global to the new global processor (if they are not already shared). Your procedure should indicate the way in which devices are to be switched to the new global processor.
- Functions using devices that cannot be shared with all processors or switched to the new global processor cannot continue after DSI. For example, if the old global processor and the new global processor are different processor models, they may not support the same set of devices. These functions should be specified in your procedure as nontransferable.
- If the global has special MPF processing requirements, ensure that the MPF options on the new global are set up correctly. Use the SET MPF operator command to change the MPF options for a system.
- After a DSI, FSS address spaces continue operating on the same processor as before. FSS address spaces defined to operate on a specific processor depending on which processor is the global processor (that is, specifying paired system names on the SYSTEM parameter of the FSSDEF statement) change location, if necessary, the next time the FSS is restarted.

Changes to the definition of an FSS address space brought about by using the *MODIFY command before the DSI remain in effect across the DSI.

- Jobs queued as a result of the SYSTEM=JGLOBAL or SYSTEM=JLOCAL parameters on //*MAIN statements before DSI are not requeued to the new global or local processor after the DSI. The jobs remain queued on the processor on which they were previously queued. If that processor becomes available, the jobs can execute.
- If you do not expect to re-IPL JES3 on the old global processor immediately after a DSI, to ensure jobs registered with automatic restart management on the old global processor are restarted on either the new global processor or another active local processor, you must issue the *S,main,FLUSH command.
- When SNA RJP is active on the old global processor, you must perform the following VTAM operations before starting SNA RJP on the new global:

  1. Start VTAM
  2. Vary the application definition (which contains the JES3 application) online to VTAM.
  3. Vary the required network online to VTAM.
  4. Enter the *CALL,SNARJP command.

  After DSI completes, determine the status of the writer output multitasking facility by issuing the command *INQUIRY,MT. Then:

  – If the new global processor is a multiprocessor and the multitasking facility is off, turn it on by issuing the command *MODIFY,MT=ON.
  – If the new global processor is a uniprocessor and the multitasking facility is on, turn it off by issuing the command *MODIFY,MT=OFF.

BSC RJP Recovery

The BSC remote job processing (RJP) facility attempts to automatically recover from errors and suspended operations that might normally require system restarts. If failures occur, BSC RJP permits analysis and selective termination of specific functions or lines rather than the entire BSC RJP function.

If a system failure occurs while the BSC RJP function is processing, the BSC RJP JESTAE exit routine initializes its retry registers and indicates to the abend function that BSC RJP is to be reinstated. The retry routine that is given control issues a message explaining the reason for the abend, and then attempts to recover from the error condition:

- If the error is associated with a line I/O event or timer event, the corresponding line is canceled immediately.
- If the error occurred during line starting, the line is varied offline and cannot be started until the operator varies the line online again.
- If the error occurred during line canceling, the line is lost to the JES3 system; BSC RJP continues to service the rest of the lines.
- If the error occurred while processing an operator message, the message is ignored.

If an error occurs during remote terminal access method (RTAM) processing, a message is issued explaining the reason for the abend, and the corresponding line is canceled immediately.

Recovering from output writer functional subsystem failures

JES3 tracks each data set sent to an output writer functional subsystem (FSS) until the FSS notifies JES3 that it has printed the data set. If an FSS fails, JES3 reschedules all data sets that were printing at the time of the failure.

An output writer FSS can fail under any of the following conditions:

- You perform an IPL.
- You cancel an FSS using operator commands.

- The last active writer in the JES3 global address space fails, in which case the output writer FSS associated with it also terminates.

If an FSS fails, JES3 also fails all of the writers in the JES3 global address space that send work to the FSS.

In all of the above cases, JES3 recovers the work the FSS was processing and reschedules it. You can, in effect, restart an FSS by using operator commands that start a writer dynamic support program (DSP) for a page mode device. The writer DSP restarts the output writer FSS.

If you define more than one device to run under the control of a single output writer FSS, and one of those devices fail, the FSS remains active and the remaining devices continue processing work. However, if the device that fails is the last active device running under control of an output writer FSS, then JES3 cancels the FSS.

If you perform a hot start, output writer FSSs continue running in their own address spaces unless you specified the TERM=YES keyword on the FSSDEF initialization statement or unless you IPL the main on which the FSSs were operating. (You use the TERM= keyword to specify whether you want JES3 to terminate an FSS when you terminate the global). If the output writer FSS runs out of work before the JES3 global address space restarts, the output writer FSS remains idle until the restart. After the hot start, JES3 restarts the writer DSPs, both hot writers and dynamic writers, that were associated with output writer FSSs active before the hot start. The writer DSPs reestablish contact with the output writer FSSs and work continues as before the hot start. For information about the effects of a dynamic system interchange on output writer FSSs see "Dynamic System Interchange" on page 372.

Recovering from SAPI Failures

JES3 tracks each data set scheduled to a SYSOUT Application Programming Interface (SAPI) thread (a 'thread' being a separate, independent 'session' between the SAPI application and JES3). Each SAPI thread indicates the disposition processing to occur for the data set (for example, delete, change class, and so on). See *z/OS MVS Using the Subsystem Interface* for details on using SSI 79.

If a SAPI thread fails, task termination processing in IATSIJS obtains control. The job's MEM (IATYMEM) entry is checked for a COW (Client Output Work area) chain. If one exists, the COW for the failing thread is found. The COW contains information about the OSE scheduled to the thread. Following the COW is the JES3 copy of the thread's SSOB/SSS2. IATSIJS sets the data set disposition section in the SSS2 to keep (SSS2DKPE). All three control blocks are passed in the SSISERV for IATOSSO use. IATOSSO uses this to unschedule the OSE. Upon return to IATSIJS, the COW is removed from the application's MEM COW chain.

If a SAPI application fails, IATMSJT receives control to process the failing job. IATMSJT invokes IATOSCWS to build a SAPI Application Termination Entry (SATE) on the SAPI JOBTERMQ, a single threaded queue pointed from the Output Service Resident Data area (OSDSAPTQ in IATYOSD). The SATE is updated with the job number and name of the failing job. This is done for each SAPI application going through job termination. When all are processed, IATOSSR is posted (flag TVTSAPTR is set) to process the OSEs that may be scheduled to each of the threads running in the application address space. IATOSSR obtains a SAPI DSP to perform the actual cleanup. IATOSSD gets control and finds each COW in the COW dataspace pertaining the SATE. Storage is obtained for a COW/SSOB/SSS2. The dataspace COW/SSOB/SSS2 is copied into the obtained storage. IATOSSO sets the data set disposition section in the SSS2 to keep (SSS2DKPE). IATOSSO is given control to unschedule the OSE. This process continues for each COW in the dataspace pertaining to this SATE. Each COW in the dataspace is deleted. When all the COWs for the SATE are processed, storage for the SATE is returned. The next SATE is obtained and processing continues. When all of the SATEs are processed, storage obtained for our copy of the COW/SSOB/SSS2 is returned.

If a hotstart of JES3 is performed, IATOSDR checks each scheduled OSE to determine if it is scheduled to a SAPI application. If it does and the application no longer exists, the OSE is unscheduled. If the application exists, an Output Service Restart Records (OSRs) is created similar to current FSS processing. The OSR for SAPI contains the OSE variable section offset, the OSE data set section offset, the thread identifier (count), the application job number and the application's RQ address. This occurs for each OSE scheduled to a SAPI application. The SAPIFCT (IATOSSR) is given control after IATOSDR has completed this processing. When IATOSSR obtains control, it's initialization routine determines if OSRs exist. If they do not, the COW dataspace is created with no COW entries. If OSRs do exist, the COW dataspace is created with a COW entry for each OSR. IATOSSR invokes IATOSRS to return the OSR storage.

If a warm start of JES3 is performed, current processing of unscheduling all scheduled OSEs remains in effect.

Recovering from Spool I/O Errors

It is possible to recover from many kinds of spool I/O errors without the need to perform a cold start. This includes, for example, errors caused by defective tracks on a spool volume or errors caused by a failing I/O device or control unit. The type of error indications you receive from JES3 can help you to determine the corrective action to take.

When an I/O error occurs on a spool data set, JES3 adds an entry to the BADTRACK table. Entries in the BADTRACK table prevent JES3 from allocating the track group containing the track with the I/O error. JES3 does not, however, create BADTRACK table entries for the following types of I/O errors:

- Read errors
- I/O error retry failures
- Write errors that can be attributed to some cause other than failure of the spool device (for example, channel errors and machine checks)
- temporary I/O errors

If the error caused JES3 to create a BADTRACK entry, use the *INQUIRY,Q,BT operator command to display:

- the location of the track having the error
- the exact time JES3 found the error, if JES3 found the error while performing I/O to the track
- whether the BADTRACK entry for the track having the error was added to the BADTRACK table during formatting of the spool data set or by a BADTRACK statement during initialization.

BADTRACK table entries that JES3 adds dynamically are lost during a warm start. To avoid further allocation of these tracks, operators must inform you of I/O errors. Operators should also save the track address information given in the message stating that JES3 has added an entry to the BADTRACK table. Then, before performing a warm or cold start, update the initialization stream with BADTRACK statements as appropriate.

Intermittent I/O Errors

If you receive one or a few I/O error messages and DM711 or DM725 abend codes and JES3 continues to execute, the error is probably intermittent. Such an error might be caused by a defective track on a spool volume.

If a defective track caused the error, JES3 dynamically adds an entry to the BADTRACK table identifying the defective track. JES3 also issues a message indicating the ddname, cylinder, and track described by the new entry. As stated above, the system operator should save the information in the message. (The operator can also get this information at a later time using the *I,Q,BT command, if JES3 is active.) Then you must update the initialization stream with a BADTRACK statement for each I/O error before the next warm or cold start. The operator should also keep track of the frequency of errors. Frequent I/O errors suggest that the spool data set needs replacing.

Permanent I/O Errors

If you receive DM711 or DM725 abend codes, several I/O error messages, and JES3 functions no longer execute, the I/O error is probably permanent. (You can tell when JES3 functions no longer execute because you will no longer receive any JES3 messages.) To try recovery, use the following procedure:

1. Enter the command *F,Q,DD=ddname,STOP. This command requests that JES3:
    - Suspend scheduling of jobs that have track groups allocated to the affected spool data set

   - Stop jobs that are executing and have track groups allocated to the affected spool data set
   - Stop all JES3 writers that are writing on the affected spool data set and reschedule them for later processing, beginning from the last checkpoint.
   - Stop allocating track groups to the affected spool data set
2. If JES3 accepts the command, you can try to correct the problem that caused the I/O error.
3. If you correct the problem, issue the *F,Q,DD=ddname,RELEASE command. This command requests that JES3:
   - Resume scheduling of jobs that have track groups allocated to the affected spool data set
   - Resume allocating track groups to the affected spool data set

   JES3 uses the job failure options to determine how to process jobs that were executing at the time you issued the command *F,Q,DD=ddname,STOP.
4. If JES3 does not accept the *MODIFY,Q,DD=ddname,STOP command, or if you cannot quickly correct the problem that caused the I/O error, let JES3 continue execution without the affected spool data set.
   - If you used a DD statement in the JES3 cataloged procedure to allocate the affected spool data set, remove that DD statement from the procedure and perform a hot start.
   - If you used a DYNALLOC statement in the initialization stream to allocate the affected spool data set, issue the MVS VARY command on the global to vary offline the volume that contains the affected spool data set and perform a hot start.

     Note: If you want to change the JES3 spool configuration, you must enter a special operator dialog to complete JES3 initialization. *z/OS JES3 Commands* describes the operator dialog to remove and reinstate a spool data set during a warm or hot start. If JES3 issues message IAT4102 during a hot start, the spool data set that you are attempting to remove contains the checkpointed initialization stream. You must perform a warm start to recreate the checkpointed initialization data.

     If you continue having problems because of the data set on the local processors, issue the MVS VARY command on the local processors. Perform a local start for each processor.

     If you need to restart JES3 before you can restore the spool data set, reissue the MVS VARY command on every processor to which you want the volume offline. If you cannot repair the volume quickly, you may want to remove the DYNALLOC statement for that spool data set from the initialization stream, perform a warm start on the global processor, and restart the local processors.
5. JES3 is now executing without the spool data set that caused the I/O errors. JES3 maintains information about the spool data set, including its size, its device characteristics, and the volume serial number of the volume on which it resides. However, JES3 considers the spool data set unavailable for use. Removing the spool data set in this manner does not release the spool space of jobs with data on the unavailable data set, unless the jobs have been canceled. You may now repair the spool data set.

To restore the repaired data set to the JES3 complex:

1. If you removed a DD statement from the JES3 cataloged procedure, reinsert it and perform a hot start.
2. If you entered the VARY command on one or more processors to take the volume offline, enter the VARY command on those processors to bring the volume online. Perform a hot start on the global processor and a local start on the appropriate local processors.
3. If you removed the DYNALLOC statement from the initialization stream, reinsert the statement and perform a warm start.
4. Enter command *F,Q,DD=ddname,RELEASE. This command requests that JES3 resume scheduling of jobs that have track groups allocated to the affected spool data set. JES3 will use the job failure options to determine how to handle the jobs that were executing on a processor when you issued the command *F,Q,DD=ddname,STOP.

Replacing a Spool Data Set

If a permanent I/O error occurs on a spool data set and you cannot recover the data (for example, there is a head crash on a direct access device), you can replace the affected spool data set. To replace the data set, perform a warm start and follow the procedures outlined below. You may create the new data set on a volume or device type different from the one being replaced. You may also change the size of the data set and redefine the single track table (STT) range using the STT or STTL parameter on the TRACK or FORMAT initialization statement.

Be aware that when you replace a spool data set, JES3 cancels all jobs with data on the replaced spool data set. Other risks include the possible loss of JES3 control blocks, STT extents, checkpoint records, and the JESNEWS data set, which may have been on the damaged spool data set. If these losses occur, the system will issue messages giving you the opportunity to take appropriate actions.

If you cannot immediately perform a warm start (for example, if it takes some time for you to make the changes needed to replace the spool data set), you can cancel jobs that have track groups allocated on the spool data set being replaced. To cancel the jobs, issue the command *F,Q,DD=ddname,CANCEL. After you cancel the jobs, the user can resubmit them. You can then replace the spool data set at the time most convenient for your installation.

When you replace the spool data set, you must use the same ddname for the new spool data set as for the old.

To replace a spool data set, use the following procedure:

1. If you allocated the old spool data set by using a JES3 cataloged procedure, update the DD statement in the cataloged procedure to reflect information about the new data set. You may need to change the data set name, device number, device type, or volume serial number. Do not change the ddname.

   If you allocated the old spool data set by including a DYNALLOC statement in the initialization stream, update the optional parameters as necessary. Do not change the ddname.
2. If the old spool data set is cataloged, replace its catalog entry with an entry for the new spool data set.
3. If the new spool data set is unformatted and your initialization stream currently includes a TRACK statement for the old spool data set, replace it with a FORMAT statement. Otherwise, leave your TRACK or FORMAT statement alone.
4. Perform a warm start. Specify WR or WAR as the restart mode. JES3 will prompt you to enter the ddnames of replaced spool data sets (message IAT4009 for unformatted spool data sets and message IAT4008 for formatted spool data sets). JES3 will then cancel all jobs that have track groups allocated to the spool data sets being replaced.

Moving a Spool Data Set to Another DASD Volume

If you must move the contents of a spool data set to another DASD volume, perform a hot start with the data set not allocated or the DD statement for the data set removed from the JES3 start procedure. During JES3 initialization, JES3 considers the spool data set unavailable. After moving the data to the new DASD volume, perform a hot start with the data set (on the new volume) allocated or with the DD statement for the data set included in the JES3 start procedure. JES3 now considers the data set available.

Recovering from C/I functional subsystem address space failures

Failure of a C/I functional subsystem (FSS) address space does not cause any JES3 address space or other C/I FSS address spaces to fail. If a C/I FSS address space encounters an error and is able to recover, no other address spaces, including JES3, even become aware of the problem. For recoverable errors, the system operator sees messages from the C/I FSS failsoft routines. The messages are similar to those the operator sees if a JES3 address space encounters an error.

If a C/I FSS address space does fail, there are two ways the JES3 global address space becomes aware of the failure:

- The C/I FSS address space disconnects through the functional subsystem interface (FSI).
- If the C/I FSS address space fails without ending communication with JES3, JES3 becomes aware of the failure when the job ends. (The C/I FSS runs as a demand select job.)

JES3 never automatically restarts a C/I FSS address space that ends. (When a C/I FSS address space abnormally ends, JES3 changes the START value, defined by the FSSDEF statement, to NO.) However, JES3 automatically reschedules all jobs that were active in the C/I FSS address space at the time of failure. Jobs restart at the beginning of C/I service.

To restart the address space, use the *F,F,FSS=fssname,ST=Y operator command.

If the JES3 global address space abnormally ends, all C/I FSS address spaces continue operating until they run out of work. Then they are idle until the JES3 global address space restarts. If the FSSDEF statement for the C/I FSS address space specifies TERM=YES, a JES3 global address space termination ends the C/I FSS address space.

If a C/I FSS address space ends during an IPL of a processor, JES3 will restart the C/I FSS provided:

- The processor is connected and online
- The DSPCNT is not zero
- The START option is specified as YES

If a C/I FSS hangs because of a minimal spool condition, and it is defined (or was modified with) TERM=YES, it will not be possible to automatically bring it down by ending the global address space. Therefore exercise care when restarting JES3 during a minimal spool condition.

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