GC38-1008-0

Systems

OS/VS Message Library: VS2 System Codes

VS2 Release 1.6

IBM

Preface

This publication lists the system completion codes and wait state codes for OS/VS2. Each code is explained, and where appropriate, a programmer response is suggested. Problem determination actions accompany problem identifying codes; you should perform the actions before calling the IBM branch office serving your locality for either programming or hardware support.

Note: Any references to 3505, 3525 are for planning purposes only.

Associated Publications

This publication contains references to other publications or to procedures and concepts documented in other publications.

These publications include:

IBM Data Processing Glossary, GC20-1699

OS/VS Data Management Macro Instructions, GC26-3793

OS/VS Data Management Services Guide, GC26-3783

OS/VS Supervisor Services and Macro Instructions, GC27-6979

OS/VS I/O Supervisor Logic, SY27-7244

OS/VS2 Debugging Guide, GC28-0632

OS/VS Service Aids, GC28-0633

OS/VS Utilities, GC35-0005

A list of the books belonging to the OS/VS Message Library is contained in figure 2 of this publication.

First Edition (September, 1972)

This edition with Technical Newsletter GN28-2558 applies to release 1.6 of OS/VS2 and to all subsequent releases until otherwise indicated in new editions or Technical Newsletters. Changes are continually made to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest **IBM System/360 and System/370 Bibliography**, GA22-6822, and the **IBM System/370 Advanced Function Bibliography**, for the editions that are applicable and current.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Corporation, Publications Developemnt, Department D58, Building 706-2, PO Box 390, Poughkeepsie, N.Y. 12602. Comments become the property of IBM.

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Summary of Amendments for GC38-1008-0 as Updated by TNL GN28-2558 OS/VS2 Release 1.6

System Completion Codes

The following new system completion (ABEND) codes have been added:

3FE
4FE
700
A37

Additional information has been added to the following system completion (ABEND) codes to clarify their meaning:

10D	800
200	900
300	A00
400	C00
500	D00
600	

Wait Stage Codes

The new wait state code A18 has been added.

Additional information has been added to the wait state code 032 to clarify its meaning.

The OS/VS Message Library is designed so that you can have the messages and codes documentation that fits your specific needs. You no longer have to maintain an enormous manual.

If you are a system programmer or installation manager, you may want to have all the books in the Message Library in a consolidated document.

If you are an operator, you may want to include *System Messages* and *System Codes* in your Operator's Library.

If you are an assembler language programmer, you may want to have *System Messages, System Codes, Linkage Editor and Loader Messages,* and the message section from the *Assembler Language Programmer's Guide* in a consolidated document.

If you are a COBOL programmer, you may want *Utilities Messages* added to your COBOL programmer's guide.

In any case, you can select the appropriate books to build a Message Library to meet your needs.

Basic Books

Each installation will require at least one copy of *VS1 System Messages* or *VS2 System Messages*. You will receive at the console or in your output listings, some subset of the messages in these books no matter which options have been included in your operating system. All programming personnel, especially operations personnel, will require access to these books; although it may not be necessary for applications oriented personnel to have their own copies.

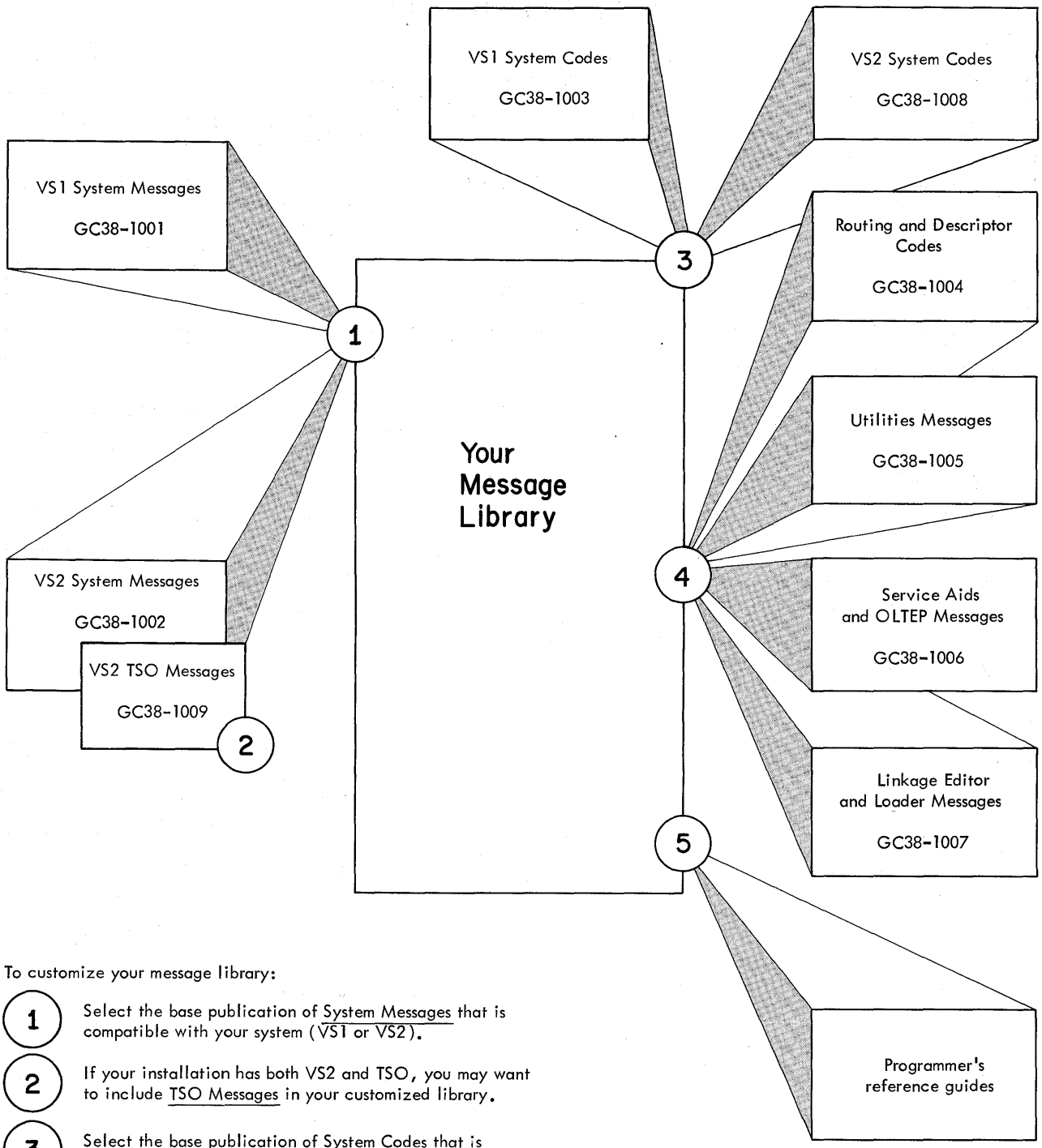
Each installation must have at least one copy of *System Codes* which contains the system completion codes and wait state codes produced by all the components of OS/VS1 or OS/VS2. All programming personnel, especially operations personnel, will require access to one of these books, although applications oriented personnel may not need to have their own copies.

Optional Books

If your installation uses TSO (an option available only in OS/VS2), you may want to add *TSO Messages* to your copies of *VS2 System Messages*.

Routing and Descriptor Codes contains routing and descriptor codes for all messages that have these codes. Your installation's system programmer will need this book, especially if your operating systems have multiple console support (MSC).

Depending on your requirements, you may want to have copies of *Utilities Messages, Service Aids and Oltep Messages,* or *Linkage Editor and Loader Messages*. Select the books that you need, and keep them either in the appropriate System Library Manual or in your costomized Message Library.



To customize your message library:

1. Select the base publication of System Messages that is compatible with your system (VS1 or VS2).
2. If your installation has both VS2 and TSO, you may want to include TSO Messages in your customized library.
3. Select the base publication of System Codes that is compatible with your system (VS1 or VS2).
4. Select any of the four supplementary messages and codes publications that fit the needs of your installation.
5. If your installation uses a particular compiler or application program, you may want to append the program's messages to your message library. These messages are in the associated programmer's guide.

Figure 2 lists the messages and their associated manuals.

Figure 1. Customizing Your OS/VS Message Library

OS/VS Message Library

Publication	Order Number	Contents
VS1 System Messages	GC38-1001	IEA, IEC, IED, IEE, IEF, IEI, IFA, IFB, IGF, IHB, IHJ, IHK messages
VS2 System Messages	GC38-1002	IEA, IEC, IED, IEE, IEF, IEI, IFA, IFB, IGF, IHB messages
VS1 System Codes	GC38-1003	all completion and wait state codes
VS2 Systems Codes	GC38-1008	all completion and wait state codes
Routing and Descriptor Codes	GC38-1004	all routing and descriptor codes
Utilities Messages	GC38-1005	IBC, IEB, IEH messages
Service Aids and OLTEP Messages	GC38-1006	HHL, HMA, HMB, HMD, IFC, IFD, IMC messages
Linkage Editor and Loader Messages	GC38-1007	IEW messages
VS2 TSO Messages	GC38-1009	IKJ, IKM, IPD messages
In other System Library Manuals:		
Assembler Programmer's Guide	GC33-4021	IFO messages
Emulator publications	See: IBM System/360 and System/370 Bibliography	emulator messages
Problem Determination Aids and Messages for Graphic Programming Services (GPS) and Graphic Subroutine Package (GSP)	GC27-6974	IFF messages

Figure 2. OS/VS Message Library

Completion codes are issued by the control program and the problem program to indicate why a task has abnormally terminated.

Abnormal termination occurs when the control program or problem program issues the ABEND macro instruction.

System completion codes indicate the control program has determined that a task cannot continue processing and expect valid results. For example, the task may have attempted an invalid operation, or an input/output operation may have failed. In such a case, the system terminates the task and supplies the completion code to indicate the reason for the termination. The code may be any three-digit hexadecimal number.

User completion codes are an indication that the problem program has determined that its processing is in error and that it cannot continue processing, expecting valid results. For example, a problem program may be producing a grand total by successive additions to a subtotoal. After each addition, the resulting subtotal is compared to a limit. If the subtotal exceeds the limit, the problem program issues the ABEND macro instruction requesting abnormal termination and, perhaps, abnormal termination services such as a diagnostic dump. The user completion code is supplied by the problem program as a four-digit decimal number coded in the ABEND macro instruction.

Completion Code Format:

The system and user codes appear together in the task completion code field (TCBCMP) of the task control block (TCB) for the terminated task.

For abnormal termination by the control program, the system code is one of the codes listed in this publication, and the user code is 0000.

For abnormal termination by the user, the system code is 000.

Abnormal Termination of Subtasks:

Abnormal termination of the highest level task in a job step causes abnormal termination of the job step. Normally, abnormal termination of a subtask terminates only the subtask itself and its subtasks. Subtask termination is indicated by the completion code in the event control block (ECB) specified when the subtask was attached, and the TCBCMP field of the task control block (TCB).

An abnormally terminating subtask, at a low level, can indirectly cause abnormal termination of the entire job step. To do so, each subtask in the job step's task chain must abnormally terminate itself upon finding a completion code indicating that one of its lower-level tasks has abnormally terminated. Eventually, the highest level task terminates abnormally, thus, abnormally terminating the job step. To terminate the entire job step with the completion code indicating the error in the failing subtask, each subtask (going up the task chain) must use the completion code from its subtask as its own completion code.

A subtask can also cause abnormal termination of the entire job step if the STEP operand has been coded in the ABEND macro instruction.

Note: Only the system codes are listed and explained in this publication. User codes are meaningful only for the specific application, and therefore cannot be explained here.

001 *Explanation:* An input/output error condition was encountered during execution of (1) a BSAM, BISAM, or BDAM CHECK macro instruction, or (2) a QSAM GET or PUT macro instruction.

- In case 1, the control program found that the data control block (DCB) did not contain the address of a SYNAD routine; therefore, control could not be given to a SYNAD routine and the task was abnormally terminated.
- In case 2, the DCBEROPT field of the data control block contained the terminate (ABE) option; therefore, the task was abnormally terminated (possibly the result of GET after EOD).

Programmer Response: In case 1, specify the address of an error analysis routine to be given control when an input/output error is detected. (This can be provided by the problem program or by the SYNAD operand of the DCB macro instruction.) Then execute the job step again.
In case 2, if desired, specify ACC or SKP in the EROPT operand of the DCB macro instruction. Be sure that the problem program does not issue a GET after EOD. Then execute the job step again.
Problem Determination: Table I, items 1, 2, 3, 5a, 15, 29.

002 *Explanation:* The error occurred while the control program was processing a sequential data set with BSAM or QSAM, creating a direct organization data set, or opening an ISAM data set for QISAM load mode:

1. The record to be transferred was greater than 32,768 bytes.
2. If chained scheduling was the selected option, then the record exceeded the maximum track length of the direct access device being used.
3. If the record format specified track overflow, then the record to be written exceeded the stated blocksize.
4. If a direct access data set was being created and the record format specified track overflow, then the block to be written could not be contained in one extent.
5. Too many tracks were specified for cylinder overflow.
6. The record descriptor word (RDW) of a variable length record contains an invalid length. The length (including data characters and any control characters) must be less than 32,767 and greater than 4.
7. The block descriptor word or record (segment) descriptor word was invalid (that is, RDW less than 9 bytes or RDW less than 4 bytes).
8. If the record to be transferred is larger than the track capacity and track overflow has not been specified.
9. The accumulated length of a spanned record being assembled in the record area exceeded the LRECL specified in the DCB.

Programmer Response: Probable user error. In the first case, the access methods cannot be used since the record length exceeds the maximum buffer length of the access methods.

In the second case, do not specify chained scheduling in the OPTCD operand of the DCB macro instruction. Then execute the job step again.

In the third case, change the BLKSIZE operand of the DCB macro instruction to reflect the actual blocksize of the data set being processed. Then execute the job step again.

In the fourth case, change the allocation of the data set to ensure that each of the extents is large enough to contain a block of data. (The CONTIG subparameter of the SPACE parameter of the DD statement can be used to ensure a contiguous extent of requested size.) Then execute the job step again.

In the fifth case, change the CYLOFL operand of the DCB macro instruction to reflect the correct number of tracks. Then execute the job step again.

In the sixth case, check the first word of the variable length record to ensure that it contains a valid length.

In the eighth case, do not specify a record size greater than the track capacity for the device unless track overflow has been specified.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

003 *Explanation:* The error occurred during End of Block processing using either BSAM or QSAM. The error occurred because the I/O macro instructions for a 3525 associated data set were not executed in the proper sequence.

The contents of register 15 indicate the nature of the error:

Register 15 Contents in Hexadecimal	Explanation
'01'	A READ sequence error
'02'	A PUNCH sequence error
'03'	A PRINT sequence error

System Action: The system terminates the task.
Programmer Response: Probable user error. Specify the I/O macro instructions in the proper sequence, and rerun the job.
Problem Determination: Table I, items 1, 5a, 15, 16, 29.

004 *Explanation:* The error occurred during OPEN processing using either BSAM or QSAM because a conflicting or invalid DCB parameter (FUNC or related parameter) is specified.

The contents of register 15 indicate the nature of the error:

Register 15 Contents in Hexadecimal	Explanation
'01'	Invalid DCB FUNC parameter specified.
'02'	Invalid combination of DCB FUNC parameter and CNTRL macro specified.
'03'	Conflicting access methods specified.
'04'	Invalid DCB specified for 3505 or 3525.
'05'	Invalid format card or an invalid device specified with Optical Mark Read (OMR).
'06'	Data protection image not found in the SYS1.IMAGELIB data set, volume containing SYS1.IMAGELIB not mounted, or SYS1.IMAGELIB data set not cataloged.

System Action: In all cases, the system terminates the task.
Programmer Response: Probable user error. In all cases, correct the invalid fields of the DCB macro instruction and rerun the job.
Problem Determination: Table I, items 1, 5a, 15, 16, 29.

008 *Explanation:* The error occurred during execution of a SYNAD routine. The routine was given control following execution of a BSAM CHECK macro instruction while creating a direct organization data set.

The SYNAD routine attempted to terminate by returning control to the control program routine for the CHECK macro instruction, but found that the save area, pointed to by register 13, was destroyed.
Programmer Response; Probable user error. Correct the SYNAD routine so that the control program save area is not destroyed. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

00B *Explanation:* The error occurred during execution of the scheduler initialization program (IEEVIPL). Either a system failure or an ABEND occured. (A diagnostic dump was taken to the SYS1.DUMP data set.)

Operator Response: Probable user error. Restart the system.

Problem Determination: Table I, items 2, 16, 29.

00D *Explanation:* The error occurred during execution of the scheduler initialization program (IEEVIPL). Either a system failure or an ABEND occurred.

Operator Response: Probable user error. Restart the system.
Problem Determination: Table I, item 29. Take a diagnostic dump.

013 *Explanation:* The error occurred during execution of an OPEN macro instruction. This system completion code is accompanied by message IEC141I. Refer to the explanation of message IEC141I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC141I.
Problem Determination: Table I, items 1, 3, 5b, 15, 16, 29.

020 *Explanation:* The error occurred during execution of a BDAM OPEN macro instruction.

The control program found that the DCBMACRF field of the data control block did not contain an A, K, or I, or an attempt was made to open a BDAM data set that contained zero extents.
System Action: The system terminates the task.
Programmer Response: Probable user error. In the first case, make sure that A, K, or I is specified in the MACRF operand of the DCB macro instruction. Verify that the DCBMACRF field was not incorrectly modified by the problem program before the opening process. After making corrections, reassemble the program and execute the job step again.
In the second case, create the data set before attempting to open it as a BDAM file.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

025 *Explanation:* The error occurred while processing a BDAM data set.

The control program found an invalid address in the data control block (DCB). The invalid address specified a location outside the boundaries of the virtual storage assigned to the task.

The data control block address field in error is DCBSOND; it contains the address of the last or only input/output block (IOB) in the queue.
System Action: The system terminated the task, but did not produce a dump.
Programmer Response: Probable user error. Locate and correct the problem program error that incorrectly modified the data control block field. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 15, 19, 29.

026 *Explanation:* The error occurred during a BDAM input/output operation for which exclusive control of a block was requested.

The control program found that control information associated with the exclusive control of blocks was incorrectly modified:

- The DCBXARG field of the data control block (DCB) did not specify the address of the "Read Exclusive" module.
- The "Read Exclusive" module, built by the open routine, did not indicate the exclusive control status of the data control block.

Programmer Response: Verify that the DCBXARG field of the "Read Exclusive" routine was not modified by the problem program.
After making corrections reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 7ab, 15, 29.

028 *Explanation:* The paging supervisor detected a system error that prevented processing from continuing for a task.

System Action: The affected task is terminated.
Problem Determination: Table I, items 1, 2, 5a, 13, 16, 29.

030 *Explanation:* The error occurred during execution of a BISAM or QISAM OPEN macro instruction.

The control program found that the DCBMACRF field of the data control block (DCB) did not indicate a valid mode of operation for BISAM or QISAM. The DCBMACRF field is set up by the MACRF operand of the DCB macro instruction or by the problem program before the data control block is opened.
Programmer Response: Probable user error. Make sure that a valid mode of operation is specified in the MACRF operand of the DCB macro instruction. Verify that the DCBMACRF field was not incorrectly set up or modified by the problem program. After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

031 *Explanation:* An input/output error occurred during processing using QISAM. The control program attempted to pass control to an error analysis (SYNAD) routine, but found that the DCBSYNAD field of the data control block did not contain the address of a valid SYNAD routine. The task was abnormally terminated.

The DCBEXCD1 and DCBEXCD2 fields of the data control block indicate the possible causes of the original error:

DCBEXCD1:

Bit	Meaning
0	Lower key limit not found.
1	Invalid device address for lower limit.
2	Space not found.
3	Invalid request.
4	Uncorrectable input error.
5	Uncorrectable output error.
6	Block could not be reached (input).
7	Block could not be reached (update).

DCBEXCD2:

Bit	Meaning
0	Sequence check.
1	Duplicate record.
2	DCB closed when error detected.
3	Overflow record.
4	PUT: length field of record greater than length indicated in DCBLRECL field of the data control block.
5-7	(Reserved bits)

Programmer Response: Examine the DCBEXCD1 and DCBEXCD2 fields of the data control block to determine the cause of the error. Specify the address of an error analysis routine to be given control when an input/output error is detected. (This can be provided by the problem program or by the SYNAD operand of the DCB macro instruction.) Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

032 *Explanation:* The error occurred during execution of a BISAM or QISAM OPEN macro instruction.

The control program found that the DCBMACRF field of the data control block (DCB) did not contain valid information for ISAM.
Programmer Response: Probable user error. Make sure that valid information is specified in the MACRF operand of the DCB macro instruction. Verify that the DCBMACRF field was

not incorrectly modified by the problem program before the opening process.
After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

033 *Explanation:* The error occurred during execution of an OPEN macro instruction for an indexed sequential data set:

- An input/output error occurred while reading the highest level index.
- An input/output error occurred while searching for the end-of-file mark following the last data record in the prime and independent overflow areas. The DCBLPDA and DCBLIOV fields of the data control block (DCB) contain, respectively, the addresses of the last records in the prime and independent overflow areas.
- The DCBMSHI field of the data control block contained an address that either specified a location outside the boundaries of the virtual storage assigned to the task or had a storage protection key other than that specified in the task control block (TCB).
- An input/output error occurred while reading the last prime data block during open processing for resume load.
- All volumes of a multivolume ISAM data set were not mounted.

Programmer Response: Verify that the DCBLPDA, DCBLIOV, and DCBMSHI fields were not incorrectly specified or modified by the problem program. After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b. 15. 29.

034 *Explanation:* The error occurred during execution of a BISAM OPEN macro instruction.

For variable length records, the control program found that the address in DCBMSWA was not valid. Either the address is outside the boundaries of virtual storage or the protection key of that address is not the same as the protection key in the TCB.

The control program found that the fields of the data control block (DCB) indicated a virtual storage area too small to contain the highest level index for the data set. The size of the virtual storage area that should be reserved for the highest level index is placed in the DCBNCBHI field of the data control block at OPEN exit time.
Programmer Response: Probable user error. The error can be corrected by one of the following:

- Specify a valid address in the MSWA operand of the DCB. Verify that this field has not been incorrectly modified.
- Provide a sufficient virtual storage area by proper specification of the DCBSMSI and DCBMSHI fields.
- Provide no virtual storage area and either do not specify the contents of the DCBSMSI and DCBMSHI fields or set the fields to zero. The highest level index can then be processed without being loaded into virtual storage.

After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

035 *Explanation:* The error occurred during execution of a BISAM OPEN macro instruction.

The control program found that new records were to be added to the data set, but the DCBMSWA and DCBSMSW fields of the data control block (DCB) indicated a virtual storage area too small to contain one track from the prime area.

Programmer Response: Probable user error. The error can be corrected by one of the following:

- Provide a sufficient area by proper specification of the DCBMSWA and DCBSMSW fields. The minimum DCBSMSW field must indicate one track capacity plus one record.
- For fixed-length records, provide no virtual storage area and either do not specify the contents of the DCBMSWA and DCBSMSW fields or set the fields to zero. A virtual storage work area is required only for variable-length records.

After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

036 *Explanation:* The error occurred during execution of a BISAM or QISAM OPEN macro instruction.

The control program found that no space was allocated on a direct access device as the prime area for the data set:

- In QISAM load mode, during data set generation, the SPACE parameter of the DD statement did not specify a primary quantity.
- The data set control block (DSCB) for the data set was incorrectly modified by the problem program.

Programmer Response: Probable user error. In the first case, the data set should be dumped sequentially and recreated using QISAM load mode. The job should be restarted with a primary quantity specified in the SPACE parameter of the DD statement. If the prime area is to span more than one volume, the number of volumes and the number of units required should be specified.

In the second case, verify that the data set control block was not incorrectly modified by the problem program. After making corrections, reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

037 *Explanation:* The error occurred during execution of a BISAM or QISAM OPEN macro instruction.

The control program found that the buffers supplied by the programmer were inadequate for the records to be processed:

- If the buffers were acquired by use of the BUILD macro instruction, either the BUFNO operand of the DCB macro insturction was not specified or the BUFL operand specified too small a value.
- If the buffers were acquired by use of the GETPOOL macro instruction, the buffer length operand specified too small a value.

Programmer Response: Probable user error. Specify the buffers correctly. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

038 *Explanation:* The error occurred during execution of an OPEN macro instruction for QISAM load mode.

The control program found that the space on a direct access device which had been allocated for the index area was either exhausted or occupied more than one volume. The index for an ISAM data set must reside on one volume.
Programmer Response: Probable user error. If a new data set is being created, the job must be restarted with larger space allocation specified in the SPACE parameter of the DD statement.

If an old data set is being updated, the data set should be dumped sequentially, the old data set scratched, and the data set recreated from the sequential data set using QISAM load mode. The job should be restarted with larger space allocation specified in the SPACE parameter of the DD statement.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

039 *Explanation:* The error occurred in scanning a data set using QISAM.

The end of the data set (EOD) was reached. The control program found that the DCBEODAD field of the data control block (DCB) did not contain an end-of-data-set exit routine address.
Programmer Response: Probable user error. Make sure that the address of a routine to be given control when the end of the data set is reached is specified either in the EODAD operand of the DCB macro instruction or in the problem program before the end of the data set is reached. Then reassemble the program and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

03A *Explanation:* The error occurred during execution of a BISAM or QISAM CLOSE macro instruction.

A format 2 data set control block (DSCB), read from a direct access device into virtual storage, was updated from various fields of the data control block (DCB). When an attempt was made to write the updated data set control block back to the direct access device, an input/output error occurred.
Programmer Response: Rerun the job.
Problem Determination: Table I, items 1, 3, 5a, 15, 25b, 29.

03B *Explanation:* The error occurred during execution of an OPEN macro instruction for an indexed sequential data set. No records could be processed because:

1. The format 2 data set control block (DSCB) indicated that the data set had not been created.
2. The format 2 DSCB indicated that the data control block had not been closed after the data set had been created.
3. The DCBRKP field of the data control block was not valid.
4. The DCBKEYLE field of the data control block was zero.
5. A QISAM data control block was being opened in preparation for a PUT operation, but the OPEN macro instruction had not been issued for output.
6. There is an error in specification of LRECL or BLKSIZE. Either:
   a. the block size (DCBBLKSI) is less than the logical record length (DCBLRECL).
   b. the logical record length (DCBLRECL) is zero.
   c. the block size (DCBBLKSI) is not a multiple of the logical record length (DCBLRECL).

Programmer Response: In case 1 and 2, make sure that the data set has been properly created and that the creating task closes the data control block.

In case 3, make sure that the value of the DCBRKP field of the data control block, when added to the value in the DCBKEYLE field, does not exceed the value in the DCBLRECL field. If variable length records are used, make sure that the value of the DCBRKP field is not less than 4.

In case 4, make sure that the DCBKEYLE field in the data control block does not contain zero.

In case 5, make sure that OUTPUT is specified as option 1 in the OPEN macro instruction.

In case 6, make sure that the block size (BLKSIZE) and logical record length (LRECL) have been specified correctly and that they are compatible.
In all cases, execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

03D *Explanation:* The error occurred during execution of (1) a QISAM or BISAM OPEN macro instruction or (2) a BDAM OPEN macro instruction.

One of the following occurred:

- In case (1), the DD statement did not specify an indexed sequential organization (which can be specified by a DSOPG = IS or DSORG = ISU subparameter of the DCB parameter).
- In case (1), if the data set resides on multiple volumes, either the volume serial numbers in the SFR subparameter of the VOLUME parameter of the DD statement were not in proper sequence, or not all volume serial numbers were specified. The serial number of the volume containing the index must be listed first. The number of volumes and the number of units allocated must be the same, and all volumes must be mounted.
- In case (2), the volume serial numbers in the SER subparameter of the VOLUME parameter of the DD statement were not in proper sequence.

This system completion code is sometimes accompanied by message IEC156I. If so, refer to the explanation of message IEC156I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.
Programmer Response: Probable user error. Correct the DCB parameter or SER subparameter, as necessary, and execute the job step again.

If this system completion code is accompanied by message IEC156I, respond as indicated for the message.
Problem Determination: Table I, items 1, 3, 5b, 15, 16, 29.

03E *Explanation:* The error occurred during execution of a QISAM OPEN macro instruction. The position of the last prime data record indicated that there is no room to add records with resume load.

The loading of an indexed sequential data set must be completed during the initial OPEN/PUT/CLOSE cycle for that data set. An indexed sequential data set which has been opened and closed for loading may be subsequently loaded if no data was created.
Possibly, an attempt was made to add records with resume load to the prime area of an ISAM data set which had no space available for additional records.
Programmer Response: Either load the data set again with a larger space allocation, or add records using BISAM.
After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

040 *Explanation:* The error occurred during execution of an OPEN macro instruction for a TCAM line group data set.

The contents of register 0 indicate the nature of the error:

Register 0 Contents in Hexadecimal	Explanation
01	Not enough virtual storage is available to build a data extent for a line group data set.
02	Incompatible stations are specified in the same line group.
03	The 'Device Class' field of the first unit control block (UCB) for a station in the line group specified something other than telecommunications or graphics.
04	An unsupported control unit was specified for this line group.
05	The adapter-type and model-code bits in a UCB specify something other than the lines specified by the DD statements for this line group.
06	The device characteristics specified for the stations in this line group are not the correct ones for these stations.
07	1) Not enough virtual storage is available to build a line control block for a line group 2) the PGFIX routine failed while attempting to fix a line control block in real storage, or 3) More than 32 lines were specified in a line group.

08	1) Not enough virtual storage is available to build a station control block for a switched line, or 2) the PGFIX routine failed while attempting to fix a station control block in real storage.
09	The binary-synchronous interface specified in the data control block does not agree with that specified in a unit control block for a line in this group.
11	No valid UCB addresses were found for this line group; all UCB addresses checked were zero.
12	The sum of the header prefix size plus the number of bytes reserved in the first buffer of each message by the RESERVE = operand in the line group DCB macro instruction is equal to or greater than the size of the buffers assigned to lines in the group for input; thus, there is no room in the buffers for data.
13	No data set has been specified for disk or virtual storage queuing for a terminal.
14	There are no lines in the line group; that is, one or more of the lines in the group have not been opened because of some other error.
15	A relative line of zero has been specified.
16	The optional features specified in the unit control block do not agree with the device characteristics entry for this line.
17	1) There was not enough virtual storage to satisfy a GETMAIN request to build a TCAM control area in the subpool, or 2) the PGFIX routine failed while attempting to fix a TCAM assembled data area or load module in real storage.
18	An invitation list is not specified for each line in the line group.

System Action: If a user ABEND exit is provided in the EXLST = operand of the DCB macro instruction for the data set, the routine is given control. If it returns, or if no user ABEND exit is provided, the task is terminated.
Programmer Response: Probable user error. No action is required if a user ABEND exit has been provided in the EXLST = operand of the DCB macro instruction for the line group data set. When the program is next reassembled, a user completion code should be supplied in register 15. For a more immediate fix, the contents of register 0 indicate the action to be taken:

Contents of Register 0 in Hexadecimal	Response
01	Specify a larger region size on the JOB statement for the MCP.
02.14.15	Set up the line groups correctly; reassemble and rerun the MCP.
03-06	Check the addresses specified in the line group DD statements to be sure that the line addresses are valid.
07	1) Specify a larger region size on the JOB statement for the MCP, 2) reduce the amount of fixed virtual storage specified for TCAM, or 3) recode the line groups with 32 or less lines specified per line group.
08	1) Specify a larger region size on the JOB statement for the MCP, or 2) reduce the amount of fixed virtual storage specified for TCAM.
09	Check the type of interface specified in the INVLIST = operand of the DCB macro instruction against the bit settings specified in the DCBs for each line in this line group.
11	Specify DD statements with valid UNIT = operands.
12	Specify a larger buffer size for input on the BUFSIZE = and BUFIN = operands of the line group DCB macro instruction: reassemble and rerun the job. If a DD statement source is used to specify this operand, no assembly is required.
13	Specify a data set, and execute the job step again.
16	Make sure that all DD statements specify the correct type of UCB for the lines being opened.
17	1) Specify a larger region size on the JOB statement for the MCP, or 2) reduce the amount of fixed virtual storage specified for TCAM.
18	Remove excessive DD cards or reassemble the (DCB) with an invitation list included for each line in the group.

041 Explanation: The error occurred during execution of an OPEN macro instruction for a TCAM message queues data set.

The contents of register 0 indicates the nature of the error:

Register 0 Contents in Hexadecimal	Explanation
0A	An incorrect length address vector table (AVT) has been specified to support disk message queuing. Disk queuing has been specified in a DCB macro insturction defining a message queues data set, but the INTRO macro instruction that generates the AVT indicates DISK = NO.
0B	The key length specified by the KEYLEN = operand of the INTRO macro instruction and the key length specified in the IEDQDATA DD statement of the IEDOXA utility used to format the message queues data set are not equal.
0C	Dissimilar disk types have been defined for message queuing.
0D	The OPTCD = operand for this DCB specifies something other than reusable disk queuing.
0E	A GETMAIN macro instruction was issued by TCAM to obtain virtual storage to build a data extent block for a message queues data set, but not enough virtual storage was available to satisfy the request.
0F	1) A GETMAIN macro instruction was issued by TCAM to obtain virtual storage to build input/output blocks for a message queues data set, but not enough virtual storage was available to satisfy the request, or 2) the PGFIX routine failed while attempting to fix an input/output block in real storage.
10	The message queues data set was allocated but not formatted correctly; the last record number written on a track is zero.

System Action: If a user ABEND exit is provided in the EXLST = operand of the DCB macro instruction for the data set, the routine is given control. If it returns, or if no user ABEND exit is provided, the task is terminated.
Programmer Response: Probable user error. No action is required if a user ABEND exit has been provided in the EXLST = operand of the DCB macro instruction for the message queues data set. When the program is next reassembled, a user completion code should be supplied in register 15. For a more immediate fix, the contents of register 0 indicate the action to be taken:

Contents of Register 0 in Hexadecimal	Response
0A	Specify DISK = YES in the INTRO macro instruction; assemble and execute the program again.
0B	Reassemble the program with the proper length specified in the KEYLEN = operand of the INTRO macro instruction and rerun the MCP, or restart the TCAM job and override the KEYLEN = value by entering REPLY xx,'K = nn,U' to the message IED002A, or reformat the disk to the proper key length using the IEDQXA utility and rerun the MCP.
0C	Ensure that the disk types specified for message queuing are similar.
0D	Check and correct the contents of the DCB field.
0E	Specify a larger region size on the JOB statement for the MCP.
0F	1) Specify a larger region size on the JOB statement for the MCP, or 2) reduce the amount of fixed virtual storage specified for TCAM.
10	Reformat the data set by means of the IEDQXA utility and rerun the MCP job.

042 Explanation: An error occurred while running with the telecommunications on-line test executive (TOTE). The TOTE subtask has terminated.

Programmer Response: The MCP should be run without TOTE.
Problem Determination: Table I, items 5a, 10, 29.

043 *Explanation:* The error occurred during execution of an OPEN macro instruction for a TCAM application program data set. The contents of register 0 indicates the nature of the error:

Register 0 Contents in Hexadecimal	Explanation
01	An OPEN macro for a TCAM application program data set has been issued but there is no Message Control Program (MCP) active in the system.
02	The QNAME = parameter of the DD statement associated with an input or output DCB for an application program is not the name of a process entry defined in the terminal table.
03	A process entry named by the QNAME = parameter of a DD statement associated with an application program is currently being used by another application program.
04	Not enough virtual storage was available in the MCP to build internal control blocks associated with the application program interface.
05	1) Insufficient virtual storage was available in the application program work area to build internal control blocks, or 2) the PGFIX routine, attempting to fix a process entry work area in real storage, failed.

System Action: If a user ABEND exit is provided in the EXLST = operand of the DCB macro for the data set, the routine is given control. If it returns, or if no user ABEND exit is provided, the task terminates.
Programmer Response: Probable user error. No action is required if a user ABEND exit has been provided in the EXLST = operand of the DCB macro for the application program data set. The contents of register 0 indicates the action to be taken:

Contents of Register 0 in Hexadecimal	Response
01	Make sure that an MCP is active before attempting to start an application program.
02	Recode the QNAME = parameter specifying the name of a valid process entry.
03	Recode the QNAME = parameter specifying another valid process entry.
04	Specify a larger region size on the JOB statement for the MCP.
05	1) Specify a larger region size on the JOB statement for the application program, or 2) reduce the amount of fixed virtual storage specified for TCAM.

044 *Explanation:* The error occurred during execution of the FE Common Write (COMWRITE) task. The COMWRITE task has been terminated.

The contents of register 3 indicates the nature of the error:

Register 3 Contents in Hexadecimal	Explanation and Technical Information
01	Permanent I/O error on output device. Register 7 contains user ID; register 8 contains address of failing DECB.
02	STAE routine failed. Register 15 contains the return code.
03	User parameter list is incorrect, and output required was specified. Register 7 contains the address of the parameter list saved in COMWRITE. Register 11 contains the address of the error message.
05	OPEN failed on the output DCB.

Programmer Response: Response depends upon the contents of register 3:

Register 3	Response
01	Check the status of the recording medium. If it is valid, call IBM for hardware support.
02	Call IBM for hardware support.
03	Probable user error. Check the parameter list.
04	Probale user error. Invalid device specified. Correct the specification.
05	Probable user error. Missing DD statement. Include the DD statement and rerun the job.

045 *Explanation:* The error occurred during execution of a TCAM Message Control Program (MCP). The MCP terminates.

The contents of the low-order byte of reigster 15 indicates the nature of the error.

Register 15 Contents in Hexadecimal	Explanation
01	I/O has been requested on a non-reusable disk record that is beyond the capacity of the data set. The non-reusable disk data set cannot be wrapped.
02	Logical read error caused by the reusable disk receiving a heavy burst of new traffic, causing unsent messages to be overlaid before they can be copied to the alternate destination queue.
03	Logical read error while trying to fetch a message for transmission to a terminal.
04	The copy subtask needed to copy messages from one data set to another has not been loaded by the disk OPEN. A multiple-route or distribution list message has been enqueued to go to dissimilar message queue types. The copy subtask is needed to put the message on the queue. Caused by failure to open successfully a disk message queue DCB.
05	I/O has been requested on an unopened disk message queues data set.
06	FEATURE = (,,NOTIMER) has been specified on the INTRO macro instruction, but a function requiring the system timer has been called.
07	A message longer than the reusable disk data set has been entered.

Programmer Response: Probable user error. To determine the action for a specific reason code, follow these procedures based on the contents of the low-order byte of register 15:

Register 15	Response
01	Either specify a larger data set or request that close down occur at an earlier point.
02,03,07	Specify a larger data set or one that occupies more than one extent. For further suggested corrections, refer to the publication OS/VS TCAM Programmer's Guide, GC30-2034.
04,05	Before issuing the OPEN macro instructions for the lines, test for successful open of the message queues data set.
06	Specify FEATURE = (,,TIMER); reassemble and rerun the MCP.

Problem Determination: Table I, items 5a, 10, 29. Obtain a listing of the message queues data set.

046 *Explanation:* The TCAM MCP has been terminated but an application program data set is still open. The application program data set is scheduled to be terminated with a system completion code of 046.

System Action: The application program is terminated.
Programmer Response: Follow the programmer response for the system completion code provided with the termination of the MCP.

047 *Explanation:* An unauthorized program requested a restricted SVC.

Operator Response: Notify the installation manager or system programmer immediately. Hold all output relevant to the job.
Programmer Response: Probable user error. Run the job again.

056 *Explanation:* The error occurred during execution of the graphic attention service routine for the IBM 2250 Display Unit or the IBM 2260 Display Station.

The routine referred to an invalid unit control block (UCB). The routine obtained the reference to the unit control block through a data control block (DCB).

The user gives the routine the addresses of data control blocks through the poll list address in the first operand of the ANALYZ macro instruction or the address of a data control

block through the list item address in the first operand of the GSERV macro instruction. The DCBDEBAD field in the data control block points to a data extent block (DEB), which in turn points to the unit control block.

The unit control block is used by the control program to obtain information about an input/output device; each unit control block is associated with one input/output device.
Programmer Response: Probable user error. Check the first operand in the ANALYZ or GSERV macro instruction to make sure that it specified the poll list address or list item address correctly. If the first operand was correct, make sure that the macro-expansion and the data control block were not incorrectly modified by program errors. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

057 *Explanation:* The error occurred during execution of the graphic attention service routine for the IBM 2250 Display Unit or the IBM 2260 Display Station.

The routine referred to a unit control block (UCB) that was associated with other than a graphic device. The routine obtained the reference to the unit control block through a data control block (DCB).

The user gives the routine the addresses of data control blocks through the poll list address in the first operand of the ANALYZ macro instruction or the address of one data control block through the list item address in the first operand of the GSERV macro instruction. The DCBDEBAD field in the data control block points to a data extent block (DEB), which in turn points to the unit control block.

The unit control block is used by the control program to obtain information about an input/output device; each unit control block is associated with one input/output device.
Programmer Response: Probable user error. Check the first operand in the ANALYZ or GSERV macro instruction to make sure that it specified the poll list address or list item address correctly. If the first operand was correct, make sure that the macro-expansion and the data control block were not incorrectly modified by program errors. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

061 *Explanation:* The error was detected during execution of a CLOSE macro instruction for a graphic data control block.

The graphic CLOSE executor issued a DAR macro instruction for a graphic attention control block (GACB) which was not specified (via a SPAR macro instruction) by the closing task.
System Action: Abnormal termination occurred for the task that issued the SPAR macro instruction for the graphic attention control block.
Programmer Response: Probable user error. Issue a DAR macro instruction for the graphic attention control block in the task which issued the SPAR macro instruction before the closing task issues the CLOSE macro instruction. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

062 *Explanation:* The error occurred during execution of a routine of the graphic subroutine package (GSP) for FORTRAN IV, COBOL, and PL/I.

A condition was encountered that produced a return code equal to or greater than the absolute value of the value specified by the programmer as the 'null' argument in the call to the INGSP subroutine. The GSPARRAY field in the GSPCB identifies the return code produced, register 2 contains the address of the status table entry last invoked, and register 3 contains the address of the GSPARRAY field.
Programmer Response: Determine the condition that caused the job step to be abnormally terminated and change the program accordingly. Then, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

063 *Explanation:* During execution of a graphic program, the 2250 operator pressed the CANCEL key on the alphameric keyboard of the display unit. The 2250 operator selected either the TERMINATE option or the DUMP option on the termination option display, and the problem program was terminated either with or without a dump.

Programmer Response: Determine from the 2250 operator the condition that caused him to terminate the program, and respond accordingly.

090 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found that a device other than a communications device was allocated to the data control block (DCB) being opened; that is, the device class code in the unit control block (UCB) for the device allocated to the data control block was not equal to hexadecimal 40.
Programmer Response: Either the UNIT parameter of the DD statement for the communications device is incorrect or the unit control block generated during system generation is invalid. Check for improper specification of the UNIT parameter or the IODEVICE macro instruction used in generating the system. Also, check for program errors that could have improperly modified control information. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

091 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found an invalid or unsupported type of transmission control unit specified in the unit control block (UCB) for the device allocated to the data control block (DCB) being opened.
Programmer Response: Check for improper specification of the IODEVICE macro instruction used in generating the system. Also, check for program errors that could have improperly modified control information. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

092 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found an invalid or unsupported type of terminal control or terminal adapter specified in the unit control block (UCB) for the device allocated to the data control block (DCB) being opened.
Programmer Response: Check for improper specification of the ADAPTER parameter in the IODEVICE macro instruction used in generating the system. Also, check for program errors that could have improperly modified control information. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

093 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found an invalid or unsupported type of terminal specified in the unit control block (UCB) for the device allocated to the data control block (DCB) being opened.

Programmer Response: Check for improper specification of the UNIT parameter in the IODEVICE macro instruction used in generating the system. Also, check for program errors that could have improperly modified control information. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

094 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found an invalid or unsupported optional feature or mode of operation specified in the unit control block (UCB) for the device allocated to the data control block (DCB) being opened.
Programmer Response: Check for improper specification of the FEATURE parameter in the IODEVICE macro instruction used in generating the system. Also, check for program errors that could have improperly modified control information. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

095 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found that the lines allocated to the line group did not have identical terminal types and/or optional features.
Programmer Response: Determine which line group contains different terminals and redefine its lines through DD statements or a new system generation.
Problem Determination: Table I, items 1, 3, 5a, 29.

096 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

An OPEN routine found that dynamic buffer allocation had been specified in the DCBBFTEK field of the data control block (DCB). However, the OPEN routine could not dynamically allocate buffers because the data control block specified neither the address of a buffer pool control block (in the DCBBUFCB field) nor the number and length of the buffers (in the DCBBUFNO and DCBBUFL fields).
Programmer Response: Correct the error by (1) providing a buffer pool and specifying the address of its control block in the DCBBUFCB field, (2) specifying the number and length of the buffers in the DCBBUFNO and DCBBUFL fields, or (3) handling buffering in the program and deleting the BFTEK = D operand in the DCB macro instruction or DCB parameter of the DD statement. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

097 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction.

The open routine required an additional entry in the device I/O directory; however, the directory was already full. Since the last system start, the maximum number of device types has already been opened. Normally, the maximum number of device types is 16.
Programmer Response: Additional space in the device I/O directory can be provided by changing one statement in the read/write routine. The statement following the one labeled IOD must be changed. The duplication factor must be increased to correspond to the number of different device types being used. The new read/write routine must be reassembled and link edited to SVCLIB with RENT, NE, and DC as parameters. The IEHIOSUP program must then be executed.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

098 *Explanation:* The error occurred during execution of a BTAM OPEN macro instruction. Dual Communication Interface B or Dual Code Feature B was specified. However, the transmission control unit was not a 2701, the transmission control unit was not the Dual Communication Interface, or the Dual Code Feature was not specified in the unit control block (UCB).

Programmer Response: Probable user error. Correct program errors, and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

0B0 *Explanation:* An input/output error occurred while the system was reading or writing in the job queue data set (SYS1.SYSJOBQE).

System Action: The task is terminated, and all subsequent steps are flushed. The partition then becomes available to process subsequent jobs.
Operator Response: Probable hardware error. If the error occurred in the job queue data set for two consecutive jobs in the same partition, stop processing in that partition. If I/O errors occur in several partitions, restart the system and reformat the job queue. If I/O errors continue after system reinitialization, move the volume containing the job queue data set to another device.

If the error occurred on SWADS, the active initiator will end. Restart that initiator. If this is not successful, move the volume containing SWADS to another device, and restart the system.
Problem Determination: Table I, items 2, 7a, 8, 30.

0Cx *Explanation:* A program interruption occurred during execution of any instruction other than those listed under completion codes 0F1 and 0F2. When the interruption occurred, the program had not specified a routine to handle this type of program interruption.

The last digit of this completion code is a hexadecimal number that indicates the cause of the program interruption:

Last Digit	Program Interruption Cause
0	Imprecise or multiple-imprecise program interruption; a program exception (or series of program exceptions) was detected during execution of an instruction that cannot be precisely identified by the instruction address in the current program status word (PSW). (The instruction-length code is 0.)
1	Operation exception: an operation code is not assigned or the assigned operation is not available on the particular model. (The operation is suppressed. The instruction-length code is 1, 2, or 3.)
2	Privileged-operation exception: a privileged operation is encountered in the problem state. (The operation is suppressed. The instruction-length code is 1 or 2.)
3	Execute exception: the subject instruction of EXECUTE is another EXECUTE. (The operation is suppressed. The instruction-length code is 2.)
4	Protection exception: the key of an instruction halfword or an operand in storage does not match the protection key in the PSW. (The operation is suppressed on a store violation, except in the case of STORE MULTIPLE, READ DIRECT, TEST AND SET, and variable-length operations, which are terminated. Except for EXECUTE, which is suppressed, the operation is terminated on a fetch violation. The instruction-length code is 0, 2, or 3.)
5	Addressing exception: an address specifies any part of data, an instruction, or a control word outside the available virtual storage for the particular installation. (In most cases, the operation is terminated for an invalid data address. Data in virtual storage remains unchanged, except when designated by valid addresses. In a few cases, an invalid data address causes the instruction to be suppressed - AND (NI), EXCLUSIVE OR (XI), OR (OI), MOVE (MVI), CONVERT TO DECIMAL, DIAGNOSE, EXECUTE, and certain store operations (ST, STC, STH, STD, and STE). The operation is suppressed for an

invalid instruction address. The instruction-length code normally is 1, 2, or 3, but may be 0 in the case of a data address.)

6 Specification exception: one of the following occurred:
- A Data, instruction, or control-word address does not specify an integral boundary for the unit of information.
- The R_1 field of an instruction specifies an odd register address for a pair of general registers that contains a 64-bit operand.
- A floating-point register address other than 0, 2, 4, or 6 is specified.
- The multiplier or divisor in decimal arithmetic exceeds 15 digits and sign.
- The first operand field is shorter than or equal to the second operand field in decimal multiplication or division.
- The block address specified in SET STORAGE KEY or INSERT STORAGE KEY has the four low-order bits not all zero.
- A PSW with a nonzero protection key is encountered when protection is not installed.

(The operation is suppressed. The instruction-length code is 1, 2, or 3.)

7 Data exception: one of the following occurred:
- The sign or digit codes of operands in decimal arithmetic or editing operations or in CONVERT TO BINARY are incorrect.
- Fields in decimal arithmetic overlap incorrectly.
- The decimal multiplicand has too many high-order significant digits.

(The operation is terminated or suppressed. The instruction-length code is 2 or 3.)

8 Fixed-point-overflow exception: a high-order carry occurs or high-order significant bits are lost in fixed-point add, subtract, shift, or sign-control operations.
(The operation is completed by ignoring the information placed outside the register. The interruption may be masked by PSW bit 36. The instruction-length code is 1 or 2.)

9 Fixed-point-divide exception: a quotient exceeds the register size in fixed-point division, including division by zero, or the result of CONVERT TO BINARY exceeds 31 bits.
(Division is suppressed. Conversion is completed by ignoring the information placed outside the register. The instruction-length code is 1 or 2.)

A Decimal-overflow exception: the destination field is too small to contain the result field in a decimal operation.
(The operation is completed by ignoring the overflow information. The interruption may be masked by PSW bit 37. The instruction-length code is 3.)

B Decimal-divide exception: a quotient exceeds the specified data field size.
(The operation is suppressed. The instruction-length code is 3.)

C Exponent-overflow exception: the result characteristic in floating-point addition, subtraction, multiplication, or division exceeds 127 and the result fraction is not zero.
(The operation is completed. The fraction is normalized, and the sign and fraction of the result remain correct. The result characteristic is made 128 less than the correct characteristic. The instruction-length code is 1 or 2.)

D Exponent-underflow exception: the result characteristic in floating-point addition, subtraction, multiplication, halving, or division is less than zero and the result fraction is not zero.
(The operation is completed. The setting of the exponent-underflow mask (PSW bit 38) affects the results of the operation. When the mask bit is zero, the sign, characteristic, and fraction are set to zero, making the result a true zero. When the mask bit is one, the fraction is normalized, the characteristic is made 128 larger than the correct characteristic, and the sign and fraction remain correct. The instruction-length code is 1 or 2.)

E Significance exception: the result of a floating-point addition or subtraction has an all-zero fraction.
(The operation is completed. The interruption may be masked by PSW bit 39. The manner in which the operation is completed is determined by the mask bit. The instruction-length code is 1 or 2.)

F Floating-point-divide exception: division by a floating-point number with zero fraction is attempted.
(The operation is suppressed. The instruction-length code is 1 or 2.)

If bit 15 of the old program PSW (PSW at entry to ABEND) is on, the problem program had control when the interruption occurred. The correct register contents are reflected under the heading "REGS AT ENTRY TO ABEND" in an ABEND/SNAP dump. In a stand-alone dump, register contents can be found in the register save area for ABEND's SVRB.

Programmer Response: Probable user error. Determine if the problem program or control program was in error. If the problem program contained an error, correct it and execute the job step again.

Problem Determination: Table I, items 5a, 16, 23, 29.

0D0 Explanation: An error occurred as the result of an invalid segment translation interrupt.

Programmer Response: If the error occurred while GTF was active, restart GTF using the GTFSNP procedure and save the resulting dump. Otherwise, restart the system.

Problem Determination: Table I, items 2, 3, 7a, 29.

0D1 Explanation: The error occurred as the result of an invalid page-fault interrupt.

Programmer Response: If the error occurred while GTF was active, restart GTF using the GTFSNP procedure and save the resulting dump. Otherwise, restart the system.

Problem Determination: Table I, items 2, 3, 7a, 29.

0F1 Explanation: A program interruption occurred during execution of an instruction in the input/output interruption handler of the control program. The applicable program status word (PSW) can be found at hexadecimal location 28. (This program status word is valid only if the first four digits are 0004.)

Note that the program interrupt can be due to a page exception.

The interruption was caused by the problem program if:
- An access method routine in the problem program storage area was overlaid.
- An input/output block (IOB), data control block (DCB), or data extent block (DEB) was modified after an EXCP macro instruction was issued, but prior to the completion of an event.
- A user appendage referred to data that was not fixed, or the appendage itself was not fixed. The latter occurs if the length of the appendage was incorrect as specified in the AVT.

Programmer Response: Determine if the parameters supplied by the problem program were incorrect or if the computer generated an incorrect address. If incorrect parameters were supplied, correct them and execute the job step again.

Problem Determination: Table I, items 5a, 16, 23, 29. Table II, Format 1: trace option - *TRACE = I/O*.

0F2 Explanation: A program interruption occurred during execution of an instruction in a Type I SVC routine or in the SVC First Level Interrupt Handler. Probably, the interruption was caused by incorrect parameters passed to the type I SVC routine.

Programmer Response: Probable user error. Determine if the parameters supplied by the problem program were incorrect or if an SVC routine was added incorrectly to the control program.

Problem Determination: Table I, items 1, 5a, 16, 23, 29.

0F3 Explanation: The control program was able to abnormally terminate the job step after a machine-check interruption and continue processing with other job steps.

System Action: The system terminated the job step, but did not produce a dump.

Programmer Response: Probable hardware error. If the data on external storage devices is still valid, execute the job step again.
Problem Determination: Table I, items 2, 18, 30.

0F4 Explanation: A page translation exception has occurred in disabled code while the supervisor lock is set.

System Action: The task that caused the page translation is abnormally terminated.
Programmer Response: Probable error in non-IBM SVC or appendage. Consult your system programmer to determine if any non-IBM type 2, 3, or 4 SVC or any non-IBM appendages are contained in the control system and used by the problem program. The program old PSW contains indicators as to whether the program was in a disabled state when interrupted. Correct the SVC or appendage and execute the job step again.
Problem Determination: Table I, items 5a, 16, 23, 29. Table II, Format 1 TRACE = SIO,IO,PI,SVC.

0F7 Explanation: Another program interruption occurred during the processing for a prior program interruption.

Programmer Response: Run the job again.
Problem Determination: Table I, items 1, 5a, 16, 29.

100 Explanation: The control program detected one of the following:

- A device to be used was not operational.
- An illegal use of a pseudo device was made. A pseudo device previously allocated has been reallocated.

Programmer Response: If the device was taken offline, the device should be varied online or another device used. Then the job step should be executed again.

If a device was specified that was not operational, an unallocated device should be specified in the UNIT parameter of the DD statement describing the data set to be processed. Run the job again.
If a pseudo device was illegally used, an unallocated device should be specified in the UNIT parameter of the DD statement and the job run again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

101 Explanation: The error occurred during execution of a WAIT macro instruction.

The problem program specified more events than there were event control blocks (ECBs).
Programmer Response: Probable user error. Change the number of events specified so that it is less than or equal to the number of event control blocks. If the specification was correct, make sure it was not incorrectly modified. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 29.

102 Explanation: The error occurred during execution of a POST macro instruction.

The control program found an invalid event control block (ECB) address.
Programmer Response: Probable user error. Make sure that the event control block address specified is a valid virtual storage address and that it was not incorrectly modified. For a system with the storage protection feature, make sure that the event control block address is in the same protection area as the task waiting for the block to be posted and the task attempting to post the block. Correct the error and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

104 Explanation: The error occurred during the execution of a GETMAIN macro instruction for a program operating in the supervisor mode. The program requested more bytes of virtual storage from a local system queue area than were available in real storage.

Programmer Response: Probable user error. If this code occurs frequently, installation action is needed to decrease the space fixed at nucleus initialization time, or the number of initiators active.
Problem Determination: Table I, items 11, 29.

106 Explanation: The error occurred during execution of a LINK, LOAD, ATTACH, or XCTL macro instruction.

An error was detected by the control program when it attempted to fetch the requested program into virtual storage. The contents of register 15 indicate the nature of the error:

Register 15 Contents in Hexadecimal	Explanation
0D	The control program found an invalid record type in the load module.
0E	The control program found an invalid address in the load module.
0F	An uncorrectable input/output error occurred. At the time of abnormal termination, the contents of general purpose register 6 plus X'400' is the address of the IOB ECB the post code of which may prove helpful in isolating the problem. (For discussion of the post codes see *OS/VS I/O Supervisor Logic*, GY24-5156.)

Note: The storage area related to the IOB ECB may be free unless the dump is taken immediately after the ABEND macro instruction is issued.
Programmer Response: If register 15 contains either a X'D' or X'E', it is a probable user error. Ensure that the load request in the problem was specified correctly and was not incorrectly modified. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 10c, 29. Table II, Format 1: trace option - TRACE = SYS.
If register 15 contains a X'F', resubmit the job, and see Table I, item 30, and Table II, Format 1: trace option - TRACE = IO.

10A Explanation: The error occurred during the execution of a GETMAIN macro instruction for a program operating in the supervisor mode. The program requested more bytes of virtual storage from a local system queue area than were available in real storage.

Programmer Response: Probable user error. If this code occurs frequently, installation action is needed to decrease the space fixed at nucleus initialization time, or the number of initiators active.
Problem Determination: Table I, items 2, 11, 29.

10D Explanation: This completion code is found only in job step tasks. It occurs when a job step task abnormally terminates and has a job step task as a subtask which is in "step must complete mode." The jobstep subtask is abnormally terminated.

Programmer Response: Run the job again with the original ABEND corrected.
Problem Determination: Table I, items 1, 5a, 16, 19, 23, 29.

10E Explanation: The error occurred during execution of the SPIE macro instruction. The PICA address is invalid.

Programmer Response: Probable user error. Correct the PICA address specified, ensuring that it is a valid virtual storage address. Execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 19, 29.

113 *Explanation:* The error occurred during execution of an OPEN macro instruction or an OPEN macro instruction with a TYPE = J operand. This system completion code is accompanied by message IEC142I. Refer to the explanation of message IEC142I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC142I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

117 *Explanation:* The error occurred during execution of a BSAM CLOSE macro instruction with a TYPE = T operand. This system completion code is accompanied by message IEC218I. Refer to the explanation of message IEC218I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC218I.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

122 *Explanation:* The operator cancelled the job and requested a dump. The job may have been cancelled because it appeared to be in a loop or because it was waiting for resources that were not immediately available (for example, direct access space or devices). Perhaps the job was cancelled to correct a system interlock condition (for example, two tasks enqueued on a resource without an intervening dequeue), or the job may have violated a procedure established for your installation. There are many reasons why an operator might cancel a job. There may be nothing wrong with your program.

System Action: The system terminates the job and produces a dump to the data set described by the SYSABEND or SYSUDUMP DD statement in the cancelled job step.
Programmer Response: Find out why the operator cancelled your job. Make any necessary corrections, and resubmit the job.
Problem Determination: Table I, items 1, 2, 5a or b, 16, 23, 29.

128 *Explanation:* The error was detected during execution of an EXTRACT macro instruction.

The address of the list in which the control program was to store the task control block (TCB) fields was invalid. The beginning address for the list did not define a fullword boundary, or the list did not begin and end within the storage assigned to the job step. (The beginning address of the list is specified in the first operand of the macro instruction; the length of the list as determined by the number of fields requested.)
Programmer Response: Probable user error. Determine if the first operand of the macro instruction was specified correctly or if program errors had incorrectly modified the EXTRACT macro expansion. After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

12A *Explanation:* The error was detected during execution of an ATTACH macro instruction.

In a GSPV or GSPL operand, the macro instruction specified that a subpool was to be given to the subtask being created. The attaching task owned the subpool, but had previously shared it with other subtasks through SHSPV and/or SHSPL operands. A task is not permitted to give an owned subpool to a subtask if it has shared the subpool with one or more other subtasks.
Programmer Response: Probable user error. Change the ATTACH macro instruction to specify the subpool in an SHSPV or SHSPL operand. Recompile the program, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

12C *Explanation:* The error was detected during execution of a CHAP macro instruction.

The address of the task control block (TCB) for the subtask whose priority was to be changed was invalid. This address was specified in the second operand of the CHAP macro instruction. The address was invalid for one of the following reasons:

- It was not a valid TCB address.
- The valid task control block at the address was not associated with a subtask of the task issuing the macro instruction.
- It was not a multiple of 4.
- The valid task has terminated.

Programmer Response: Probable user error. Change the address specification and ensure that it and the task control block were not incorrectly modified by the problem program. Recompile the program, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

12D *Explanation:* The error occurred during execution of an overlay program.

The overlay supervisor found that words 3 and 4 of the segment table were incorrect.
Programmer Response: Probable user error. Check for program errors that caused the segment table to be incorrectly modified. After making corrections, assemble, link edit, and execute the program again.
Problem Determination: Table I, items 1, 5a, 9. 29.

130 *Explanation:* The error occured during execution of a DEQ macro instruction.

The DEQ macro instruction specified a resource not previously specified by an ENQ macro instruction under the same task. That is, the program had not requested control of a resource it was attempting to release. The DEQ macro instruction did not contain a RET = HAVE operand.
Programmer Response: Probable user error. Check the DEQ macro instruction for incorrect qname or rname operands, or specify RET = HAVE in the DEQ macro instruction, or add an ENQ macro instruction before the DEQ macro instruction. Recompile and execute the program again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

137 *Explanation:* The error occurred at an end-of-volume on a magnetic tape. This system completion code is accompanied by message IEC022I. Refer to the explanation of message IEC022I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC022I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

138 *Explanation:* The error occurred during execution of an ENQ macro instruction.

Two ENQ macro instructions were issued for the same resource in the same task without an intervening DEQ macro instruction. The second ENQ macro instruction did not specify TEST, USE, or HAVE in its RET operand.
Programmer Response: Probable user error. Specify RET = TEST, RET = USE, or RET = HAVE in the second ENQ macro instruction, or add a DEQ macro instruction between the two ENQ macro instructions, or delete one of the ENQ macro instructions. Recompile and execute the program again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

13E Explanation: The error occurred during execution of a DETACH macro instruction.

The macro instruction specified the address of a task control block (TCB) for a subtask that had not yet terminated.
System Action: The system did not produce a dump.
Programmer Response: Probable user error. Determine if the macro instruction specified the address correctly or if program errors incorrectly modified the address.

If the address was correctly specified and was not incorrectly modified, add a WAIT macro instruction to the program immediately before the DETACH macro instruction. This WAIT macro instruction should specify the event control block (ECB) established by the ECB operand of the ATTACH macro instruction that creates the subtask.
After making corrections, recompile and execute the program again.
Problem Determination: Table I, items 1, 16, 23, 29.

13F Explanation: An error occurred during execution of a checkpoint restart.

System Action: The system did not produce a dump.
Programmer Response: Respond as indicated for message IHJ007I, which appears on the console.

140 Explanation: The error occurred during execution of a RDJFCB macro instruction. This system completion code is accompanied by message IEC154I. Refer to the explanation of message IEC154I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC154I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

14F Explanation: The error occurred during execution of the STATUS macro instruction.

The routine attempted to execute the STATUS macro instruction for other than the STOP or START function and was not key zero.
Programmer Response: Probable user error. Correct the program errors making sure that the STATUS macro is not being used for other than the STOP or START function. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

155 Explanation: An SVC 85, which is authorized for use by Dynamic Device Reconfiguration (DDR) only, has been illegally issued by a user's task. DDR has abnormally terminated the user's task.

Programmer Response: Probable user error. Make sure that no program except DDR issues SVC 85.
Problem Determination: Table I, items 5a, 16, 23, 29.

160 Explanation: The error occurred during the processing of a user attention exit for a time sharing task. The control program's record of the attention exit routine was invalid.

System Action: The job step was abnormally terminated.
Programmer Response: Rerun the job. Abnormal termination of the job step may be intercepted by specifying STAE exit and retry routines to reestablish the failing task. The STAE macro instruction must be reissued in either the STAE exit or retry routines to reestablish a user exit routine to handle attention interruptions.
Problem Determination: Table I, items 1, 2, 5a, 7c, 29. Also, retain the terminal listing or record what is currently displayed on the graphic device. Make sure that a TSO Dump DD statement was included for failing start TSO procedures. Execute the AMDPRDMP service aid, specifying TSO options, after restarting the system. The input to AMDPRDMP is the dump tape from TSO Dump. Save the formatted output.

16D Explanation: The error occurred during execution of one of the extended SVC routers (ESR), SVCs 109, 116, and 117. An invalid ESR code was detected in register 15.

This error is the result of:
- The function invoked not being included in the system.
- The ESR code passed to SVC 109, 116, or 117 having no related function.

Programmer Response: In the first case, make sure that the item being invoked has been included in the system. In the second case, correct the ESR code, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

16E Explanation: The control program requested that a DEBCHK function be performed on a Data Extent Block (DEB) obtained from the DCB passed by the program. That function could not be completed. The contents of register 15 indicate the nature of the error.

Programmer Response: The response depends upon the contents of register 15:

Register 15 Contents in Hexadecimal	Explanation
04	The indicated DEB pointer is not in the DEB table. A DEB whose address is not in the DEB table cannot be verified, deleted, or purged.
08	Invalid TYPE specified (macro not issued). Acceptable types are ADD, DELETE, VERIFY, and PURGE.
10	DEBDCBAD does not point to DCB. It is assumed that the DCBDEBAD field of the DCB points to the DEB, but the DEBEBAD field of the DEB must point to the DCB when TYPE = VERIFY, ADD, or DELETE.
14	AM value does not equal DEBAMTYP value. When a DEB pointer is added to the table, the access method (AM) value, if given, is placed in the DEBAMTYP field of the DEB. If no AM value is coded, a 0 is inserted in the field. Subsequent DEBCHKs issued to verify or delete that DEB pointer must either specify the same AM value or omit the operand. When the operand is omitted, no comparison is made.
18	DEB not on TCB chain for TYPE ≠ ADD. Before the DEB pointer can be added to the table, the DEB itself must be queued on the current TCB DEB chain (the TCBDEB field points to the first DEB in the chain.)
1C	DEBAMTYP or DEBTBLOF = 0 for TYPE = ADD. Values other than 0 indicate a pointer to this DEB already exists in the DEB table.
20	DEB table contains 32760 bytes and TYPE = ADD. The current DEB table does not have space for this new DEB pointer. To increase the table size by the increment amount (specified by the DEBTINCR operand of the SYSGEN CTRLPROG macro instruction) would cause the table to exceed its maximum size.

1B0 Explanation: The system conversion routine has encountered an invalid TTR for an address in the SYS1.SYSJOBQE data set.

System Action: The system terminated the task without allowing access to the SYS1.SYSJOBQE data set.
Programmer Response: Attempt to execute the failing job again. At the next convenient time the system should be restarted and the job queue reformatted.
Problem Determination: Table I, items 2, 8, 16, 29.

200 Explanation: An error was detected during EXCP processing; the storage protect key of the input/output block (IOB), the event control block (ECB), or the data control block (DCB) was not the same as the protection key field in the data extent block (DEB).

This system completion code will result if a program check occurs while the IOB, ECB, or DCB is being loaded for IOS EXCP validity checking. Typical causes are premature freeing or overrunning of control blocks.
System Action: The task is abnormally terminated.
Programmer Response: Probable user error. Verify that the blocks were correctly modified by the problem program. If the EXCP access method is being used, make sure that the input/output block and the event control block are correctly built. After making corrections, execute the job step again.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:

- Offset 0 contains a copy of the registers when the program check occurred.
- Offset 64 contains the contents of the request queue element (RQE) when the program check occurred.
- Offset 84 contains a copy of the program status word (PSW) when the program check occurred.
- Offset 92 contains the instruction length count (ILC) when the program check occurred.
- Offset 94 contains the interruption code when the program check occurred.
- Offset 96 contains the last page fault address.

Problem Determination: Table I, items 1, 3, 5b, 15, 19, 29.

201 Explanation: The error occurred during execution of a WAIT macro instruction.

The macro-expansion contained an invalid event control block (ECB) address.
Programmer Response: Probable user error. Make sure that the event control block address specified is a valid virtual storage address and that it was not incorrectly modified. Correct the error and execute the job step again.
Problem Determination: Table I, items 1, 3, 5b, 15, 19, 29.

202 Explanation: The error occurred during execution of a POST macro instruction.

The control program found an invalid request block (RB) address in the 3 low-order bytes of the event control block (ECB) specified by the problem program.

The address of the request block is placed in the event control block during execution of a WAIT macro instruction. This address must remain in the event control block until a POST macro instruction places a post code or zeros in the event control block. The request block is a control block used for internal purposes by the control program.
Programmer Response: Probable user error. Make sure that the contents of the event control block were not modified after the WAIT macro instruction and before the POST macro instruction.
Correct the error and execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

206 Explanation: The error occurred during execution of a LINK, LOAD, XCTL or DELETE macro instruction. One of these errors was detected by the control program:

- the address of the parameter list supplied in the macro instruction was erroneous.
- the address of the name (if EP or EPLOC was specified), or the address of the directory entry (if DE was specified) was erroneous.
- if DE was specified, the DE was not long enough to contain the information required for the module.

Programmer Response: Probable user error. Check for program errors which incorrectly modified the parameter list. If the DE operand was specified, check that the macro instruction is correct for the attributes of the requested module. Ensure that the address specified in the EP, EPLOC or DE operand was not incorrectly specified or modified. After making ocrrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

20A Explanation: While freeing a region, the virtual storage supervisor found that storage was still allocated to the requesting task.

Programmer Response: Run the job again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29. Table II, Format 2: trace option keywords - *TRACE = SVCP*, event keywords - *SVC = 0A,END.*

20E Explanation: The error occurred during execution of the SPIE macro instruction. The PIE address is invalid.

Programmer Response: Probable user error. Correct the PIE address specified, ensuring that it is a valid virtual storage address. Execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 16.

213 Explanation: The error occurred during execution of an OPEN macro instruction for a data set on a direct access device. This system completion code is accompanied by message IEC143I. Refer to the explanation of message IEC143I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC143I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

214 Explanation: The error occurred during execution of a CLOSE macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC210I. Refer to the explanation of message IEC210I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC210I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

217 Explanation: The error occurred during execution of a BSAM CLOSE macro instruction with a TYPE = T operand. This system completion code is accompanied by message IEC219I. Refer to the explanation of message IEC219I for

complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC219I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

222 *Explanation:* The operator canceled the job. The job may have been canceled because it appeared to be in a loop or because it was waiting for resources that were not immediately available (for example, direct access space or devices). Perhaps the job was canceled to correct a system interlock condition (for example, two tasks enqueued on a resource without an intervening dequeue). Or the job may have violated a procedure established for your installation. There are many reasons why the operator might cancel a job. There may be nothing wrong with your program.

System Action: The system terminates the job.
Programmer Response: Find out why the operator canceled your job; make any necessary corrections. Rerun the job making sure the operator enters the command CANCEL iobname, DUMP.
Problem Determination: Table I, items 1, 2, 5a or b, 16, 23,

228 *Explanation:* The error was detected during execution of an EXTRACT macro instruction.

The location of the input parameter list was invalid. (The input parameter list, ordinarily created through expansion of the standard or MF = L form of the EXTRACT macro instruction, describes the function to be performed.) The starting address provided, indicated that the parameter list did not begin either on a fullword boundary or within the area of storage assigned to the job step.
Programmer Response: Probable user error. Correct the program so that the address of the input parameter list is valid, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

22A *Explanation:* The error was detected during execution of an ATTACH macro instruction.

A GSPV, GSPL, SHSPV, or SHSPL operand specified a subpool number greater than 127. The subpools above 127, that is, subpools 128 through 255, are supervisor subpools. A problem program is not permitted to use these subpools.
Programmer Response: Probable user error. Change the macro instruction to specify a problem program subpool (1 through 127). If the macro instruction is specified correctly, check for program errors that incorrectly modify it. Recompile the program and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29. Table II, Format 2: trace option keyword(s) - *TRACE = SVCP*, event keyword(s) - *SVC = 42,END*.

22C *Explanation:* The error was detected during execution of a CHAP macro instruction.

The address of the task control block (TCB) for the subtask whose priority was to be changed was invalid. This address was specified in the second operand of the CHAP macro instruction.
The address was invalid for one of the following reasons:
- It was not a multiple of 4.
- It was higher than the highest address in virtual storage.
- It was not in storage assigned to the job step.

Programmer Response: Probable user error. Change the CHAP macro instruction to specify a valid address pointing to the task control block, and ensure that the specification was not incorrectly modified by the problem program. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29. Table II, Format 2: trace option keyword(s) - *TRACE = SVCP*, event keyword(s) - *SVC = 44,END*.

22D *Explanation:* The error occurred during execution of an overlay program.

The overlay supervisor found an invalid address in the segment table or the entry table. The address pointed to a location outside the boundaries of the virtual storage assigned to the job step.
Programmer Response: Probable user error. Check for program errors that caused the segment table or entry table to be incorrectly modified. Correct the program; link edit and execute the job step again.
Problem Determination: Table I, items 1, 5a, 9, 16, 29.

230 *Explanation:* The error occurred during execution of a DEQ macro instruction.

An invalid length was specified for the name length representing a resource. The length was specified in the rname length operand of the DEQ macro instruction, was supplied by the assembler program, or was contained in the byte immediately preceding the resource name.
Programmer Response: Probable user error. Correct the invalid macro instruction or the program errors that incorrectly modified the length. Recompile the program and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

237 *Explanation:* The error occurred at an end-of-volume. This system completion code is accompanied by message IEC023I. Refer to the explanation of message IEC023I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC023I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 19, 29.

238 *Explanation:* The error occurred during execution of an ENQ macro instruction. An invalid length was specified for the name representing the resource. This length was specified in the rname length operand of the ENQ macro instruction, was supplied by the assembler program, or was contained in the byte immediately preceding the resource name.

Programmer Response: Probable user error. Correct the invalid macro instruction or the program errors that incorrectly modified the length. Recompile the program, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

23E *Explanation:* The error was detected during execution of a DETACH macro instruction.

The address of the task control block (TCB) for the subtask to be detached was invalid. This address was specified in the DETACH macro instruction.
The address was invalid for one of the following reasons:
- It was not a multiple of 4.
- It was higher than the highest address in virtual storage.

- It was not in storage assigned to the job step.
- It was not a valid TCB address.
- The valid task control block was not for a subtask of the task issuing the macro instruction.

Programmer Response: Probable user error. Change the DETACH macro instruction to specify a valid address of the TCB, and ensure that it was not incorrectly modified by the problem program. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

240 *Explanation:* The error occurred during execution of a RDJFCB macro instruction. This system completion code is accompanied by message IEC155I. Refer to the explanation of message IEC155I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC155I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

2F3 *Explanation:* The job was running when a system failure occurred. A system restart was performed; a system job queue entry for the job existed at the time of failure.

Programmer Response: If results of the job are unsatisfactory, resubmit the job or job steps, as desired.

2FF *Explanation:* The job step was abnormally terminated at the request of User Appendage III (the request for ABEND appendage). No dump is produced.

Programmer Response: Rerun the job.
Problem Determination: Table I, items 1, 5a, 23, 29.

300 *Explanation:* An error was detected when an I/O operation was requested; the storage protection key of the data extent block was not zero or the DEB validity check routine IFGDEBCK returned to IOS with a non-zero return code.

System Action: The task is abnormally terminated.
Programmer Response: Probable user error. Verify that the data control block (DCB) contains the address of the DEB. After making corrections, execute the job step again.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when the program check occurred.

Problem Determination: Table I, items 1, 3, 5b, 15, 19, 29.

301 *Explanation:* The error coccured during execution of a WAIT macro instruction.

The macro instruction specified an event control block (ECB) whose wait flag was already on. This indicated that a previous WAIT macro instruction was already waiting for posting of the event control block.
Programmer Response: Probable user error. Change the problem program to eliminate a double wait on a single event. If no double wait is found, make sure that the event control block was not incorrectly modified by the program. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

305 *Explanation:* The error occurred during execution of a FREEMAIN macro instruction:

- The specified subpool could not be found.
- The SP parameter was specified, but the virtual storage area to be released was not within the subpool specified.
- The SP parameter was not specified, but the virtual storage area to be released was not within subpool zero.
- The SP parameter was specified correctly, but the boundaries of the the storage area to be freed were not completely described by a descriptor queue element (DQE).

Programmer Response: Probable user error. Determine if the A operand and the LV or LA operand specify an area within the subpool. If the area as specified is within the subpool, check for program errors that incorrectly modified the FREEMAIN macro-expansion. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

30A *Explanation:* The error occurred during execution of an R-form FREEMAIN macro instruction:

- The SP = (0) parameter was specified, but the length in the three low-order bytes of register 0 was not zero.
- The specified subpool could not be found.
- The SP parameter was specified, but the virtual storage area to be released was not within the subpool specified.
- The SP parameter was not specified, but the virtual storage area to be released was not within subpool zero.
- The SP parameter was specified correctly, but the boundaries of the storage area to be freed were not completely described by a descriptor queue element (DQE).

Programmer Response: Probable user error. Determine if the A operand and LV operand specify an area within the subpool. If the area as specified is within the subpool, check for program errors that incorrectly modified the FREEMAIN macro-expansion. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

30D *Explanation:* The task was enqueued for a resource that became permanently unavailable. A task had allocated the resource using the 'step must complete' option (SMC) of the ENQ or RESERVE macro instructions. Subsequently, while still in 'must complete' status, the task abnormally terminated. The resource was designated by the operator as a critical system resource.

Programmer Response: Run the job again.
Problem Determination: Table I, items 1, 5a, 16, 19, 29.

30E *Explanation:* The error occurred during the execution of the SPIE macro instruction. An unauthorized program attempted to specify program interruption code 17.

Programmer Response: Probable user error. Recode the macro instruction to delete the specification of interrupt code 17, or contact the system programmer to have authorization assigned to your program through the authorized program facility (APF). Then execute the job step again.
Problem Determination: Table I, items 1, 5a, 15, 16, 19, 29.

313 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on a direct access device. This sytem completion code is accompanied by message IEC144I. Refer to the explanation of message IEC144I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC144I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

314 Explanation: The error occurred during the execution of a CLOSE macro instruction for a data set on a direct access device. This system completion code is accompanied by message IEC211I. Refer to the explanation of message IEC211I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC211I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

317 Explanation: The error occurred during execution of a BSAM CLOSE macro instruction with a TYPE = T operand for a data set on a direct access device. This system completion code is accompanied by message IEC220I. Refer to the explanation of message IEC220I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC220I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

322 Explanation: Execution of a job, job step, or cataloged procedure step took longer than the time specified in:

- The TIME parameter of the EXEC or JOB statement.
- The standard time limit specified in the cataloged procedure for the SYSIN reader, if the TIME parameter was not specified in the EXEC or JOB statement.

System Action: The system abnormally terminated the job, job step, procedure, or procedure step.
Programmer Response: Check for program errors, such as endless loops, that would cause the job step, procedure, or precedure step to take too long. Correct any such errors. If no errors are found, specify a longer time in the TIME parameter. Then execute the job again.
Problem Determination: Table I, items 1, 5a, 7b, 26d, 29.

328 Explanation: The error was detected during execution of an EXTRACT macro instruction.

The task control block (TCB) specified in the second operand of the macro instruction was not for an immediate subtask of the task issuing the EXTRACT macro instruction.
Programmer Response: Probable user error. Change the EXTRACT macro instruction to specify a task control block for an immediate subtask. If the macro instruction was specified correctly, check for program errors that incorrectly modified the EXTRACT macro-expansion. After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

32A Explanation: The error occurred during execution of an ATTACH macro instruction issued by a program executing in key 0.

The requesting task attempted to give its job pack queue, which contained one or more active programs, to the newly created task. (A program is considered active if its contents directory entry (CDE) contains a use count greater than zero.)
Programmer Response: Probable user error. Ensure that the job pack queue is not given to the new task or that the job pack queue contains only contents directory entries with a use count of zero. Then execute the job step again.
Problem Determination: Table I, items 5a, 16, 23, 29. Table II, Format 2: trace option keyword(s) - *TRACE = SVCP*, event keyword(s) - *SVC = 42,END*.

32D Explanation: The error occurred during execution of an overlay program.

A record of an incorrect length was found or an uncorrectable input/output error occurred in loading a segment from the library.
Programmer Response: Linkage edit the program again, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 9, 29.

330 Explanation: A task assigned a non-zero protection key issued a DEQ macro instruction specifying the RMC, TCB, and GENERIC options. The options may be specified by key-zero tasks only.

Programmer Response: Probable user error. Change the macro instruction so that the RMC, TCB, and GENERIC options are not specified. Recompile and run the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

337 Explanation: The error occurred when the end of a data set was reached. This system completion code is accompanied by message IEC024I. Refer to the explanation of message IEC024I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC024I.
Problem Determination: Table I, items 1, 3, 5b, 15, 16, 21, 29.

338 Explanation: A task assigned a non-zero protection key issued an ENQ macro instruction specifying the SMC, TCB, or ECB options. These options may be specified by key-zero tasks only.

Programmer Response: Probable user error. Change the macro instruction so that the SMC, TCB, and ECB options are not specified. Recompile and run the job step again.

33E Explanation: A DETACH macro instruction specifying the STAE = YES operand has been issued by the originating task, but the specified subtask has not completed execution.

System Action: The subtask is abnormally terminated. If the STAE macro instruction was issued by the subtask, the specified exit routine will be given control during abnormal termination processing. However, if the STAE exit routine specified a retry routine, the retry routine will not be given control.
Programmer Response: Probable user error. Make sure that the DETACH macro instruction is not issued until the specified subtask has completed execution. This may be done by specifying the ECB operand in the ATTACH macro instruction that created the subtask, and issuing a WAIT macro instruction specifying this ECB before issuing the DETACH macro instruction.
After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

3FE *Explanation:* The task attempted to end normally but teleprocessing I/O requests were active or pending. This situation usually occurs when the terminating task issued I/O requests to a data set opened by another task in the terminating task's tree structure.

System Action: The outstanding I/O has been halted.
Programmer Response: Correct the program to ensure that all teleprocessing I/O for the terminating task is complete prior to that task completing.
Problem Determination: Table I, items 5a, 15, 16, 29.

400 *Explanation:* The control block chain between the IOB, DCB, DEB, and UCB is invalid; the control program found that one of the blocks was incorrectly modified or built.

System Action: The task is abnormally terminated.
Programmer Response: Probable user error. Check the control blocks and rerun the job.
In the abnormal termination dump, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when IOS determined the error condition.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

406 *Explanation:* The error occurred during execution of a LINK, ATTACH, or XCTL macro instruction.

The requested program was marked by the linkage editor as "only loadable." The program was produced by a linkage editor execution for which the EXEC statement contained OL in the PARM parameter field.
Programmer Response: Probable user error. Rewrite the problem program so that it specifies only loading, but not execution, of the "only loadable" program. Then recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

40A *Explanation:* The error was detected during execution of an R-form FREEMAIN macro instruction.

The macro instruction specified the release of all subpool zero storage. The entire subpool zero cannot be released by problem programs, that is, programs with storage protection keys other than zero.
Programmer Response: Probable user error. If the FREEMAIN macro instruction was intended to release subpool zero, remove it from the program. The control program automatically releases subpool zero when a job step terminates.
If the FREEMAIN macro instruction was not intended to release subpool zero, correct the macro instruction or program errors that incorrectly modified it.
After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

413 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape or on a direct access device. This system completion code is accompanied by message IEC145I. Refer to the explanation of message IEC145I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC145I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

414 *Explanation:* The error occurred during execution of a CLOSE macro instruction for a data set on a direct access device. This system completion code is accompanied by message IEC212I. Refer to the explanation of message IEC212I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC212I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

417 *Explanation:* The error occurred during execution of a BSAM CLOSE macro instruction with a TYPE = T operand for a data set on a direct access device. This system completion code is accompanied by message IEC221I. Refer to the explanation of message IEC221I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC221I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

422 *Explanation:* The job required too much queue space in the SYS1.SYSJOBQE data set for initiation.

The space reserved for each initiator was specified either during system generation or in the t parameter of the reply to message IEF423A.
System Action: If the ABEND occurred during step termination for the last step of the job, the problem program will have run to completion, even though the CANCEL messages are issued.
Programmer Response: Divide the steps of the terminated job into two or more jobs or, the next time the system is started, specify that (1) the format of the SYS1.SYSJOBQE data set be changed (F in the Q parameter of the SET command) and (2) a larger t parameter be used in reply to message IEF423A.
If the error occurred during step termination for the last step of the job, verify that the problem program completed as expected and that the data sets associated with the problem were handled properly.
Problem Determination: Table I, items 7ab, 8, 17b, 29.

42A *Explanation:* The error was detected during execution of an ATTACH macro instruction.

The ECB operand specified an invalid address for the event control block (ECB) to be posted when the subtask terminates. The address was invalid for one of the following reasons:
- It was not on a fullword boundary.
- It was not in the storage assigned to the job step.

Programmer Response: Probable user error. Change the ATTACH macro instruction to specify the correct ECB, and ensure that the specification was not incorrectly modified by the problem program. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

430 *Explanation:* The error occurred during execution of a DEQ macro instruction.

The control program found that the parameter list created from the macro instruction was invalid.

Programmer Response: Probable user error. Correct the DEQ macro instruction specification or the program errors that incorrectly modified the parameter list. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

437 *Explanation:* The error occurred at an end-of-volume. This system completion code is accompanied by message IEC025I. Refer to the explanation of message IEC025I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC025I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

438 *Explanation:* The error occurred during execution of an ENQ macro instruction.

The control program found that the parameter list created from the macro instruction was invalid.
Programmer Response: Probable user error. Correct the specification of the macro instruction or the program errors that incorrectly modified the parameter list. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

4FE *Explanation:* The task attempted to terminate normally; however, there was at least one outstanding I/O request that was incomplete. This situation usually occurs when the terminating task issues I/O requests to a data set that was opened by another task in the terminating task's tree structure.

System Action: The outstanding I/O has been purged.
Programmer Response: The program may be corrected by one of the following:
- Making sure that all I/O for the terminating task has completed prior to that task completing.
- Making sure that the completing task was attached using the EXTR or ECB option. The EXTR routine or ECB logic can then be used to restore the purged I/O to the attaching task by RESTORE. The IOB chain pointer was stored in the terminated TCB at TCB+X'BC' (TCBIOBRC).

Problem Determination: Table I, items 5a, 15, 16, 29.

500 *Explanation:* An unexpected program interruption occurred during processing of the input/output supervisor. Note that the program interrupt can be due to a page exception.

System Action: The task is abnormally terminated.
Programmer Response: Usually not a programmer error. Rerun the job requesting an abnormal termination dump before calling the system programmer.
In the abnormal termination dump, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when the program check occurred.
- Offset 64 contains the contents of the request queue element (RQE) when the program check occurred.
- Offset 84 contains a copy of the program status word (PSW) when the program check occurred.
- Offset 92 contains the instruction length count (ILC) when the program check occurred.
- Offset 94 contains the interruption code when the program check occurred.
- Offset 96 contains the last page fault address.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

504 *Explanation:* The error was detected during execution of a GETMAIN macro instruction that requested allocation of one or more areas of virtual storage. The macro instruction contained an LA operand (address of a list of lengths) and an A operand (address of a list of beginning addresses for the areas).

The length list and the address list occupied overlapping storage locations.
Programmer Response: Probable user error. Correct the macro instruction or program errors that incorrectly modified the parameter lists. Then execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

505 *Explanation:* The error was detected during execution of a FREEMAIN macro instruction that requested release of one or more areas of virtual storage. The macro instruction contained an LA operand (address of a list of lengths) and an A operand (address of a list of beginning addresses for the areas).

The length list and the address list occupied overlapping storage locations.
Programmer Response: Probable user error. Correct the macro instruction or program errors that incorrectly modified the parameters. Then execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

506 *Explanation:* The error occurred during execution of a LINK, LOAD, ATTACH, or XCTL macro instruction in overlay program.

If the requested program had been loaded, not enough virtual storage would have remained for the overlay supervisor.
Programmer Response: Probable user error. Reduce the size of the entire program or of the overlay segment. If this is not possible, change the program from an overlay program to a dynamically loaded program. Then recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29. Table II, Format 1: trace option - *TRACE = SYS*.

513 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC146I. Refer to the explanation of message IEC146I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC146I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

514 *Explanation:* The error occurred during execution of a CLOSE macro instruction. This system completion code is usually accompanied by message IEC213I. Refer to the explanation of message IEC213I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC213I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

522 *Explanation:* All of the tasks in a job step were in an SVC wait state for the time specified in the JWT parameter.

The event control block (ECB) specified in the wait request was never posted. This could be the result of waiting on the wrong ECB or not posting the correct ECB.
Programmer Response: Correct any errors and execute the job step again. If no errors are found and the wait is expected for that particular job step, specify TIME = 1440 on the EXEC statement to bypass all job step timing.
Problem Determination: Table I, items 7ab, 29.

52A *Explanation:* The error occurred during the execution of an ATTACH macro instruction. Although the STAI operand was not specified in this macro instruction, it was specified for an antecedent task in the subtask queue for the job step. There is insufficient LSQA storage to copy the necessary STAI information for the subtask specified by this ATTACH macro instruction.

System Action: The subtask is not attached, and the task that issued the ATTACH macro instruction is abnormally terminated.
Programmer Response: Notify the system programmer at the installation and resubmit the job.
Problem Determination: Table I, items 1, 2, 5a, 7a, 29. If the problem persists in a TSO environment, have the terminal sheet available.

530 *Explanation:* The error was detected during execution of a DEQ macro instruction.

A DEQ macro instruction was issued in an asynchronous exit routine for a resource previously enqueued by another routine in the same task. However, the task had not yet received control of the resource.
Programmer Response: Probable user error. Correct the program so that the DEQ macro instruction is issued only after the task has control of the resource. If possible, avoid issuing the DEQ macro instruction in the exit routine. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

538 *Explanation:* The error occurred during execution of an ENQ macro instruction. A task requested one-at-a-time access to a permanently unavailable resource. Another task, in must-complete status, requested this resource using the step-must-complete option of the ENQ macro instruction. That task was subsequently abnormally terminated while still owning the resource. The operator designated the resource as a critical system resource. Consequently, the resource was marked permanently unavailable instead of being freed for further use.

Programmer Response: The system must be started again to free the needed resource. Notify the system programmer, and after the system is loaded, run the job again.
Problem Determination: Table I, items 1, 5a, 16, 19, 29.

600 *Explanation:* An SVC 114 was issued with one of the following conditions:

- The SVC 114 authorization bit was not set in the DEB.
- The protect key was not zero.
- The request was not issued in supervisor state.
- The authorization bit was not set in the JSCB.

System Action: The task is abnormally terminated.
Programmer Response: Probable user error. Ensure that the user is authorized for use of SVC 114 or issue SVC 0.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the problem determination area. Offset 0 contains a copy of the registers when IOS determined the error condition.
Problem Determination: Table I, items 1, 2, 11, 29, if stopped on address of ABTERM entry; otherwise, items 16 and 29.

604 *Explanation:* The error occurred during execution of a GETMAIN macro instruction.

The control program found one of the following:

- The address in the A or LA operand specified a location outside the virtual storage assigned to the task or was not a multiple of 4.
- The address of the parameter list for the macro instruction was erroneous. This address was in register 1.

Programmer Response: Probable user error. Check for program errors that incorrectly modify the parameter list. Make sure that the address given by the A or LA operand was not incorrectly specified or modified. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

605 *Explanation:* The error occurred during execution of a FREEMAIN macro instruction.

The control program found one of the following:

- The address in the A or LA operand specified a location outside the boundaries of the virtual storage assigned to the task, or was not a multiple of 4.
- The address of the parameter list for the macro instruction was erroneous. This address was in register 1.

Programmer Response: Probable user error. Check for program errors that incorrectly modify the free area queue or the parameter list. Make sure that the address given by the A or LA operand was not incorrectly specified or modified. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

606 *Explanation:* The error occurred during execution of a LINK, XCTL, ATTACH, or LOAD macro instruction.

Not enough virtual storage was available to load the requested program, or not enough real storage was available to fix the requested program.
Programmer Response: Probable user error. Reduce the size of the program, change it to an overlay program, increase the region size request on the EXEC statement. Then recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

613 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC147I. Refer to the explanation of message IEC147I for complete information about the job that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC147I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

614 *Explanation:* The error occurred during execution of a CLOSE macro instruction for a data set on a direct access device. This system completion code is accompanied by message IEC214I. Refer to the explanation of message IEC214I for complete information about the job that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC214I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

622 *Explanation:* Initiation of execution of a task entered from a TSO terminal was terminated for one of the following reasons:

1. The system encountered one of the following errors while constructing control blocks for TSO:
   a. A GETMAIN macro instruction was not executed because not enough virtual storage was available.
   b. A multiple-step procedure was found.
   c. An OBTAIN macro instruction was not executed because the data set being sought did not exist.
   d. The prompting task terminated abnormally.
   e. An input/output error was encountered while reading the SYS1.SYSJOBQE data set.
2. The operator issued a STOP TSO command.
3. The terminal user signaled ATTN after the allocation process had completed.
4. The user submitting the job disconnected his terminal from the system.

System Action: In cases 1 and 2, the system issued terminal messages that describe the error conditions.
Programmer Response: In the first case, respond to the terminal messages that accompany this termination:
- For case 1a, specify a larger region size and attempt to execute the job again.
- For case 1b and 1c, specify a different procedure or consult your system programmer. Attempt to execute the job again.
- For cases 1d and 1e, consult your system programmer.

In the second case, attempt to execute the job again when TSO is started.

In the third case, attempt to execute the job again; make sure that you do not signal ATTN inadvertently.

In the fourth case, attempt to execute the job again when the terminal is reconnected to the system.
Problem Determination: In all cases, have the terminal sheet available or record the current display on the graphics device before calling IBM for programming support.

637 *Explanation:* The error occurred at an end-of-volume for a data set on magnetic tape or an end-of-volume during concatenation. This system completion code is accompanied by message IEC026I. Refer to the explanation of message IEC026I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC026I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

700 *Explanation:* A program check occurred in a supervisor service routine called by IOS.

System Action: The task is abnormally terminated.
Programmer Response: Not a programmer error. Rerun the job requesting an abnormal termination dump before calling the system programmer. For the system programmer, the problem is most likely in one of the several service routines used by IOS.
In the abnormal termination dump, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when the program check occurred.
- Offset 64 contains the contents of the request queue element (RQE) when the program check occurred.
- Offset 84 contains a copy of the program status word (PSW) when the program check occurred.
- Offset 92 contains the instruction length count (ILC) when the program check occurred.
- Offset 94 contains the interruption code when the program check occurred.
- Offset 96 contains the last page fault address.

Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

706 *Explanation:* The error occurred during execution of a LINK, XCTL, ATTACH, or LOAD macro instruction.

The requested load module was marked by the linkage editor as not executable.
Programmer Response: Probable user error. Correct the errors that were found by the linkage editor in the load module, have the module edited by the linkage editor again, recompile, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

713 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape or on a direct access device. This system completion code is accompanied by message IEC148I. Refer to the explanation of message IEC148I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC148I.
Problem Determination: Table I, items 1, 2, 3, 5a, 15, 16, 29.

714 *Explanation:* The error occurred during execution of a CLOSE macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC215I. Refer to the explanation of message IEC215I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC215I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

717 *Explanation:* The error occurred during execution of a BSAM CLOSE macro instruction with a TYPE = T operand for a data set on magnetic tape. This system completion code is accompanied by message IEC222I. Refer to the explanation of message IEC222I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC222I.
Problem Determination: 1, 3, 5a, 15, 16, 29. OUTLIM value on the SYSOUT DD statement.

72A *Explanation:* The error occurred during the execution of an ATTACH macro instruction. The issuer of the macro instruction specified an invalid parameter address.

Programmer Response: Probable user error. Correct the parameter addresses insuring that they are valid virtual addresses. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 15, 16, 19, 29.

737 *Explanation:* The error occurred at an end-of-volume or during allocation of a secondary quantity or direct access

storage as requested in the SPACE parameter of the DD statement for the data set. This system completion code is accompanied by message IEC027I. Refer to the explanation of message IEC027I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC027I.
Problem Determination: If the data set does exist on the specified volumes and the problem recurs, see Table I, items 1, 3, 5a, 15, 16, 25b, 29.

800 *Explanation:* An error occurred when IOS attempted to fix a page for this EXCP request.

System Action: The task is abnormally terminated.
Programmer Response: Ensure that the appendage vector table (AVT), appendages, control blocks, channel program, and data areas are all valid addresses.
In the abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when IOS determined the error condition.
- Offset 84 contains the first fix list when IOS determined the error.
- Offset 212 contains the second fix list, if there is one. This area is X'00' when a second fix list does not exist.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

804 *Explanation:* The error occurred during execution of 1. a GETMAIN macro instruction with a mode operand of EU or VU or 2. a language processor.

More virtual storage was requested than was available.
Programmer Response: Probable user error. Ensure that sufficient storage is available when the storage request is executed. Then check for program errors that incorrectly modify the storage request. If necessary, request a smaller amount of storage or a larger region. Then execute the job step again.
Problem Determination: Table i, items 1, 5a, 16, 23, 29.

806 *Explanation:* An error occurred during execution of a LINK, XCTL, ATTACH, or LOAD macro instruction, in which the EP or EPLOC operand was specified. The error was detected by the control program routine for the BLDL macro instruction.

The contents of register 15 indicate the nature of the error:
- 04 - The program whose entry point was specified in the EP or EPLOC operand was not found in the indicated library (private library, job library, or link library).
- 08 - An uncorrectable input/output error occurred when the BLDL control program routine attempted to search the directory of the library that contained the program whose entry point was specified in the EP or EPLOC operand. This can occur if the specified library is an unitialialized partitioned data set. At the time of abnormal termination, the contents of general purpose register 6 plus X'138' points to the address of the IOB ECB, the post code of which may prove helpful in isolating the problem. (For a discussion of the post codes, see *OS/VS2 Supervisor Logic*, SY27-7244.) *Note:* The storage related to the IOB ECB may be free unless the dump is taken immediately after the ABEND macro instruction is issued.
- 0C - An SVC routine required by the system could not be found in the link pack area.

Programmer Response: If register 15 contains a X'04' it is a probable user error. Make sure that the requesting program was not incorrectly modified. Make sure that the source library was indicated correctly and that the indicated library does contain the requested program. Correct the error, and execute the job step again.
If register 15 contains X'0C', report this completion code to the system programmer.
Problem Determination: Table I, items 1, 5a, 16, 23, 25c, 29.
If register 15 contains a X'08', see Table II, Format 1: trace option - *TRACE = IO*.

80A *Explanation:* The error occurred during execution of either an R-form GETMAIN macro instruction, or a GETMAIN macro instruction with a mode operand of EU or VU.

More virtual storage was requested than was available.
Programmer Response: Probable user error. Ensure that sufficient storage is available when the storage request is executed. Then check for program errors that incorrectly modify the storage request. If necessary, change the problem program to request a smaller amount of storage. Then execute the job step again.
After taking corrective action, execute the job or job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

813 *Explanation:* The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC149I. Refer to the explanation of message IEC149I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC149I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

822 *Explanation:* A problem program's V = R request could not be satisfied because the requested amount of real storage was not available.

Programmer Response: Either reduce the V = R region request or resubmit the job asking the operator to run it when no other jobs are active.
Problem Determination: Table I, items 1, 4, 5a, 29.

837 *Explanation:* The error occurred at an end-of-volume for a sequential data set. This system completion code is accompanied by message IEC028I. Refer to the explanation of message IEC028I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC028I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

900 *Explanation:* A program check occurred in a user appendage or an attention routine.

System Action: The task is abnormally terminated.
Programmer Response: Probably not a programmer error unless using EXCP for I/O operations. Rerun the job requesting

an abnormal termination dump before calling the system programmer. For the system programmer, the error is most likely to be in the IOS appendage.
In the abnormal termination dump, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when the program check occurred.
- Offset 64 contains the contents of the request queue element (RQE) when the program check occurred.
- Offset 84 contains a copy of the program status word (PSW) when the program check occurred.
- Offset 92 contains the instruction length count (ILC) when the program check occurred.
- Offset 94 contains the interruption code when the program check occurred.
- Offset 96 contains the last page fault address.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

905 *Explanation:* The error occurred during execution of a FREEMAIN macro instruction.

The address of the storage area to be released was not on a double-word boundary (a multiple of 8).
Programmer Response: Probable user error. Check the addresses specified for areas to be released. They may have been incorrectly specified or modified. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

906 *Explanation:* The error occurred during execution of a LINK macro instruction.

This macro instruction caused the count of requestors waiting to use a reenterable or serially reusable load module to exceed 4096.
Programmer Response: Probable user error. Check for program errors, such as endless loops, that would cause macro instruction(s) executed too often. After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

90A *Explanation:* The error occurred during execution of an R-form FREEMAIN macro instruction.

The address of the storage area to be released was not on a doubleword boundary (a multiple of 8).
Programmer Response: Probable user error. Check the addresses specified for areas to be released. They may have been incorrectly specified or modified. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

913 *Explanation:* One of three kinds of errors has occurred:
- The error occurred during execution of an OPEN macro instruction or during end-of-volume for a password-protected data set after the operator attempted to enter a password in response to message IEC310A.
- An OPEN macro instruction was issued for a data set with ASCII labels and an ASCII label was either not created or not written on an IBM system, or was created or written by the user.
- An unauthorized job step or job step task tried to open the VTOC for output.

Programmer Response: Respond as indicated for message IEC150I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

A00 *Explanation:* In translating CCW's out of the PCI appendage, IOS found:
- A buffer or channel program area had not been fixed.
- An invalid indirect address list (IAL) entry in the SIO extent list.

System Action: The task is abnormally terminated.
Programmer Response: Add to the list of pages to be fixed out of the page fix appendage, any pages to be referenced by the CCWs to be added in the PCI appendage.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when IOS determined the error condition.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 2, 11, 29, if stopped on the address of the entry to ABTERM. Otherwise, items 16 and 29.

A03 *Explanation:* The error occurred when a task attempted to terminate normally with a RETURN macro instruction or a branch to the return address in register 14. The task had initiated one or more subtask(s) that had not terminated.

Programmer Response: Probable user error. Change the program so that, before termination of the task, all its subtasks will terminate. A task can determine that its subtasks have terminated by specifying ECB operands in the ATTACH macro instructions that initiate the subtasks and then issuing WAIT macro instruction(s) that specify the event control blocks representing the subtask terminations.
If WAIT macro instruction(s) had been issued and had indicated that all subtasks had terminated, check for program errors that incorrectly modified the WAIT macro instructions or event control blocks.
After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

A05 *Explanation:* The error occurred during execution of a FREEMAIN macro instruction. The control program found that the address and length specifications in the release request defined an area to be freed that overlapped a free area in virtual storage. Specifications for free areas are contained in the free area queue, which is composed of queue elements defining each free area.

Programmer Response: Probable user error. Check for program errors that incorrectly modified the release request. Ensure that the release was correctly specified. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

A06 *Explanation:* The error was detected during execution of either a LINK, LOAD, XCTL or ATTACH macro instruction.

This macro instruction requested a serially reusable load module; however, a prior request for the same load module was already queued for the task issuing this macro instruction.
Programmer Response: Probable user error. Change the program to wait until the serially reusable load module is executed before issuing the LINK, LOAD, XCTL or ATTACH macro instruction for the load module. After making corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

A0A Explanation: The error occurred during execution of an R-form FREEMAIN macro instruction.

The control program found that the address and length specifications in the release request defined an area to be freed that overlapped a free area in virtual storage.
Programmer Response: Probable user error. Check for program errors that incorrectly modified the free area queue or the release request. Make sure the release request was correctly specified. Correct the error and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

A13 Explanation: The error occurred during execution of an OPEN macro instruction for a data set on magnetic tape. This system completion code is accompanied by message IEC151I. Refer to the explanation of message IEC151I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC151I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

A14 Explanation: The error occurred during execution of a CLOSE macro instruction for a data set on a direct access device. This system completion code is accompanied by message IEC216I. Refer to the explanation of message IEC216I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC216I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

A23 Explanation: The task was placed on a queue waiting for an ORE (operator reply element) when an ABEND of the communications task occurred.

Operator Response: Probable system error. Re-IPL the system and run the job again.
Problem Determination: Table I, items 2, 16, 29.

A37 Explanation: The error occurred during end-of-volume processing. This system code is accompanied by message IEC015I.

Refer to the explanation of message IEC015I for completion information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.
Programmer Response: Respond as indicated by message IEC015I.
Problem Determination: Table I, items 1, 4, 5a, 15, 16, 29.

B00 Explanation: The load on the system is such that more pages of storage are fixed than the paging supervisor has set as its threshold value.

Programmer Response: Readjust routines, buffers, channel programs, and appendages such that fewer pages require fixing for the I/O operation. If the problem recurs, the system programmer should examine the load on the system and the fix threshold specified.
Problem Determination: Table I, items 1, 2, 11, 29, if stopped on address of Abterm entry; otherwise, item 16.

B04 Explanation: The error occurred during execution of a GETMAIN macro instruction.

A subpool number greater than 127 was specified.
Programmer Response: Probable user error. Make sure that the storage request was specified correctly and was not incorrectly modified. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

B05 Explanation: The error occurred during execution of a FREEMAIN macro instruction.

A subpool number greater than 127 was specified.
Programmer Response: Probable user error. Make sure that the release request was specified correctly and was not incorrectly modified. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

B06 Explanation: During input/output activity, a system error task operating in behalf of a user task was abnormally terminating. Rather than have the system error task fail, the supervisor reinstated the error task and abnormally terminated the user task.

Programmer Response: Retry the task.
Problem Determination: Table I, items 5a, 16, 23, 29.

B0A Explanation: The error occurred during execution of an R-form GETMAIN or FREEMAIN macro instruction.

A subpool number greater than 127 was specified.
Programmer Response: Probable user error. Make sure that the request was specified correctly and was not incorrectly modified. Correct the error, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

B13 Explanation: The error occurred during execution of an OPEN macro instruction for a data set on a 1403 printer with the universal character set (UCS) special feature. This system completion code is accompanied by message IEC152I. Refer to the explanation of message IEC152I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC152I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

B14 Explanation: The error occurred during execution of a CLOSE macro instruction for a partitioned data set opened for output to a member. This system completion code is accompanied by message IEC217I. Refer to the explanation of message IEC217I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC217I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

B23 Explanation: The task issued a WTOR which was still unanswered when a communication task ABEND occurred.

Operator Response: Probable system error. Re-IPL the system and run the job again.
Problem Determination: Table I, items 2, 16, 29.

B37 Explanation: The error was detected by the end-of-volume routine. This system completion code is

accompanied by message IEC030I. Refer to the explanation of message IEC030I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC030I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

C00 *Explanation:* Too many entries were specified by the page fix appendage in its page fix list.

System Action: The task is abnormally terminated.
Programmer Response: Combine contiguous pages into an entry which spans more than one page.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when IOS determined the error condition.
- Offset 84 contains the first fix list when IOS determined the error.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 2, 11, 29.

C03 *Explanation:* The error occurred when a task attempted to terminate normally with a RETURN macro instruction or a branch to the return address in register 14.

The control program could not close one of the task's data sets that was still open at termination, because the data control block (DCB) for the data set had been invalidly modified. The TCBDEB field of the task control block (TCB) for the termination task points to the data extent block (DEB) associated with the invalid DCB. Examples of how the DCB could be incorrectly modified are:
- A program containing an open DCB issued an XCTL macro instruction.
- A program freed virtual storage that contained an open DCB.
- The system program modified the DCB incorrectly.

(*Note:* In an ABEND dump, the TCBDEB field points to the DEB for the SYSABEND or SYSUDUMP data set, which in turn points to the DEB associated with the invalid DCB.)
Programmer Response: Probable user error. Correct the program error that incorrectly modified the data control block. After making the corrections, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

C13 *Explanation:* The error occurred during execution of an OPEN macro instruction for a concatenated partitioned data set or a graphic device. This system completion code is accompanied by message IEC153I (or for graphics, message IEC157I). Refer to the explanation of message IEC153I (or message IEC157I) for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC153I (or message IEC157I).
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

C2D *Explanation:* The error occurred during execution of an overlay program. The control program found an invalid scatter record when attempting to load a segment of the overlay program.

Programmer Response: Link edit the program again, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 9b, 29.

D00 *Explanation:* A page was referenced within the control blocks, channel program, user page fix list, or an appendage of IOS which was not within the user's region LSQA, the nucleus, SQA, or LPA.

System Action: The task is abnormally terminated.
Programmer Response: Check to see if all addresses described in the fix list are within the user's region, LSQA, SQA, LPA or nucleus as described in the PQE for the failing task.
If an abnormal termination dump is available, the TCB field TCBIOSAB (at offset 192) points to the IOS problem determination area. The items in the problem determination area of greatest interest to you are:
- Offset 0 contains a copy of the registers when IOS determined the error condition.
- Offset 64 contains the contents of the request queue element (RQE) when IOS determined the error condition.
- Offset 84 contains the first fix list when IOS determined the error.
- Offset 212 contains the second fix list, if there is one. This area is X'00' when a second fix list does not exist.

After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 19, 29.

D05 *Explanation:* The error occurred during execution of a FREEMAIN macro instruction.

A task invoked a system function which, in turn, issued a FREEMAIN macro instruction. However, the FREEMAIN macro instruction attempted to free system queue space or local system queue area storage that was not owned by the task. For example, a task issues a CLOSE macro instruction for a data set that it does not own. During execution of the CLOSE macro instruction, a FREEMAIN macro instruction is issued.
Programmer Response: Probable user error. Change the program to ensure that no requests for system functions result in the issuance of an invalid FREEMAIN macro instruction. After making corrections, execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

D0A *Explanation:* The error occurred during execution of an R-form FREEMAIN macro instruction.

A task invoked a system function which, in turn, issued an R-form FREEMAIN macro instruction. However, the FREEMAIN macro instruction attempted to free system queue area or local system queue area storage that was not owned by the task.

For example, a task issues a CLOSE macro instruction for a data set that it does not own. During execution of the CLOSE macro instruction, a FREEMAIN macro instruction with an R operand is issued.
Programmer Response: Probable user error. Change the program ensuring that requests for system functions do not result in invalid freemain macro instructions being issued; then, rerun the job.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

D0D Explanation: An error occurred while ABEND was handling an abnormally terminating subtask for the job step task. ABEND was reentered invalidly; therefore the environment of the abnormal termination was altered to include all tasks in the job step.

The system completion code of the subtask originally scheduled for abnormal termination can be found in the user completion code subfield (the low-order 12 bits) of the TCBCMP field of the job step task control block (TCB). If the user completion code subfield is zero, the subtask terminated as the result of a user-invoked ABEND macro instruction.
Note: This system completion code may be accompanied by one of several system messages, which may contain the user completion code from the TCBCMP field of the TCB. If this code is in decimal, it must be converted to hexadecimal to be meaningful.
System Action: ABEND attempts to terminate the job step. A SYSUDUMP or SYSABEND dump may be provided; a dump may also have been written in the SYS1.DUMP data set.
Programmer Response: Make sure that none of the tasks in the job step has overlaid an FQE. Determine the system completion code for the original subtask, as described above. Take any necessary corrective action and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 19, 29.

D13 Explanation: The error occurred during execution of an OPEN macro instruction for a graphic data control block.

The data control block (DCB) was associated with a device other than a graphic device. The device was specified by the name subparameter of the UNIT parameter of the DD statement for the graphic data set.
Programmer Response: Probable user error. Determine if the DD statement correctly specified a graphic device. If it did, make sure that the data control block or other control information was not incorrectly modified by program errors. If it did not, change the DD statement to specify the correct device. Determine if the OPEN macro instruction specified the correct data control block address. If it did, make sure that the macro-expansion was not incorrectly modified by program errors. If it did not, change the macro instruction to specify the correct data control block. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 29.

D14 Explanation: The error occurred during execution of a CLOSE macro instruction for a graphic data control block.

The graphic device to be closed was not opened by the closing task.
Programmer Response: Probable user error. Issue the CLOSE macro instruction within the same task that issues the OPEN macro instruction, or remove the invalid CLOSE macro instruction. Then execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

D23 Explanation: The error occurred during execution of a WTO or WTOR macro instruction for one of the following reasons:

- The parameter list supplied to the WTOR macro instruction does not begin on a fullword boundary.
- A WTOR/MLWTO parameter list was specified.
- No buffers were available (WTO and WTOR).

Programmer Response: Probable user error. Correct the program issuing the WTO or WTOR macro instruction, recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

D2D Explanation: The error occurred during execution of an overlay program.

The control program found an invalid record type when attempting to load a segment of the overlay program.
Programmer Response: Link edit the program again, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 9, 29.

D37 Explanation: The error occurred when an output operation to a direct access device was requested. This system completion code is accompanied by message IEC031I. Refer to the explanation of message IEC031I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC031I.
Problem Determination: Table I, items 1, 3, 5a, 15, 16, 25b, 29.

E03 Explanation: The error occurred when a task attempted to terminate normally with a RETURN macro instruction or a branch to the return address in register 14. The task is operating in must-complete status and did not reset must-complete.

System Action: The task is abnormally terminated.
Programmer Response: Probable user error. Ensure that each issuance of an ENQ, RESERVE or STATUS macro instruction requesting must-complete status is paired with a DEQ or STATUS macro instruction requesting 'reset must-complete'.
Problem Determination: Table I, items 1, 5a, 16, 19, 23, 29. Table II, Format 1, TRACE = SVC.

E13 Explanation: The error occurred during execution of an OPEN macro instruction for a graphic data control block.

The DCBGNCP field in the data control block contained zero or a number greater than 99. This field specifies the maximum number of input/output macro instructions that can be issued before a WAIT macro instruction must be issued; the value specified in the field must be 1 through 99 inclusive.
Programmer Response: Probable user error. Determine if a correct value was specified for the DCBGNCP field. This value could come from (1) the GNCP operand in the DCB macro instruction that created the data control block, (2) the GNCP subparameter in the DCB parameter of the DD statement for the data set (provided that the GNCP operand in the macro instruction specified zero), or (3) modification by the user's program. If a correct value was specified, make sure that the specification or the data control block was not incorrectly modified by program errors. If an incorrect value was specified, change the specification. After correcting the error, execute the job step again.
Problem Determination: Table I, items 1, 3, 5a, 15, 29.

E23 *Explanation:* The error occurred during processing of a WTOR macro instruction.

The address of the event control block (ECB), the address of the request block (RB) in the ECB, or of the virtual storage area for the reply was invalid.
Programmer Response: Probable user error. Correct the macro instruction or program errors that incorrectly modified the macro-expansion. Recompile and execute the job step again.
Problem Determination: Table I, items 1, 5a, 16, 23, 29.

E2D *Explanation:* The error occurred during execution of an overlay program.

The control program found an invalid address when attempting to load a segment of the overlay program.
Programmer Response: Link edit the program again, and execute the job step again.
Problem Determination: Table I, items 1, 5a, 9, 29.

E37 *Explanation:* The error occurred when an output operation was requested. The data set was on a direct access or magnetic tape device. This system completion code is accompanied by message IEC032I. Refer to the explanation of message IEC032I for complete information about the task that was terminated and for an explanation of the return code (rc in the message text) in register 15.

Programmer Response: Respond as indicated for message IEC032I.
Problem Determination: Table I, items 1, 3, 5b, 15, 16, 29.

Fnn *Explanation:* The error occured during the execution of an invalid supervisor call (SVC) instruction.

The last 2 digits of this completion code are the operand of the supervisor call instruction in hexadecimal.
Programmer Response: Probable user error. Make sure that the supervisor call instruction was not incorrectly modified. Check the operand against the valid codes for the control program being used, and determine if the SVC that was issued had been generated into the system. Correct the error, and execute the job step again.
Problem Determination: Table I, items 5a, 16, 23, 29.

Wait State Code	The wait state code is found in the program status word (PSW) when the computer is in wait state.
Program Producing Code	Input/output supervisor, IPL and NIP programs, machine-check handler, supervisor.
Audience and Where Produced	For operator: displayed in console lights.
Program Status Word Format	yyyyyyyyxxxxxzzz yyyyyyyy Left half of program status word. This half as two forms: FF0s0000 If the wait state code (zzz in the right half of program status word) is 000, no tasks are ready in the system. Otherwise, an error condition, indicated by zzz has occurred. 000s0000 System wait state caused by an error condition. In each of the above forms, s represents bits 12-15 (the AMWP bits). xxxxxzzz Right half of program status word. The wait state code, zzz, indicates the error condition.
Comments	If the system enters a wait state during IPL or NIP execution and the explanation of the wait state resulted from an input/output error, the operator should display the contents of register 10 in the console lights. Register 10 will contain the unit address of the last device referenced in an input/output operation. Since this device could be the source of the error, the operator should, if possible, disable or demount the device before starting the system again.
Problem Determination	Refer to fold-out Tables I and II at the back of this publication for problem determination instructions.

001 *Explanation:* During execution of the IPL program a "not operational" condition code was produced in response to a Test I/O instruction that was issued to determine the current status of the volume containing the nucleus being loaded.

This wait state may result if the operator attempts to load (IPL) the system with the IPL volume on a device not supported for systems residence.
Operator Response: Probable user error. Ensure that the device on which the volume was mounted is ready. If the problem recurs, call IBM for programming support.

002 *Explanation:* During execution of the IPL program an input/output operation was not initiated; the channel status word (CSW) was stored; and the channel was not busy.

Operator Response: Probable hardware error. Start the system again. If the problem recurs, call IBM for hardware support.

003 *Explanation:* During execution of the IPL program, an input/output operation was not initiated, because a not operational response was received from an SIO instruction. The channel status word (CSW) was not stored, and the channel was not busy.

Operator Response: Probable harware error. Start the system again.
Problem Determination: Table I, item 30.

004 *Explanation:* During execution of the IPL program an input/output operation was not initiated; the channel status word (CSW) was not stored and the channel was not busy following execution of a Test I/O instruction.

Operator Response: Probable hardware error. Start the system again. If the problem recurs, call IBM for hardware support.

005 *Explanation:* During execution of the IPL program an input/output interruption occurred because of a unit check.

The address of the channel command word (CCW) causing the original unit check was placed at hexadecimal location 4C. The first four sense bytes describing the unit check were placed at hexadecimal location 54.
The result of a sense operation to determine the cause of the unit check was not one of the following:

- No record found.
- File mask violation.
- End of cylinder.
- Track condition check.

Operator Response: Probable hardware error. Restart the system.
Problem Determination: Table I, items 11, 17b, 30.

006 *Explanation:* During execution of the IPL program one or more of the following occurred:

- An interface control check.
- A channel control check.
- A channel data check.
- A program check.
- A channel chaining check.

Operator Response: Probable user error. Restart the system.
Problem Determination: Table I, items 11, 17b, 29.

007 *Explanation:* During execution of the nucleus initialization program (NIP), a console was not available.

Operator Response: Probable user error. Ensure that a console is available.
Problem Determination: Table I, items 17b, 29.

00A *Explanation:* This wait state is preceded by message IEA326I. The catalog entry for the SYS1.LINKLIB data set could not be found on, or could not be retrieved from the system catalog.

Operator Response: Notify the system programmer of this code.
Programmer Response: Probable user error. Ensure that the SYS1.LINKLIB is in the catalog and restart the system.
Problem Determination: Table I, item 30.

00C Explanation: The active nucleus member is not edited in scatter format; this nucleus cannot be loaded by the IPL program.

Operator Response: Probable user error. Report this wait state code to the system programmer.
Programmer Response: Ensure that the IEANUC0x member of SYS1.NUCLEUS has been linkage edited with the SCTR option of the Linkage Editor. If not, linkage edit the IEANUC0x member again specifying the Linkage Editor JCL as indicated in the SYS1.NUCLEUS link edit step of the system generation for this system.
Problem Determination: Table I, items 11, 29. Also do the following:

- Execute the IEHLIST utility program to obtain a directory listing of the SYS1.NUCLEUS data set and have the listing available.
- Have a copy of the last link edit step for the failing nucleus member, IEANUC0x, available, if possible.
- Have the name of the IEANUC0x member that was selected for the failing IPL process available. Unless altered by the specialized operator IPL procedure, the member name is IEANUC01.

00E Explanation: The SYS1.NUCLEUS data set or the active member, IEANUC0x, of the SYS1.NUCLEUS was not found on the IPL volume. The system nucleus cannot be located by the IPL program.

Operator Response: Probable user error. If an alternate nucleus was selected during the IPL process through the specialized operator IPL procedure, ensure that the alternate nucleus ID (x of IEANUC0x) has been correctly entered, in its EBCDIC form, at absolute storage location 9. If the error persists, report this wait state code to the system programmer.
Programmer Response: Ensure that the selected IEANUC0x member of SYS1.NUCLEUS, which is IEANUC01 unless altered by the specialized operator IPL procedure, is included in the SYS1.NUCLEUS data set.
Problem Determination: Table I, items 11, 29. Also do the following:

- Execute the IEHLIST utility program to obtain a directory listing of the SYS1.NUCLEUS data set; have the listing available.
- Have the name of the IEANOC0x member, which was not found, available.

00F Explanation: A volume has been IPLed that does not contain IPL text.

Operator Response: Probable user error. Correct the load unit switches to address the correct volume to be IPLed. Verify that the correct volume is mounted. Press the LOAD key and continue.
Problem Determination: Table I, items 11, 29.

013 Explanation: An error occurred during execution of the nuclues initialization program (NIP) from which recovery is impossible. Check the system completion code to determine the problem.

Operator Response: Restart the system.
Problem Determination: Table I, items 11, 17b, 29.

017 Explanation: During the IPL program, a unit check occurred following a successfully started I/O operation. The start I/O operation was either a sense I/O or an attempt to read the home address and record 0 of a track which previously caused a track condition check.

Operator Response: Probable hardware error. Restart the system.
Problem Determination: Table I, items 11, 17b, 30.

018 Explanation: During execution of the IPL program, the nucleus was found to be too big for the machine size; the space available for relocation dictionary (RLD) records was exceeded.

Operator Response: Probable user error. Report this message to the programmer.
Programmer Response: Regenerate the system and decrease the size of the nucleus by removing options. If the problem recurs, call IBM for programming support.

019 Explanation: During execution of the IPL program, an unexpected program interruption occurred. IPL did not complete the loading of the resident nucleus. The IPL program is in error, or the storage in which IPL resides is failing.

Operator Response: Probable hardware error. Restart the system.
Problem Determination: Table I, item 30.

021 Explanation: During nucleus initialization, an input/output interruption occurred on the main console following an EXCP operation.

Register 1 contains a pointer to the input/output block (IOB) for the failing EXCP operation.
Operator Response: Probable hardware error. Restart the system.
Problem Determination: Table I, item 30.

028 Explanation: This wait state code is accompanied by message IEA047A. The reason for the wait state is indicated by the 4-digit error code printed in that message. Refer to the message description for an explanation of the error code.

Operator Response: Refer to the recommended operator response for message IEA047A.
Problem Determination: Table I, items 2, 11, 13, 16, 29.

030 Explanation: During execution of the nucleus initialization program (NIP), an unanticipated request for abnormal task termination (ABEND) has occurred. The system completion code (in hexadecimal) may be found in bits 36-48 of the wait state PSW.

Operator Response: Probable user error. Record the contents of the wait PSW, and report this wait state code to the system programmer.
Programmer Response: Refer to the description of the ABEND code for further problem determination data.
The ABEND SVC entry in the system's SVC table reflects the address of a 'trap' routine in NIP, and not the address of the ABEND SVC. The registers at the time of the ABEND SVC request are found in the Type I SVC save area.
Problem Determination: Table I, items 11, 29. Have the recorded contents of the wait PSW available.

031 Explanation: The IPL volume resides on a unit for which there is no UCB.

Operator Response: Probable user error. Remove the system residence volume from its present unit and mount it on a unit defined at system generation. Then start the system again.
Programmer Response: Perform an I/O device system generation specifying the addresses of all devices accessible to the system in the IODEVICE macro instruction.
Problem Determination: Table I, items 11, 29.

032 *Explanation:* A required NIP module has not been found (through BLDL) in the SYS1.NUCLEUS data set.

System Action: The last 12 bits of the EBCDIC name of the missing NIP module will be placed in bits 36-48 of the wait state PSW and may be used to identify the NIP module name; the values of bits 36-48 and their associated module names are as follows:

Bits 36-48

Value (in hex)	Module name
0F1	IEAVNP01
0F2	IEAVNP01
0F3	IEAVNP03
0F4	IEAVNP04
0F5	IEAVNP05
0F6	IEAVNP06
0F7	IEAVNP07
1F4	IEAVNPA4
1F5	IEAVNPA5
7D4	IEAVNIPM
7E7	IEAVNIPX

Note: If bits 36-48 of the wait state PSW equal X'7D4' it may imply that the system was loaded using the OS/360 IPL program. The system must be loaded using the OS/VS2 IPL program (IEAIPL00) distributed in SYS1.SAMPLIB.
Operator Response: Probable user error. Record the contents of the wait state PSW and report this wait state code to the system programmer.
Programmer Response: Ensure that the missing module is included in the SYS1.NUCLEUS data set.
Problem Determination: Table I, items 11 and 29. Also do the following:

- Execute the IEHLIST utility program to obtain a directory listing of the SYS1.NUCLEUS data set and have the listing available.
- Have the recorded contents of the wait state PSW available.

033 *Explanation:* An I/O error occurred during BLDL processing for a required nucleus initialization program (NIP) module. The NIP module, for which the BLDL process was attempted, may be identified as described for wait state code X'32'.

Operator Response: Probable hardware error. Restart the system.
Problem Determination: Table I, item 30. Record the address of the IPL device on which the input/output error occurred and have it available. Record the contents of the wait PSW and report this wait state code to the system programmer.

034 *Explanation:* An operating system that requires the dynamic address translation feature has been loaded on a CPU that does not inlcude this feature.

Operator Response: Probable user error. Either move the operating system to a CPU that includes the dynamic address translation feature, or mount an operating system that does not require it, such as MVT, and re-IPL.
Problem Determination: Record the contents of the wait PSW and have this information available. Table I, item 29.

035 *Explanation:* The Time-of-Day Clock has been found inoperative.

Operator Response: Probable hardware error. Record the contents of the wait PSW and have this information available.
Problem Determination: Table I, item 30.

036 *Explanation:* An attempt was made to expand the storage initially allocated to the SQA before the initialization of the paging subsystem. This error occurred because of an unusual demand for storage (more than 20,480 bytes) in the SQA during the early stages of the IPL procedure.

Operator Response: Probable user error. If system messages were incorrectly responded to, restart the system. If this error recurs, report this wait state code to the system programmer.
Problem Determination: Table I, items 2, 11, 29.

037 *Explanation:* The DSCB for SYS1.LOGREC, SYS1.SVCLIB, SYS1.PARMLIB, or SYS1.LINKLIB could not be successfully read from the volume where the data set resides for one of the following reasons:

- The data set does not exist on this volume.
- An unrecoverable I/O error occurred during the attempt to read the related DSCB.

Register 1 contains a pointer to the IOB for the failing I/O operation (EXCP). Diagnostic messages explaining the reason for the wait state and identifying the name of the data set involved precede the system wait.
Operator Response: Probable user error. Report this wait state code and the diagnostic messages which preceded it to the system programmer.
Programmer Response: Correct the error that caused the DSCB read I/O operation to fail and restart the system.
Problem Determination: Table I, items 2, 11, 25, 29.

038 *Explanation:* There is insufficient real storage space for the VS2 system to be initialized during nucleus initialization program (NIP) processing.

Operator Response: Probable user error. Report this wait state code to the system programmer.
Programmer Response: Ensure that there is sufficient real storage available for NIP processing. It may be necessary to reduce the number of optional system facilities selected for this system configuration. For further details concerning the real storage requirements for the current configuration, see the OS/VS2 System Generation Reference, GC26-3792 and OS/VS2 Storage Estimates, GC28-0604.
Problem Determination: Table I, items 11, 29.

039 *Explanation:* A required direct access volume could not be successfully mounted because of a conflict with another online volume. The conflict could not be resolved since both volumes were required by the system, and, although both volumes had the same volume serial, the volume that was to be mounted required a different device type than that containing the online volume.

Operator Response: Probable user error. Report this wait state code to the system programmer.
Programmer Response: Change the volume where one of the two data sets resides. If the moved data set is cataloged, the catalog must be updated.
Problem Determination: Table I, items 2, 11, 25d, 29.

03A *Explanation:* An error occurred during an attempt to build the LPA (cold start). The diagnostic messages preceding message IEA304W identify the error condition.

Operator Response: Probable user error. Report this wait state code and the preceding diagnostic messages to the system programmer.
Programmer Response: Correct the conditions that caused the LPA cold start to fail and restart the system.
Problem Determination: Table I, items 2, 11, 29.

03B Explanation: A module required for continued system operation cannot be found in the system Link Pack Area (LPA).

Operator Response: Probable user error. Report this wait state code to the syytem programmer and save the console listing.
Programmer Response: Examine the console listing to determine the name of the missing module (see message IEA363I). Execute the IEHLIST utility program to obtain a directory listing of the SYS1.LPALIB data set. Examine this list to determine which required system modules are missing. The missing modules should then be copied into the SYS1.LPALIB from the starter system libraries or from a similar back-up source. Restart the system and add the missing module to the LPA either by requesting an LPA cold start or by using the MLPA or FIX options.
Problem Determination: Table I, items 2, 11, 29. Have a copy of the contents of the wait PSW available.

03C Explanation: The system detected insufficient auxiliary storage available for system operation.

Operator Response: Probable user error. Report this wait state code to the system programmer. Have the console listing available.
Programmer Response: Probable user error. Ensure that there is sufficient auxiliary storage available for system operation. Re-IPL specifying either larger paging data sets or additional paging data sets. For further details concerning auxiliary storage requirements, see the OS/VS2 System Generation Reference, GC26-3792, or OS/VS2 Storage Estimates, GC28-0604.
Problem Determination: Table I, items 2, 11, 29. Have a copy of the contents of the wait PSW available.

03F Explanation: A nucleus initialization program (NIP) function has been inproperly invoked.

Operator Response: Probable user error. Report this wait state code to the system programmer.
Problem Determination: Table I, items 2, 11, 29.

040 Explanation: A request for abnormal task termination (ABEND) has occurred during nucleus initialization program (NIP) processing. The system completion code (in hexadecimal) may be found in bits 36-48 of the wait state PSW.

Operator Response: Probable user error. Record the contents of the wait PSW and report this wait state code to the system programmer.
Programmer Response: Probable user error. Refer to the description of the ABEND code for further problem determination data.
The ABEND SVC entry in the system's SVC table reflects the address of a 'trap' routine in NIP, and not the address of the ABEND SVC. The registers at the time of the ABEND SVC request are found in the SVRB which represents the ABEND SVC.
Problem Determination: Table I, items 11, 29. Have the recorded contents of the wait PSW available.

101 Explanation: The error occurred during execution of a GETMAIN macro instruction for a program executing in supervisor mode. More bytes were requested from the system queue space (SQS) than were available.

Operator Response: Run the job again. If this code occurs frequently, installation action is needed to increase the space allowed for the system queue; more space should be specified at system generation time or inresponse to message IEA101A during system IPL.
Problem Determination: Table I, items 2, 11, 29.

102 Explanation: The error occurred during execution of a GETMAIN macro instruction for a program executing in supervisor mode. More pages of real storage were requested for the system queue space (SQS) than were available.

Operator Response: Run the job again. If this code occurs frequently, installation action is required to decrease the fixed real storage requirements of the system.
Problem Determination: Table I, items 2, 11, 29.

900 Explanation: During execution of the nucleus initialization program (NIP), an error has occurred during the initialization of one or more of the page data sets. Prior to entering the wait state, the NIP page file initialization routine will print a message on the console to indicate the specific error condition. These messages include the following:

IEA111W SQS OR PQA SIZE EXCEEDS REAL STORAGE
IEA750W SPACE ALLOCATED FOR PAGE FILE INSUFFICIENT FOR VIRTUAL MEMORY SIZE
IEA751W DEVICE AT ddd UNACCEPTABLE FOR SYS1.PAGE
IEA752W UNABLE TO SCRATCH SYS1.PAGE ON ser.
IEA753W UNABLE TO ALLOCATE SYS1.PAGE ON ser.
IEA754W FORMATTING OF SYS1.PAGE UNSUCCESSFUL ON ser.
IEA755W OBTAIN FAILED FOR SYS1.PAGE DATA SET ON ser.

Operator Response: Probable user error. Report this message to the programmer.
Programmer Response: Based on the message printed on the console, refer to the appropriate programmer response as documented for the message. Correct the error condition, and re-IPL the system.

901 Explanation: During the execution of a paging I/O operation, a channel program check occurred. A paging supervisor channel program was destroyed by an illegal reference to supervisor storage, or the paging supervisor's storage key was illegally modified.

Operator Response: Probable user error. Re-IPL the system, and notify the system programmer of this situation.
Programmer Response: If the program is executing in key zero, check the program and correct the problem. If the program is not running in key zero, perform the problem determination actions.
Problem Determination: Table I, items 2, 11, 29.

902 Explanation: An uncorrectable I/O error occurred while the pageable portion of the supervisor was being read into real storage from the SYS1.PAGE data set. The system cannot continue operation without the referenced portion of the supervisor.

Operator Response: Probable hardware error. Report this condition to the system programmer or installation manager.
Programmer Response: It is possible for this condition to occur because the SYS1.PAGE data set was not accessed correctly. If a page file dump indicates that a program has

improperly modified the SYS1.PAGE data set, correct that program.

If it cannot be determined how the SYS1.PAGE data set was damaged, it is probable that a hardware error occurred. In any case, the problem can be temporarily resolved by restarting the system, specifying another volume for paging.
Problem Determination: Table I, items 2, 29, 30. Obtain a virtual storage dump when the wait state occurs. Obtain a dump of the SYS1.PAGE data set(s).

903 *Explanation:* The page supervisor ended abnormally. The system cannot continue without it.

Operator Response: Re-IPL the system.
Problem Determination: Table I, items 2, 29.
- Run a dump of virtual storage at the wait state.
- Have available a program listing of the system's page supervisor.

904 *Explanation:* The nucleus initialization program (NIP) was unable to complete system initialization. Sufficient real storage was not available for one of the following:
- SQA
- BLDLF
- RAMF
- RSVCF
- NCBA (nucleus control block area)

Operator Response: Notify the system programmer. Use of real storage must be reduced to provide sufficient space for initialization. OS/VS1 Storage Estimates should be consulted to determine which changes have increased the use of real storage.

A01 *Explanation:* This wait state code is associated with message IGF910W. An error occurred while RMS was performing a recovery. Probably, a hard machine check interrupt occurred while RMS was processing a hard machine check.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A02 *Explanation:* An error occurred while RMS was performing a recovery. Probably, a hard machine check interrupt occurred while RMS was processing a hard machine check; no message could be issued.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A03 *Explanation:* This wait state code is associated with message IGF910W. An error occurred while RMS was performing a recovery. Probably, a hard machine check interrupt occurred while RMS was processing a hard machine check.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A04 *Explanation:* This wait state is associated with message IGF930W. The machine check handler encountered an I/O error during a machine check recovery.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A05 *Explanation:* This wait state code is associated with message IGF900W. The machine check handler encountered an nonrecoverable failure within the supervisor area.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A0A *Explanation:* The channel check handler encountered a failure that could not be corrected.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded error records, see Table I, item 11.

A11 *Explanation:* This wait state code is associated with message IGF910W. An error occurred while RMS was performing a recovery. Probably, the machine check handler detected a invalid machine check interrupt code.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A16 *Explanation:* This wait state is associated with message IGF950W. The machine check handler encountered a failure in the time-of-day clock, the clock comparator, or the CPU timer.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A17 *Explanation:* This wait state is associated with message IGF950W. The machine check handler encountered a failure in the interval timer.

Operator Response: Probable hardware error. Notify the system programmer or installation manager that this wait state has occurred.
Problem Determination: Table I, items 12, 18, 30. To recover possible unrecorded machine check error records, see Table I, item 11.

A18 *Explanation:* IOS received an unsolicited device end interruption for a volume containing a paging data set. Volume serial verification failed for at least one of the following reasons:

- The device address contained a volume with a different volume serial number.
- An I/O error occurred while attempting to read the volume label.
- The device went from ready to not ready status (intervention required) by the time volume verification attempted to read the volume label.

System Action: Enters disabled wait state.
Operator Response: Probable operator error. Ensure that all volumes containing paging data sets are on the same device addresses as they were at IPL time; make sure that all devices are ready, and press the RESTART key or the PSW RESTART key. If the system reenters this wait state try again.
Note: Repeated failure indicates that a device containing a volume with a paging data set is giving uncorrectable I/O errors while trying to verify the volume containing the data set.
Problem Determination: Table I, items 11, 29 or 30.

B01 Explanation: The 3211 utility has completed normally.
Operator Response: Verify the printed image and restart the system.

B02 Explanation: This wait state code is issued by the 3211 utility. A control card is missing or out of order. The JOB and END control cards must be the first and last cards respectively. The DFN, UCS, and FCB statements can be included in any order.
Operator Response: Correct the control card sequence, insert any missing cards, and rerun the program.
Problem Determination: Table I, items 11, 29.

B03 Explanation: This wait state code is issued by the 3211 utility. The JOB statement is incorrect.
Operator Response: Correct the JOB statement and rerun the program.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control cards available.

B04 Explanation: This wait state code is issued by the 3211 utility. The DFN statement is incorrect.
Operator Response: Correct the DFN statement and rerun the program.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control cards available.

B05 Explanation: This wait state code is issued by the 3211 utility. The UCS statement is incorrect.
Operator Response: Correct the UCS statement and rerun the program.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control cards available.

B06 Explanation: This wait state code is issued by the 3211 utility. The FCB statement is incorrect.
Operator Response: Correct the FCB card and rerun the program.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control cards available.

B07 Explanation: This wait state code is issued by the 3211 utility. The END statement is incorrect.
Operator Response: Correct the END statement and rerun the program.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control cards available.

B0A Explanation: This wait state code is issued by the 3211 utility. An external interrupt has occurred. The interrupt key was pressed.
Operator Response: Rerun the program.

B0B Explanation: This wait state code is issued by the 3211 utility. A program check interrupt has occurred.
Problem Determination: Table I, items 11, 29. Have the 3211 utility and control statements available.

B0C Explanation: This wait state code is issued by the 3211 utility. A machine check interrupt has occurred.
Operator Response: Execute the SEREP program and save the output. Rerun the job.
Problem Determination: Table I, items 14, 30.

B11 Explanation: This wait state code is issued by the 3211 utility. The reader is not online. This will occur when the reader's control unit has no power or when the control unit has been switched off the I/O interface.
Operator Response: Put the specified control unit online and rerun the program. If the error recurs, call IBM for hardware support.

B12 Explanation: This wait state code is issued by the 3211 utility. The reader is not ready.
Operator Response: Ready the reader and rerun the program.

B13 Explanation: This wait state code is issued by the 3211 utility. The reader is not ready.
Operator Response: If the error condition is not apparent, display location 3 for sense information. (An interpretation of sense bit settings can be found in the component description manual for the control unit being used.) Correct the faulty condition and clear the reader check. Rerun the program. If reader checks occur frequently, use a card guide to check for off-punched cards. If the cards are punched correctly and are in good condition and read checks continue, call IBM for hardware support.

B14 Explanation: This wait state code is issued by the 3211 utility. A reader channel error has occurred.
Operator Response: Probable hardware error. Rerun the job.
Problem Determination: Table I, items 12, 30.

B15 Explanation: This wait state code is issued by the 3211 utility. No device end is indicated on the reader.
Operator Response: Probable hardware error. Rerun the job.
Problem Determination: Table I, items 12, 30.

B19 Explanation: This wait state code is issued by the 3211 utility. The printer is not online. This will occur when the printer's control unit has no power, when the control unit has been switched off the I/O interface, or when the control unit is not a part of the system.
Operator Response: Ensure that the address of the printer specified in the DFN statement is correct. Ensure that the control unit is online, and rerun the job. If the error recurs, call IBM for hardware support.

B1B Explanation: This wait state code is issued by the 3211 utility. A unit check has occurred on the printer.
Operator Response: If the error condition is not apparent, display low core location 2-7 for sense information. (An interpretation of sense bit settings can be found in the publication IBM 3211 Printer and 3811 Control Unit Component Description, GA24-3343.) Correct the faulty

condition and rerun the job. If the problem recurs, call IBM for hardware support.

B1C Explanation: This wait state code is issued by the 3211 utility. A printer channel error has occurred.

Operator Response: Probable hardware error. Rerun the job.
Problem Determination: Table I, items 12, 30.

B1D Explanation: This wait state code is issued by the 3211 utility. No device end is indicated on the printer.

Operator Response: Probable hardware error. Rerun the job. If the error recurs, call IBM for hardware support:

E02 Explanation: A permanent input/output error occurred while the IBM 2250 Display Unit was being used as the primary console. At the time the error occurred, no alternate console was available.

System Action: The sense bytes are placed in the two high-order bytes of register 15 and the status bytes are placed in the two low-order bytes of register 15. Then the system is placed in a wait state.
Operator Response: If an alternate console is available, start the system again, using the alternate console. If an alternate console is not available, call IBM for programming support.

Definition: A system wait state is indicated by the wait light on the operator control section of the system control panel. If the wait light is on, no instructions are being processed by the central processing unit. A system wait state is entered when bit 14 of the current program status word (PSW) is set to 1. To exit from this state, an interruption or initial program load must occur to change the current PSW. When a condition arises such that the right half of the PSW does not match any of the explicit wait state codes listed in this publication, an uncoded wait state has occurred.

Explanation: An uncoded wait state may be the result of normal operation; for example, the system may wait for a series of specified operator actions before it can resume processing. The uncoded wait state may also be a symptom of abnormal operation; for example, the system may enter a wait state if a hardware malfunction causes an input/output interruption to be lost.

System Action: The system may exit from an uncoded wait state without operator intervention if an input/output interruption occurs, for example when a user at a terminal signals attention, or when an external interruption occurs, for example when a specified time interval has expired. Otherwise, the system continues to wait for an appropriate operator response before it can continue processing.

Operator Response: If you are able to communicate with the system through the master console device, perform the following actions:

- Enter a DISPLAY R command. The system will respond with message IEF110I if any operator action is required for previous messages. This would include replies to messages or mounting of volumes. If all system requests have been satisfied, you will receive message IEF111I.
- Scan the console log to make sure that all messages requiring operator action have been satisfied. For example, IEF308I suggests that the operator must redefine a region size to allow enough virtual storage for the job scheduler's minimum operating requirements.
- The system may be waiting for work. Issue a DISPLAY A command. The system will respond with message IEE821I or IEF102I to list all active tasks. The system is out of work if all readers (RDR) and writers (WTR) are stopped and the number of IEF429I messages issued since the last IEF161I message is equal to the number of times you gave the START INIT command.
- The system may have exhausted direct access space, and be waiting for space to become available. In this case, issue a DISPLAY Q command. The system will respond with message IEF869I to list the number of jobs on the output queue (SOUTQ). Direct access space will be released if you can start a WTR for each class of the output queue. In order to start a WTR, you may find it necessary to issue a HOLD Q command and possibly CANCEL some active jobs or system tasks so enough virtual storage is available for a WTR. You may also find it necessary to stop the reader (P RDR) to prevent further use of direct access space by the reader for the input queue (JOBQ).
- Issue a DISPLAY U command. The system will respond with message IEE450I to list the status of devices in the system. The data listed will include indications of BSY (busy), MTP (mount pending), NRD (not ready), and other status information that may be useful to help you determine why the system is in the wait state. (This command may cause lengthy type-out time.)
- As a last resort, issue the following sequence of commands until the uncoded wait state condition is corrected:
  1. If a SYS1.DUMP data set was created during or before nucleus initialization, issue the DUMP command to obtain a core image dump of the conditon causing the wait. Save the output in case the uncoded wait cannot be resolved.
  2. HOLD Q to prevent initiation of new jobs.
  3. DISPLAY JOBNAMES to get information about jobs starting and stopping.
  4. DISPLAY ACTIVE to get current job execution status.
  5. STOP RDRs and WTRs to correct possible virtual storage fragmentation.
  6. CANCEL jobs with DUMP (CANCEL jobname,DUMP) in reverse order of their importance.
  7. DISPLAY ACTIVE to monitor the changing environment.
  8. RELEASE Q to resume normal processing.

Problem Determination: If the problem cannot be corrected or communication with the system cannot be established, do the following before calling IBM for programming support:

- Record the contents of the current PSW.
- Have the master console sheet available.
- Execute the AMDSADMP service aid program to dump the contents of real storage and page data sets on magnetic tape.
- After restarting the system, execute the GO function of the AMDPRDMP service aid to print the real storage portion of the dump tape produced by AMDSADMP.
- Save both the tape from AMDSADMP (should further information from the tape be required) and the listing from AMDPRDMP.

If you cannot restart the system, execute the hardware system test appropriate for your system before calling IBM for hardware support.

Loops

Definition: A loop is the repeated execution of a sequence of instructions until a terminal condition occurs. If the terminal condition does not occur, the sequence of instructions will be endlessly executed, and, in such a case, meaningful work is not accomplished. At times, it may be necessary for the operator to terminate such endless looping by cancelling the looping job.

You can recognize a loop by:

- A steady glow in the lights of the system control panel with the SYSTEM light on.
- A pointless recurrence of input/output activity (for example, tape oscillating).
- A job that does not change status for a long period of time.

Explanation: A loop can be the result of several different causes, some of which are listed here:

- A deliberate loop designed by the programmer. This might be a debugging loop built during program testing. Or it might be a loop to poll for the occurrence of some event before it will exit.
- An apparent loop. This kind of situation is not actually a loop. It can occur, for example, when a scientific data reduction program is doing a lengthly repetitive operation on a large array of numbers.
- A loop due to a logic error or coding error by the programmer.
- A loop due to a logic error in a system component.
- A loop due to incorrect setup by the operator.
- A loop due to an error in the control program.
- A loop due to a hardware malfunction.

System Action: The system may exit from a loop, without operator intervention, if the execution time of the program exceeds the time limit specified in the TIME parameter of the EXEC statement or the standard time limit of the RDR procedure (assuming your installation has interval timing included in the system).

Operator Response: If you are able to communicate with the system through the master console device, enter DISPLAY A. The system will respond with message IEE821I or IEE102I to list all active tasks. Use this command frequently. Identical entries occurring on successive uses of DISPLAY A command beyond the estimated execution time of a job indicates a possible loop. If you are reasonably certain the program is in an endless loop, enter CANCEL jobname,DUMP to terminate the job. The programmer will receive a system completion code of 122 with his output. The code will direct him to take appropriate actions. A copy of the master console sheet should accompany his output if he calls for IBM programming support.

Programmer Response: The programmer whose job is terminated from a loop by the operator or the system (for example, through time expiration or program check interruption) will be directed by the documented instructions for the system completion code that accompanies his job step. This might be system completion code 122, 222, 322, or OCx.

Problem Determination: If communication with the system cannot be established, do the following before calling IBM for programming support:

- Record the contents of the current PSW.
- Press stop. Place the RATE switch to the INST position. Record the contents of the Instruction Counter (also called Instruction Address Register on some models) for each depression of the START pushbutton until you have instruction-stepped through the loop. If the loop is so large that it is impractical to record its entire scope, then record five sequential instruction addresses when the Instruction Counter contains a large value. You may capture the small and large ends of the loop by temporarily placing RATE to the PROCESS position, pressing START then STOP until observation of the Instruction Counter shows the desired range:
- Have the master console sheet available.
- Execute the AMDSADMP service aid program to dump the contents of real storage and page data sets on magnetic tape.
- After restarting the system, execute the GO function of the AMDPRDMP service aid to print the real storage portion of the dump tape produced by AMDSADMP.
- Save both the tape from AMDSADMP (should further information from the tape be required) and the listing from AMDPRDMP.

If you cannot restart the system, execute the hardware system test appropriate for your system before calling IBM for hardware support.

Problem Determination

Problem determination is the activity required to identify a failing hardware unit or program and determine who is responsible for maintenance.

Problem determination is accomplished by using procedures specified by IBM. In some cases, these procedures may be initiated by a message or code which requires operator or programmer response. The response may include the requirement for additional problem-related data to be collected and will attempt, where possible, to indicate "probable" failure responsibility.

Problem determination information is included for applicable messages and codes under the heading "Problem Determination." Standard problem determination actions are identified as items of Tables I and II. Unique actions are identified following the list of standard actions to be taken. In any case, it is intended that the specified actions be taken before calling IBM for support.

Table I

If the problem recurs, follow the problem determination aids specified by the associated message or code before calling IBM for support:

1. Make sure that MSGLEVEL=(1,1) was specified in the JOB statement.
2. Save the console sheet from the primary console. In systems with Multiple Console Support (MCS), save a copy of the hard copy log.
3. Save the job stream associated with the job.
4. Save the system output (SYSOUT) associated with the job.
5. Make sure that the failing job step includes a:
   a. SYSABEND DD statement.
   b. SYSUDUMP DD statement.
   c. PL1DUMP DD statement.
6. Make sure that the PARM parameter of the EXEC statement specifies:
   a. MAP
   b. LIST
   c. DIAG
   d. MSG=AP
   e. CORE, if applicable
   f. XREF
   g. DUMP
7. Execute the LISTIDR function of the AMBLIST service aid program to obtain a list of all members with a PTF or local fix, and save the output. Execute the program against the:
   a. SYS1.LINKLIB data set.
   b. SYS1.SVCLIB data set.
   c. library containing the program that issued the message.
8. Execute the IMCJOBQD service aid program to obtain a formatted copy of the contents of the SYS1.SYSJOBQE data set.
9. Execute the IMCJOBQD service aid program to obtain a formatted
   a. an object module listing, specifying the LISTOBJ function.
   b. a load module map and cross-reference listing, specifying the OUTPUT=BOTH option of the LISTLOAD function.
10. Have a copy of the Message Control Program (MCP) available.
11. Execute the AMDSADMP service aid program to dump the contents of real storage and page data sets on magnetic tape.

    After restarting the system, execute the GO function of the AMDPRDMP service aid program to print the real storage portion of the dump tape produced by AMDSADMP.

    Save both the tape from AMDSADMP (should further information from the tape be required) and the listing from AMDPRDMP.
12. Execute the SEREP program, and save the resulting output.
13. Save all the associated output.
14. In the normal response to this message, the programmer/o requested to execute a specific program. Save all output program.
15. Save the program listing associated with the job.
16. Save the dump.
17. Have the system generation (SYSGEN) output available
    a. Stage I b. Stage II
18. Execute the IFCEREP0 service aid program, specifying PA to dump the SYS1.LOGREC data set. Save the resulting
19. Save the assembly listing associated with the job.
20. Save the control cards associated with the job.
21. Save the compiler output associated with the job.
22. Save the source input associated with the job.
23. Save the source program listing associated with the job.
24. Run OLTEP diagnostics for the problem device and save t
25. Execute the IEHLIST system utility program to obtain a li
    a. volume table of contents of the associated volume the FORMAT option.
    b. volume table of contents of the associated volume the DUMP option.
    c. directory of the associated data set.
    d. the system catalog.
26. Execute the IEBPTPCH data set utility to
    a. print the directory of the applicable data set.
    b. print the applicable data set.
    c. print the applicable member.
    d. print the applicable procedure.
27. Have the linkage editor/loader map available.
28. Save the associated volume.
29. Contact IBM for programming support.
30. Contact IBM for hardware support.

Table I

If the problem recurs, follow the problem determination aids specified by the associated message or code before calling IBM for support:

1. Make sure that MSGLEVEL=(1,1) was specified in the JOB statement.
2. Save the console sheet from the primary console. In systems with Multiple Console Support (MCS), save a copy of the hard copy log.
3. Save the job stream associated with the job.
4. Save the system output (SYSOUT) associated with the job.
5. Make sure that the failing job step includes a:
   a. SYSABEND DD statement.
   b. SYSUDUMP DD statement.
   c. PL1DUMP DD statement.
6. Make sure that the PARM parameter of the EXEC statement specifies:
   a. MAP
   b. LIST
   c. DIAG
   d. MSG=AP
   e. CORE, if applicable
   f. XREF
   g. DUMP
7. Execute the LISTIDR function of the AMBLIST service aid program to obtain a list of all members with a PTF or local fix, and save the output. Execute the program against the:
   a. SYS1.LINKLIB data set.
   b. SYS1.SVCLIB data set.
   c. library containing the program that issued the message.
8. Execute the IMCJOBQD service aid program to obtain a formatted copy of the contents of the SYS1.SYSJOBQE data set.
9. Execute the IMCJOBQD service aid program to obtain a formatted
   a. an object module listing, specifying the LISTOBJ function.
   b. a load module map and cross-reference listing, specifying the OUTPUT=BOTH option of the LISTLOAD function.
10. Have a copy of the Message Control Program (MCP) available.
11. Execute the AMDSADMP service aid program to dump the contents of real storage and page data sets on magnetic tape.

    After restarting the system, execute the GO function of the AMDPRDMP service aid program to print the real storage portion of the dump tape produced by AMDSADMP.

    Save both the tape from AMDSADMP (should further information from the tape be required) and the listing from AMDPRDMP.
12. Execute the SEREP program, and save the resulting output.
13. Save all the associated output.
14. In the normal response to this message, the programmer/operator was requested to execute a specific program. Save all output from that program.
15. Save the program listing associated with the job.
16. Save the dump.
17. Have the system generation (SYSGEN) output available from
    a. Stage I
    b. Stage II
18. Execute the IFCEREP0 service aid program, specifying PARM=(N), to dump the SYS1.LOGREC data set. Save the resulting output.
19. Save the assembly listing associated with the job.
20. Save the control cards associated with the job.
21. Save the compiler output associated with the job.
22. Save the source input associated with the job.
23. Save the source program listing associated with the job.
24. Run OLTEP diagnostics for the problem device and save the output.
25. Execute the IEHLIST system utility program to obtain a list of the
    a. volume table of contents of the associated volume, specifying the FORMAT option.
    b. volume table of contents of the associated volume, specifying the DUMP option.
    c. directory of the associated data set.
    d. the system catalog.
26. Execute the IEBPTPCH data set utility to
    a. print the directory of the applicable data set.
    b. print the applicable data set.
    c. print the applicable member.
    d. print the applicable procedure.
27. Have the linkage editor/loader map available.
28. Save the associated volume.
29. Contact IBM for programming support.
30. Contact IBM for hardware support.

Table II

GTF FOR PROBLEM DETERMINATION

Format 1: Tracing without prompting for event keywords.

Before reproducing the problem, have the system operator issue a START GTF command specifying tape output, MODE=EXT and TIME=YES. In response to message AHL100A, he should type TRACE=opt, where opt is the trace option keyword indicated for the particular message or code, within the text of his reply.

When data for the problem has been recorded, run the AMDPRDMP service aid program using the EDIT statement to format the trace output, specifying DDNAME=(ddname of the trace data set).

Format 2: Tracing with prompting for event keywords.

Before reproducing the problem, have the system operator issue a START GTF command specifying tape output, MODE=EXT and TIME=YES. In response to the message AHL100A, he should specify the trace option keywords indicated for the associated message or code within the text of his reply. Then, in response to the message AHL101A, he should specify the event keywords also indicated with the associated message or code.

When data for the problem has been recorded, run the AMDPRDMP service aid program using the EDIT statement to format the trace output, specifying DDNAME=(ddname of the trace data set).

Format 3: Specialized tracing action.

Before reproducing the problem, have the system operator issue a START GTF command specifying tape output, MODE=EXT and TIME=YES. In response to message AHL100A, he should type 'TRACE=SYS,USR'. The DD statement for a data set in error should specify DCB=DIAGNS=TRACE.

When data for the problem has been recorded, execute the EDIT function of AMDPRDMP specifying the options SYS and USR=FFF.

Figure 3. Problem Determination

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OS/VS Message Library: VS2 System Codes Printed in U.S.A. GC38-1008-0

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(U.S.A. only)

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