

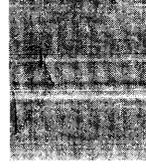
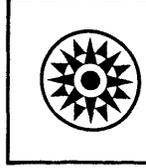
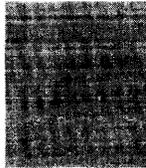
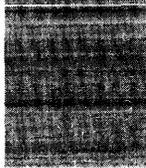
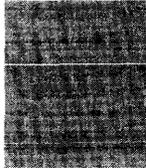
Systems Reference Library

IBM System/360 Operating System: System Control Blocks

OS Release 21.7

This publication shows the formats of the major control blocks and tables used by more than one component of the System/360 Operating System control program. Descriptions of each field within the control blocks or tables follow each format illustration.

The system control blocks described in this publication will be changed by IBM from time to time to extend the capabilities of the operating system. Programs should refer to these control blocks only through the system macro instruction facilities provided in the operating system. (For example, a field of the Data Control Block should only be referred to by use of the DCBD macro instruction.) Programs that refer to the control blocks by other means do so at the risk of not executing correctly in the future.



Tenth Edition (April, 1973)

This is a major revision of, and obsoletes, GC28-6628-8. The changes in content made in this edition for this release are enumerated in a summary of amendments which follows the table of contents. Changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

This edition applies to release 21.7 of IBM System/360 Operating System 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, for the editions that are applicable and current.

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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 Development, Department D58, Building 706-2, PO Box 390, Poughkeepsie, N.Y. 12602. Comments become the property of IBM.

Preface

This publication contains reference information about the contents and format of system control blocks. Most of the control blocks covered in this publication are used by more than one component of the System/360 Operating System control program. A diagram of each block is followed by descriptions of its fields. The block descriptions are ordered alphabetically by acronym. When a block has different access method versions, they are arranged under the block name in this order: QSAM, BSAM, BPAM, ISAM, BDAM, QTAM, BTAM, GAM, TCAM.

This publication contains a pointer diagram which shows the addressing relationships between the major control blocks in the system.

The reader of this manual must be familiar with the following publications:

IBM System/360: Principles of Operation, GA22-6821

IBM System/360 Operating System: Introduction, GC28-6534

IBM System/360 Operating System: Data Management Services, GC26-3746

IBM System/360 Operating System: Supervisor Services and Macro Instructions, GC28-6646

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Summary of Amendments

Summary of Amendments for GC28-6628-9 OS Release 21.7

BTAM

Addition of 3270 Support.

TCAM

Modifications of DCB, LCB, and TCB.

DSCB

Changes in Format 1, Format 2, and Format 4.

UCB

Additions and changes to Graphics Devices Segment, Magnetic Tape Devices Segment, 3284 and 3286 Printer Extension, 3270 and 3277 Display Devices, and Communications Equipment Device Class.

GENERAL

Minor changes in the JFCB, a clearer definition of checkpoint/restart, and minor changes in the TCB.

Summary of Amendments for GC28-6628-8 OS Release 21

GENERALIZED TRACE FACILITY

The Generalized Trace Facility (GTF), a new service aid, allows the user to more easily debug his program. Status flags for this new feature are contained in the CVT, the TCBS for MFT and MVT, and the JFCB.

DOS/OS TAPE COMPATIBILITY

New aids for maintaining compatibility between DOS- and OS-created input data sets have been added. These aids are reflected in the DCB for SAM, the DEB the ECB, and the JFCB.

NEW DEVICE SUPPORT

Support for the IBM 3505/3525 Card Reader/Card Punch, the IBM 3420/3803 Magnetic Tape Subsystem, and the IBM 2596 Card Reader is added. This support is reflected in the DEB, DCB, JFCB, and UCB.

ABEND RECURSION

New status flags for ABEND recursion and communication are included in the TCB for MFT and MVT.

ISAM SYSTEM INTEGRITY

For system integrity in the ISAM access method, a new section is added to the DEB. In addition, new fields are added to the DCB and JFCB.

OPEN/CLOSE/EOV

Changes to the OPEN, CLOSE, and EOV processing facilities are reflected in changes to the CVT.

PCP REMOVAL

Information about the PCP option has been removed, including the entire TCB for PCP.

MISCELLANEOUS CHANGES

New features for the 2740 are indicated in the UCBTYP field. New terminology for the SMF recording data set is incorporated into the SMCA. Problem determination information is added to the TCBS. New terminology is incorporated in the various DSCB formats.

**Summary of Amendments
for GC28-6628-7
OS Release 20.1**

Item	Description	Areas Affected																																																												
2305 and 3330 Devices	Changes to the CVT, DCB, DSCB, IOB, JFCB, and UCB.	<table border="1"> <thead> <tr> <th><u>Block</u></th> <th><u>Offset</u></th> <th><u>Bit or Field Name</u></th> </tr> </thead> <tbody> <tr><td>CVT</td><td>232</td><td>CVTOSCR1</td></tr> <tr><td>DCB</td><td>52.5</td><td>DCBOPTCD</td></tr> <tr><td>DEB</td><td>44</td><td>DEBRPSID</td></tr> <tr><td>DSCB</td><td>70</td><td>DS4DEVK</td></tr> <tr><td></td><td>71.4</td><td>DS4DEVFG</td></tr> <tr><td></td><td>71.5</td><td></td></tr> <tr><td></td><td>71.6</td><td></td></tr> <tr><td></td><td>71.7</td><td></td></tr> <tr><td>IOB</td><td>0.4</td><td>JOBFLAG1</td></tr> <tr><td>JFCB</td><td>101.5</td><td>JFCBOPTCD</td></tr> <tr><td>UCB</td><td>17</td><td>UCBTYP</td></tr> </tbody> </table>	<u>Block</u>	<u>Offset</u>	<u>Bit or Field Name</u>	CVT	232	CVTOSCR1	DCB	52.5	DCBOPTCD	DEB	44	DEBRPSID	DSCB	70	DS4DEVK		71.4	DS4DEVFG		71.5			71.6			71.7		IOB	0.4	JOBFLAG1	JFCB	101.5	JFCBOPTCD	UCB	17	UCBTYP																								
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3211 Printer	Changes to the JFCB and UCB.	<table border="1"> <tbody> <tr><td>JFCB</td><td>56</td><td>JFCFCBID</td></tr> <tr><td></td><td>112.4</td><td>JFCUCSID</td></tr> <tr><td></td><td>112.5</td><td></td></tr> <tr><td>UCB</td><td>16</td><td>UCBTYP</td></tr> </tbody> </table> <p>Also UCB extension for 3211 Printer.</p>	JFCB	56	JFCFCBID		112.4	JFCUCSID		112.5		UCB	16	UCBTYP																																																
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TCAM	The TCAM DCB, TCAM DEB, and TCAM LCB have been added. Changes have been made to the CVT, JFCB, and TCB.	<table border="1"> <thead> <tr> <th><u>Block</u></th> <th><u>Offset</u></th> <th><u>Bit or Field Name</u></th> </tr> </thead> <tbody> <tr><td>CVT</td><td>240</td><td>CVTTCMFG</td></tr> <tr><td>CVT</td><td>241</td><td>CVTAQAVT</td></tr> <tr><td>TCAM DCB</td><td></td><td></td></tr> <tr><td>TCAM DEB</td><td></td><td></td></tr> <tr><td>TCAM ECB</td><td></td><td></td></tr> <tr><td>JFCB</td><td>0</td><td>JFCBDSNM</td></tr> <tr><td>JFCB</td><td>8</td><td></td></tr> <tr><td>JFCB</td><td>78</td><td></td></tr> <tr><td>JFCB</td><td>88</td><td>JFCBUFOU</td></tr> <tr><td>JFCB</td><td>88</td><td>JFCBUFIN</td></tr> <tr><td>JFCB</td><td>101</td><td>JFCBOPTCD</td></tr> <tr><td>JFCB</td><td>102</td><td>JFCBUFSI</td></tr> <tr><td>JFCB</td><td>106</td><td>JFCBUFMX</td></tr> <tr><td>JFCB</td><td>107</td><td>JFCPCI</td></tr> <tr><td>JFCB</td><td>108</td><td>JFCBRSRV</td></tr> <tr><td>JFCB</td><td>112</td><td>JFCINVTL</td></tr> <tr><td>JFCB</td><td>113</td><td>JFCCPRI</td></tr> <tr><td>JFCB</td><td>113</td><td>JFCTHRSH</td></tr> <tr><td>TCB</td><td>173</td><td>TCBTSP</td></tr> </tbody> </table>	<u>Block</u>	<u>Offset</u>	<u>Bit or Field Name</u>	CVT	240	CVTTCMFG	CVT	241	CVTAQAVT	TCAM DCB			TCAM DEB			TCAM ECB			JFCB	0	JFCBDSNM	JFCB	8		JFCB	78		JFCB	88	JFCBUFOU	JFCB	88	JFCBUFIN	JFCB	101	JFCBOPTCD	JFCB	102	JFCBUFSI	JFCB	106	JFCBUFMX	JFCB	107	JFCPCI	JFCB	108	JFCBRSRV	JFCB	112	JFCINVTL	JFCB	113	JFCCPRI	JFCB	113	JFCTHRSH	TCB	173	TCBTSP
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Release 20.1 (Continued)

Item	Description	Areas Affected	
TSO	The addition of new TSO control blocks: DPA, ECT, PSCB, TJB, TSCVT, TSIA, and UPT. Changes have been made to the CDE, CVT, SAM DCB, JSCB, MVT PRB, and TIOT.	CDE 20 CVT 228 CVT 229 SAM DCB 68 JSCB 243 JSCB 244 JSCB 248 JSCB 264 JSCB 268 JSCB 272 MVT PRB 10 TIOT 3 DPA ECT PSCB TJB TSCVT TSIA UPT	CDSTZ CVTTSRDY CVTTSCVT JSCBPASS JSCBQMPI JSCBQMPO JSCBPSCB JSCBTJID JSCBIECB PRATT TIOTOPEN TIOTTERM TIOEDYNM TIOEQNAM
Miscellaneous		MVT IRB 29 MVT PRB 29 MVT SIRB 29 MFT TCB 4 MFT TCB 154 MVT TCB 29 UCB	RBLINK RBLINK RBLINK TCBFLGS TCBTFLG TCBPDMP

System Control Blocks

System control blocks are the primary means for communicating information among the major parts of the System/360 Operating System control program. The information is stored in the control blocks and tables in a highly compact, readily accessible form. These blocks and tables have a standardized format, so that the information is usable by all parts of the control program. The addresses maintained in the control blocks and tables permit the control program to locate other control blocks and tables.

If a field or block is used in different manners by the different configurations of the System/360 Operating System control program, the control program configurations are shown as:

- MFT - The multiprogramming with a fixed number of tasks configuration of the System/360 Operating System.
- MVT - The multiprogramming with a variable number of tasks configuration of the System/360 Operating System.

This publication consists of descriptions of the major system control blocks and tables. It illustrates their formats and describes their fields. Both the format illustrations and the field descriptions show the decimal (Dec.) and hexadecimal (Hex.) displacements of the fields. Each block description begins on a right-hand page for ease in turning to a particular block and to segment material about different blocks into sets of separate pages; thus, users may readily remove selected parts of the publication.

MBBCCCHHR - Actual Address Format

In the operating system, the actual address for a location on direct-access storage is expressed in the 8 byte format MBBCCCHHR. These 8 bytes contain:

- M - The extent number. A one-byte binary number specifying the relative location of an entry in a data extent block (DEB). Each extent entry describes a set of contiguous tracks allocated for the data set. For the first extent M=0 except when ISAM is used. In that case, M=1 for the first extent of user data.
- BB - The bin number. The number of the bin of a 2321 data cell drive, in which a data cell is mounted. (For devices other than 2321, this number is zero.)
- CCHH - The CCHH number. The number that identifies:
 - A track of a 2301 drum.
 - A subcell, strip, cylinder, and track of a 2321 data cell drive.
 - A cylinder and track of other direct-access storage devices.
- R - The record number. The number of a record on its track.

The following table shows how the BBCCHH number relates to the various types of devices.

Relation of BBCCHH Number to Devices

Device		B	B	C	C	H	H
Drum	2301						Track
	2303				Cylinder		Track
Disk					Cylinder		Track
Data Cell Drive			Bin	Subcell	Strip	Cylinder	Track

Note: Unused fields are zero.

Page Format

The page format used to contain the control block field descriptions is illustrated here:

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
--------	---------------------	------------	-----------	--------------------------------------

This format puts field identification data to one side of the page, and thereby gives major emphasis to describing the use of the field. The longer text lines make it easier and quicker to read and contrast successive field descriptions. This format shows the alignment of the field with respect to the word boundary. When reading a dump, this helps to locate, for example, a flag field that is not the high-order byte of a word. For coding, it shows the relative position of the subject data or mask in a register.

The columns of the page format and their use are:

Offset - The numeric address of the field relative to the beginning of the block. The first number is the offset in decimal, followed (in parentheses) by the hexadecimal equivalent.

Example:
16 (10)

Bytes and Alignment - The size (number of bytes) of the field and its alignment relative to the full-word boundary.

Examples:

4 A 4-byte field beginning on a word boundary.
. . 2 - A 2-byte field beginning on a halfword boundary.
. . . 1 - A 1-byte field in the low-order byte of a word.
. . . 3 - A 3-byte field beginning at the low-order byte of a word (and running into the next word).

Field Name - A name that identifies the field.

This column is also used to show the bit settings of flag fields, that is, the state of bits in a byte. When the column is used to show the state of bits (0, 1) in a flag byte, it is shown as follows:

.... The 8 bit positions (0 - 7) in a byte. For ease of scanning, the high-order (left-hand) 4 bits are separated from the low-order 4 bits.
x... A reference to bit 0.
1... Bit 0 is on.
0... Bit 0 is off.
.... ..xx A reference to bits 6 and 7.

Bit settings that are significant are shown and described. Bit settings that are not presently significant are described as reserved bits. Users should not use these bits because future features of the Operating System may make use of them.

Hex. Dig. (Hexadecimal Digits) - The contents of the field expressed as hexadecimal digits.

Examples:

- F F - A 1-byte field with all bits on.
- 8 - - A 1-byte field in which the high-order bit has a meaning independent of the setting of the 4 low-order bits.
- 0 - A 1-byte field in which the off-state of the 4 low-order bits has a significance independent of the state of the 4 high-order bits.
- J - - A general reference to the high-order 4 bits.
- K - A general reference to the low-order 4 bits.

Field Description, Contents, Meaning - The use of the field.

Where a field's contents relate directly to a value coded by the user (generally in job control statements) the value coded is shown under the heading:

Code - The value coded by the user that resulted in the described contents.

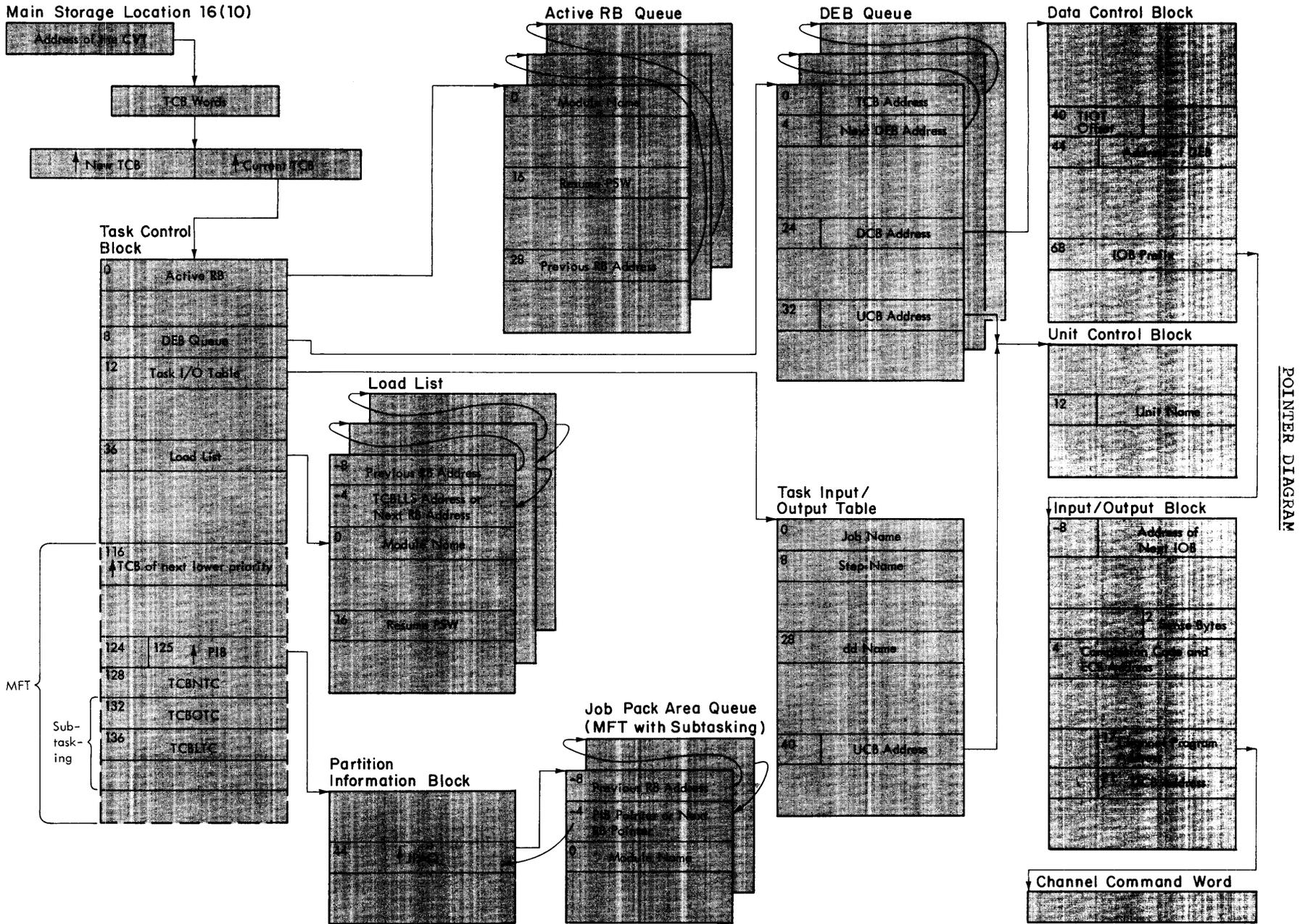


Figure 1A. Pointer Diagram -- MFT Control Blocks

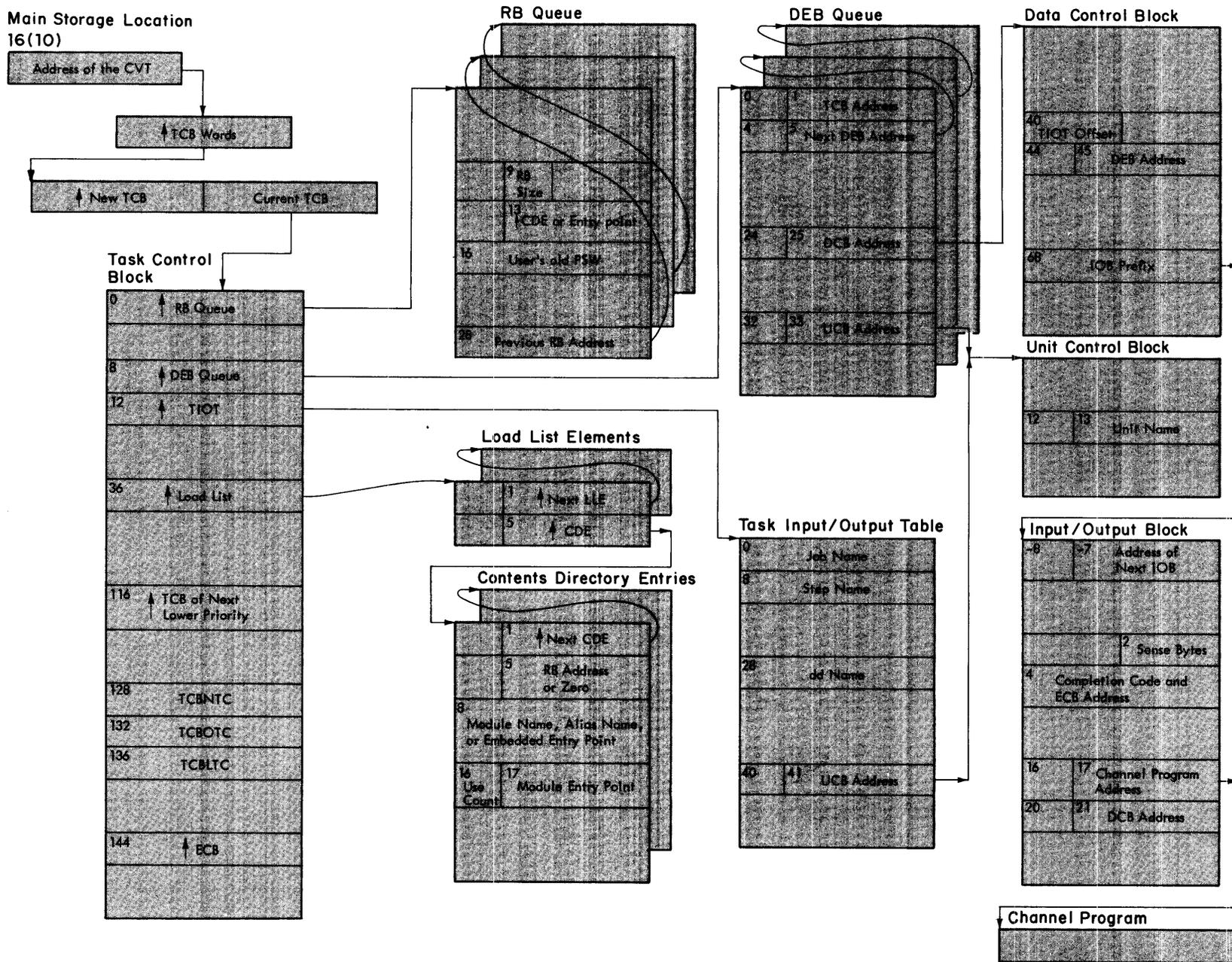


Figure 1B. Pointer Diagram -- MVT Control Blocks

Contents Directory Entry (MVT Only)

The contents supervision feature of the supervisor determines the location of requested programs, fetches the program to main storage if necessary, and schedules the execution of these programs for the requesting tasks. As a byproduct of these functions, records are kept of all programs in main storage.

One of these records is the contents directory entry (CDE), which describes the requested module. Each area of storage occupied by a job step has a contents directory recording each load module requested by the step. Entries in the contents directory (CDEs) contain the names of load modules and pointers to their entry points. The CDE is initialized with descriptive information from the input parameters of the request. When the module is located, its attributes are further recorded in the CDE.

If the caller has specified an alias entry point within the called module, two contents directory entries will be created for that module. One, the major CDE, contains the main entry point name; the other, the minor CDE, contains the alias entry point name.

CDEs are maintained either within a job pack area control queue (JPACQ), which is pointed to by the TCBJPQ field of the MVT task control block, or within a link pack area control queue (LPACQ), which contains CDEs describing modules normally resident in the link pack area.

Figure 2 illustrates the format of the CDE. Descriptions of the fields follow the illustration.

CONTENTS DIRECTORY ENTRY

0 (0) CDATTR Attribute Field	1 (1) CDCHAIN Address of Next CDE on Queue
4 (4) CDROLL Reserved	5 (5) CDRBP Request Block Address
8 (8) CDNAME Module Name	
16 (10) CDUSE Use/Responsibility Count	17 (11) CDENTPT Entry Point Address
20 (14) CDATTR2 Attribute Field	21 (15) CDXLMJP Extent List Address or Major CDE Address
	23 (17)

Figure 2. Contents Directory Entry

CONTENTS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	CDATTR	Attribute field.
		1...	Module is resident in the link pack area.
		.1..	Module is being fetched.
		..1.	Module is reenterable.
		...1	Module is serially reusable.
		.... 1...	Module may not be reused. This bit is not applicable if either bit 2 or 3 is on.
		.... .1..	This is a minor CDE. If this bit is on the CDNAME field will contain an alias name or an embedded entry point name, and the CDXMLMJP field will contain the major CDE address.
		.... ..1.	Module is in the job pack area.
		.... ...1	Module is not only loadable.
1	(1) . 3	CDCHAIN	Address of the next CDE in this queue.
4	(4) 1	CDROLL	Reserved.
5	(5) . 3	CDRBP	RB address. If the module is reenterable, contains the address of the RB representing the most recent request for the module. If the module is serially reusable, contains the address of the RB at the top of the waiting queue. Contains zeros if the module was requested through the LOAD macro instruction.
8	(8) 8	CDNAME	Contains either a module name, an alias name, or an embedded entry point name.
16	(10) 1	CDUSE	The use/responsibility count. This represents the number of outstanding requests for the module's use. This field is not used in a minor CDE.
17	(11) . 3	CDENTPT	Address of the module entry point.
20	(14) 1	CDATTR2	A second attribute field.
		1...	TSO: Program was loaded by loader, not program fetch.
		.1..	Module is inactive and may be released by the GETMAIN routine to satisfy a later request for space.
		..1.	An extent list has been built for the module.
		...1	This CDE contains a relocated alias entry point address.
		.... 1...	The module is refreshable.
		.... .1..	This program is an overlay program.
		.... ..xx	(Reserved bits)
21	(15) . 3	CDXMLMJP	Extent list address, or major CDE address if this CDE is a minor. If this CDE is a minor, bit 5 of CDATTR will also be set.

Communication Vector Table

The communication vector table (CVT) provides the means whereby nonresident routines may refer to information in the nucleus of the control program; it contains addresses of other control blocks and tables which are used by control program routines. The CVT is part of the resident nucleus. During the nucleus initialization process (NIP), the address of the CVT is placed in main storage in the full word at decimal address 16 (hexadecimal address 10). This address points to the CVT but is not a part of the CVT.

Figure 3 illustrates the format of the CVT. Descriptions of the fields follow the illustrations.

The symbolic displacements shown for the various fields are generated in nonresident routines by use of the CVT macro instruction.

COMMUNICATION VECTOR TABLE

-8(-8)	Reserved	-6(-6)	CVTMDL Model ID
-4 (-4)	CVTRELNO Release Number		
0 (0)	CVTTCBP Pointer to Address for Next and Current TCB		
4 (4)	CVT0EF00 Address of Routine to Schedule Asynchronous Exits		
8 (8)	CVTLINK Address of DCB for SYS1.LINKLIB		
12 (C)	CVTJOB Address of Work Queue Control Blocks		
16 (10)	CVTBUF Address of Buffer for Resident Console Interruption Routine		
20 (14)	CVTXAPG Address of IOS Appendage Table		
24 (18)	CVT0VL00 Address of Entry-Point of Address Validity Checking Routine		
28 (1C)	CVTPCNVT Address of Entry-Point of Routine for Converting Relative Track Address to Absolute		
32 (20)	CVTPRLTV Address of Entry-Point of Routine for Converting Absolute Track Address to Relative		
36 (24)	CVTILK1 Address of Channel and Control Unit Section in UCB Lookup Table		
40 (28)	CVTILK2 Address of UCB Address List Portion in UCB Lookup Table		
44 (2C)	CVXTLER Address of Entry-Point to XCTL Routine for Systems Error Routines		
48 (30)	CVTSYSAD Address of System Residence Volume Entry in UCB Table		
52 (34)	CVBTERM Address of Entry-Point of ABTERM Routine		
56 (38)	CVTDATE Current Date in Packed Decimal		
60 (3C)	CVTMSLT Address of Master Common Area Within Master Scheduler Resident Data Area		

Continued

Figure 3. Communication Vector Table (Part 1 of 4)

COMMUNICATION VECTOR TABLE

Continued

64 (40)	CVTZDTAB Address of I/O Device Characteristic Table
68 (44)	CVTXITP Address of Error Interpreter Routine
72 (48)	CVTDAR Address of the I/O control block complex accessed by DAR
76 (4C)	CVTOFN00 Entry-Point Address to FINCH
80 (50)	CVTEXTIT An SVC 3 Instruction
82 (52)	CVTBRET A BCR 15, 14 Instruction
84 (54)	CVTSVDCB Address of DCB for SYS1.SVCLIB
88 (58)	CVTTPC Address of Pseudo Clock for Timer Routine
92 (5C)	CVTPBLDL Address of BAL Entry-Point to BLDL Routine
96 (60)	CVTSJQ Address of Selected Job Queue
100 (64)	CVTCUCB Address of Table with Console UCB Address
104 (68)	CVTQTE00 Address of Timer Enqueue Routine
108 (6C)	CVTQTD00 Address of Timer Dequeue Routine
112 (70)	CVTSTB Address of I/O Device Statistics Table
116 (74)	CVTDCB System Configuration, Address of DCB for SYS1.LOGREC
120 (78)	CVTIOQET Address of Request Element Table
124 (7C)	CVTIXAVL Address of IOS Freelist Pointer

Continued

Figure 3. Communication Vector Table (Part 2 of 4)

COMMUNICATION VECTOR TABLE

Continued

128 (80)	CVTNUCB Lowest Storage Address Not in Nucleus
132 (84)	CVTBOSV Address of Program Fetch Routine
136 (88)	CVT0DS Address of Entry-Point of Dispatcher
140 (8C)	CVTILCH Address of Logical Channel Word Table
144 (90)	CVTIERLC Address of Asynchronous Exit Queue
148 (94)	CVTMSEB Address of Data Area Within Master Scheduler Resident Data Area
152 (98)	CVTOPT01 Address of Branch Entry-Point for Post Routine
156 (9C)	CVTTRMTB Address of Terminal Table for QTAM
160 (A0)	CVTHEAD Address of Highest Priority TCB in Ready Queue
164 (A4)	CVTMZ00 Highest Storage Address in Machine
168 (A8)	CVTIEF00 Address of IRB Creation Routine
172 (AC)	CVTQOCR Address of a GFX Parameter List Word, or Zeros
176 (B0)	CVTQMWR Address of Queue Manager's Communication Data Area
180 (B4)	CVTSNCTR Serial Number Counter
182 (B6)	CVTOPTA Flags
183 (B7)	CVTOPTB Error Recording During NIP
184 (B8)	CVTQCDSR MFT: (without Link Library Option) - Reserved (with Link Library Option) - Reenterable Load Module Queue Search Routine Address MVT: CDE Search Routine Address
188 (BC)	CVTQLPAQ MFT: (without Link Library Option) - Reserved (with Link Library Option) - Reenterable Load Module Queue Address MVT: Address of Top CDE in LPA Queue

Continued

Figure 3. Communication Vector Table (Part 3 of 4)

COMMUNICATION VECTOR TABLE

Continued

192 (C0)		CVTMPCVT MFT: Reserved MVT: Address of M65MP Secondary CVT
196 (C4)		CVTSMCA Address of the SMCA
200 (C8)		CVTABEND MFT: Reserved MVT: Address of Secondary CVT
204 (CC)		CVTUSER Field Available to the User
208 (D0)		Reserved
212 (D4)	CVTQABST MFT: Reserved MVT: An SVC 13 Instruction	214 (D6) align="center">CVTLNKSC MFT with Subtasking: An SVC 6 Instruction MVT: Reserved
216 (D8)		CVTTSCE MFT: Address of TSCE MVT: Address of First TSCE
220 (DC)		CVTPATCH Address of FE Patch Area
224(E0)		CVTRMS RMS Communications Vector
228(E4)	CVTTSFLG Time Sharing Flags	229(E5) align="center">CVTTS CVT Address of Time Sharing CVT
232(E8)		CVT0SCR1 Address of the Sector Calculation Routine for RPS
236(EC)	CVTGFST GTF Status Flags	237 (ED) align="center">CVTCMT Address of the Class Mask Table (CMT)
240(F0)	CVTTCMFG TCAM/TSO Flags	241 (F1) align="center">CVTAQAVT Address of Pointer to TCAM AVT
		243 (F3)

MFT With Subtasking (For MFT Without Subtasking or MVT, These Fields are Reserved.)

244 (F4)	CVTTSKS Maximum Number of TCB Address Table Entries	245 (F5) align="center">CVTTAT Pointer to Partition 0 TCB Address
248 (F8)	CVTSYST Number of System Generated TCBs	249 (F9) align="center">CVTATERA Address of System Error TCB
		251 (FB)

MFT, MVT

252 (FC)		Reserved
		259 (103)
260 (104)	CVTPURG	261 (105) align="center">CVTPURGA Address of Subsystem Purge Routine
264 (108)		Reserved
268 (10A)	CVTQMSG	269 (10B) align="center">CVTQMSGA Address of Message Information List Module for Type 1 SVC ABEND Facility
272 (110)	CVTDMSR	273 (111) align="center">CVTDMSRA Address of OPEN/CLOSE/EOV Supervisory Routine

Figure 3. Communication Vector Table (Part 4 of 4)

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
-8	(-8) 2		Reserved.
-6	(-6) 1	CVTMDL	Model ID. The model number of the CPU in decimal. Each digit is represented by four bits, and the significant digits are right justified in the half-word. For example, a Model 50 would be represented as 0050.
-4	(-4) 4	CVTRELNO	Release number. The level of this release, in EBCDIC.
0	(0) 4	CVTTCPB	Address of a double word, the first containing the next-to-be dispatched TCB address, the second containing the last (current) TCB address. Both words are identical unless the task goes into a WAIT state. When in a WAIT state, the first word is set to zero until the waiting is over; then both words are once again identical.
4	(4) 4	CVTOEF00	Address of routine to schedule asynchronous exits.
8	(8) 4	CVTLINK	Address of the DCB for the SYS1.LINKLIB data set.
12	(C) 4	CVTJOB	Address of work queue control blocks used by the job scheduler.
16	(10) 4	CVTBUF	Address of the buffer of the resident console interrupt routine.
20	(14) 4	CVTXAPG	Address of the I/O supervisor appendage table.
24	(18) 4	CVTOVL00	Address of entry point of the task supervisor's address validity checking routine.
28	(1C) 4	CVTPCNVT	Address of entry point of the routine which converts a relative track address (TTR) to an absolute track address (MBBCHHR).
32	(20) 4	CVTPRLTV	Address of entry point of the routine which converts an absolute track address (MBBCHHR) to a relative track address (TTR).
36	(24) 4	CVTILK1	Address of the channel and control unit portion of the UCB lookup table.
40	(28) 4	CVTILK2	Address of the UCB address list portion of the UCB lookup table.
44	(2C) 4	CVTXTLER	Address of entry point of an XCTL routine that brings system error routines into the error transient area.
48	(30) 4	CVTSYSAD	Address of the system residence volume entry in the UCB table.
52	(34) 4	CVTBTERM	Address of entry point of the ABTERM routine.
56	(38) 4	CVTDATE	Current date in packed decimal.

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
60	(3C) 4	CVTMSLT	Address of master common area within master scheduler resident data area. <i>Note:</i> The MFT/MVT master scheduler resident data area consists of a data area followed by the master common area. The offset of the master common area from the beginning of the master scheduler resident data area may change in future releases. Therefore, all references to the master common area should be made using the address in CVTMSLT, and all references to the data area of the master scheduler resident data area should be made using the address in CVTMSER, at offset 148 dec., 94 hex.
64	(40) 4	CVTZDTAB	Address of the I/O device characteristic table.
68	(44) 4	CVTXITP	Address of the error interpreter routine.
72	(48) 4	CVTDAR	Address of the I/O control block complex needed by ABEND's damage assessment routine (DAR). If zeros, SYS1.DUMP data set has not been defined.
76	(4C) 4	CVTOFN00	Address of entry point of the FINCH routine.
80	(50) 2	CVTEXTIT	An SVC 3 instruction (EXIT).
82	(52) . . 2	CVTBRET	A BCR 15,14 instruction (used by data management routines).
84	(54) 4	CVTSVDCB	Address of the DCB for the SYS1.SVCLIB data set.
88	(58) 4	CVTTPC	Address of the 6-hour pseudo clock (SHPC), used by timer supervisor routines.
92	(5C) 4	CVTPBLDL	Address of BAL entry point to the BLEL routine.
96	(60) 4	CVTSJQ	Address of the selected job queue.
100	(64) 4	CVTCUCB	Address of the table that contains the current console UCB addresses.
104	(68) 4	CVTQTE00	Address of the timer enqueue routine.
108	(6C) 4	CVTQTD00	Address of the timer dequeue routine.
112	(70) 4	CVTSTB	Address of the I/O device statistics table.
116	(74) 1	CVTDCB	System Configuration. 10 MVT - Uniprocessing 14 MVT - Multiprocessing 20 MFT
117	(75) . 3		Address of the DCB for the SYS1.LOGREC (outboard recorder) data set for system environment recording.
120	(78) 4	CVTIOQET	Address of request element table.

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diag. Field Description, Contents, Meaning</u>
124	(7C) 4	CVTIXAVL	Address of the I/O supervisor's freelist pointer (which contains the address of the next request element).
128	(80) 4	CVTNUCB	Lowest address not in the nucleus. If the protection option is specified in the system generation process, this is a 2K boundary. If the protection option is not specified in the system generation process, this is a double-word boundary.
132	(84) 4	CVTFBOSV	Address of program fetch routine.
136	(88) 4	CVTODS	Address of entry point of the dispatcher.
140	(8C) 4	CVTILCH	Address of the logical channel word table.
144	(90) 4	CVTIERLC	Address of the asynchronous exit queue.
148	(94) 4	CVTMSER	Address of data area within master scheduler resident data area. <u>Note:</u> This field should be used to address the data area, but not the master common area, of the master scheduler resident data area. See the note under CVTMSLT, at offset 60 dec., 3C hex.
152	(98) 4	CVTOPT01	Address of branch entry point of post routine.
156	(9C) 4	CVTTRMTB	Address of terminal table present in systems that have QTAM routines.
160	(A0) 4	CVTHEAD	Address of the highest priority TCB in the ready queue.
164	(A4) 4	CVTMZ00	Highest storage address for this machine (machine size).
168	(A8) 4	CVT1EF00	Address of routine which creates IRBS for exits.
172	(AC) 4	CVTQOCR	Graphics interface task (GFX) field. If GFX is active: Address of seventh word of GFX parameter list. If GFX is not active: Zero. (Four bytes of binary zeroes.)
176	(B0) 4	CVTQMWR	Address of system output communications data area (CDA) used by the queue manager, which is stored on an external device.
180	(B4) 2	CVTSNCTR	Serial number counter. Counter for assigning serial numbers to non-specific, unlabeled magnetic tape volumes. (A binary number forming the XXX part of the volume serial number of the form LXXXXY.)

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
182	(B6) . . 1	CVTOPTA xxx. 1... .... .1.. .... ..1. .... ...1 1... .... .x.. .... .1.. .... .0.. .... ..1. .... ...1		Option indicators. Indicate which recovery management support (RMS) options are present in the system: Channel check handler (CCH). Alternate path retry (APR). Dynamic device reconfiguration (DDR). NIP is executing. This is an MFT system with the subtasking option. MVT: Main storage hierarchy support option indicator. Main storage hierarchy support is included in the system. Main storage hierarchy support is not included in the system. ASCII tape processing is generated in this system. CVTXFPF - Extended precision floating point feature is in the CPU.
183	(B7) . . . 1	CVTOPTB 1... .... .1.. .... ..1. .... ...x xxxx		CVTPROT - MFT: Store protection feature is in the CPU. CVTTOD - Time-of-day clock feature is in CPU. CVTNLOG - SYS1.LOGREC unavailable for error recording. (Reserved bits)
184	(B8) 4	CVTQCDSR		MFT (without link library option): Reserved. MFT (with link library option): Address of the routine that searches the reenterable load module queue. MVT: Address of the routine that searches the contents directory.
188	(BC) 4	CVTQLPAQ		MFT (without link library option): Reserved. MFT (with link library option): Address of the reenterable load module queue. MVT: Address of the top entry of contents directory chain of entries in link pack area (LPA) queue.
192	(C0) 4	CVTMPCVT		MFT: Reserved. MVT: - If M65MP was specified in the system generation process: Address of the MVT with Model 65 Multiprocessing (M65MP) secondary CVT. - If M65MP was not specified in the system generation process: Zero.
196	(C4) 4	CVTSMCA		Address of the system management control area (SMCA) if the system management facilities (SMF) option is present in the system. Zeros if SMF is not present.
200	(C8) 4	CVTABEND		MFT: Reserved. MVT: Address of a secondary CVT in the end-of-task (EOT) routine used by the ABEND routine.
204	(CC) 4	CVTUSER		A field available to the user of System/360 Operating System.
208	(D0) 4			Reserved.
212	(D4) 2	CVTQABST		MFT: Reserved. MVT: An SVC 13 instruction (ABEND).
214	(D6) . . 2	CVTLNKSC		MFT with subtasking: An SVC 6 instruction (LINK). MVT: Reserved.

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
216	(D8) 4	CVTTSCE		MFT: Address of the time slice control element (TSCE). MVT: Address of the first time slice control element (TSCE).
220	(DC) 4	CVTPATCH		V-type address constant referring to external name of a 200 byte FE patch area.
224	(E0) 4	CVTRMS		Recovery management support (RMS) communications vector. Address of a machine status block.
228	(E4) 1	CVTTSFLG 1... .. .xxx xxxx		Time-sharing flags. CVTTSRDY-TSO is initialized and ready. (Reserved bits)
229	(E5) . 3	CVTTSCVT		Address of TSO Secondary CVT.
232	(E8) 4	CVTOSCR1		Address of the sector calculation routine for rotational position sensing (RPS).
236	(EC) 4	CVTGTF		Status flags and the address of the class mask table for the generalized trace facility (GTF).
236	(EC) 1	CVTGTFST 00.. .. 01.. .. 10.. .. 11.. .. ..1. .... ...1 ........0 1..		Status flags for GTF. CVTGTF - GTF is not active. GTF is starting. GTF is stopping. GTF is active. CVTSTATE - GTF is in control. CVTMODE - Trace data is to be written to an external device (MODE=EXT specified). MODE=INT specified. CVTFORM - Trace data is to be formatted on abnormal termination.
		.... .1..		CVTUSR - User-requested trace data is to be included in the trace data set.
		.... ..1.		CVTMCTYP - The System/370 MONITOR CALL instruction is valid.
		.... ...x		Reserved.
237	(ED) . 3	CVTCMT		Address of the class mask table (CMT).
240	(F0) 1	CVTTCMFG 1... .. 0... .. .xxx xxxx		CVTTCRDY-TCAM is ready to accept users. TCAM is not in use or has abnormally terminated. (Reserved bits)
241	(F1) 3	CVTAQAVT		The address of the first word of the TCAM dispatcher. The first word of the dispatcher contains the address of the address vector table (AVT). If this field (CVTAQAVT) contains zero, TCAM is not in the system.
244	(F4) 1	CVTTSKS		MFT with subtasking: The maximum allowable number of entries in the TCB address table. MVT: Reserved.
245	(F5) . 3	CVTTAT		MFT with subtasking: Address of the first entry in the TCB address table. The first entry is for Partition 0. MVT: Reserved.

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Dig. Field Description, Contents, Meaning</u>
248	(F8) 1	CVTSYST	MFT with subtasking: The number of entries in the TCB address table, for TCBs created during system generation. MVT: Reserved.
248	(F8) 4	CVTATER	
249	(F9) . 3	CVTATERA	MFT with subtasking: The address of the system error TCB. The PURGE routine uses this field to access the SIRB. MVT: Reserved.
252	(FC) 8		Reserved.
260	(104) 4	CVTPURG	
261	(105) . 3	CVTPURGA	Address of the subsystem purge routine.
264	(108) 4		Reserved.
268	(10C) 4	CVTQMSG	
269	(10D) . 3	CVTQMSGA	The address of the message information list module for the type 1 SVC WTP facility.
272	(110) 4	CVTDMSR	
273	(111) . 3	CVTDMSRA	The address of the OPEN/CLOSE/EOV supervisory routine in the nucleus. This routine handles the routing of control among the I/O support routines.

END OF CVT

MULTIPROCESSING COMMUNICATION VECTOR TABLE

The multiprocessing communication vector table (MPCVT), which begins at symbolic location IEAMPCVT, is also part of the resident nucleus if M65MP was specified in the system generation process. The address of the first location of MPCVT is contained in the CVTMPCVT field (location 192 decimal, C0 hex.) of the CVT and also in the MPCVTPTR field (location 668 decimal, 29C hex.) of the prefixed storage area. The MPCVT contains flags used during M65MP processing, and the addresses of routines and tables necessary to the multiprocessing system. Figure 4 illustrates the format of the MPCVT. Descriptions of the fields follow the illustration.

MULTIPROCESSING COMMUNICATION VECTOR TABLE

0 (0)	CVTAFFLK CPU Affinity and Supervisor Lock
4 (4)	CVTSTPTR Address of SHOLDTAP Routine
8 (8)	CVTWTCB Address of Dispatcher WAIT Task
12 (c)	CVTKRM Address of Task Removal Routine
16 (10)	CVTGOV Address of GOVRFLB Table
20 (14)	CVTIOTIO Address of Test I/O (TIO) Routine
24 (18)	CVTIOTCH Address of Test Channel (TCH) Routine
28 (1C)	CVTSTOR Address of Notify Storage Online Routine
32 (20)	CVTVRYOF Address of VARY Storage Offline Routine

35 (23)

Figure 4. Multiprocessing Communication Vector Table

MULTIPROCESSING COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Dig. Field Description, Contents, Meaning</u>
0	(0) 4	CVTAFFLK Byte 1	The CPU affinity byte. This byte contains the identity, in hex, of the CPU that has set the supervisor lock byte, if the lock byte has been set. C1 CPU A is executing disabled supervisor code. C2 CPU B is executing disabled supervisor code. 00 Neither CPU is executing disabled supervisor code.
		Byte 2	The supervisor lock byte. Indicates whether or not Supervisor code has been locked. FF The supervisor code has been locked (the identity of the CPU that set the lock is contained in the CPU affinity byte). 00 The lock is not set.
		Bytes 3-4	Reserved.
4	(4) 4	CVTSTPTR	Address of the SHOLDTAP routine, one of two subroutines used when a shoulder-tap must occur. The SHOLDTAP subroutine causes a WRITE DIRECT instruction to be issued from one CPU. This instruction causes an external interruption on the other CPU (the receiving CPU) to get the receiver to perform some activity (start I/O, halt I/O, command configuration, task switching, task termination, recovery management support interface.)
8	(8) 4	CVTWITCB	Address of the dispatcher WAIT task. The WAIT task is used to indicate that no tasks are ready for execution.
12	(C) 4	CVTTKRM	Address of the task removal subroutine, which is resident in the prefixed storage area (PSA) for each CPU. The task removal subroutine ensures that a task (and any subtask created by the task) that has been set nondispatchable on one CPU does not continue to run on the second CPU.
16	(10) 4	CVTGOV	Address of the GOVRFLB table. This table is located in the nucleus and contains a pointer to the descriptor queue element (DQE), located in the system queue area. The DQE contains a record of the number of 2048-byte blocks assigned to the system queue area.
20	(14) 4	CVTIOTIO	Address of the test I/O (TIO) routine for MVT with Model 65 multiprocessing. TIO issues the privileged TIO instruction for the extended VARY commands used in multiprocessing.
24	(18) 4	CVTIOTCH	Address of the test channel (TCH) routine for MVT with Model 65 multiprocessing. TCH issues the privileged TCH instruction for the extended VARY commands used in multiprocessing.

MULTIPROCESSING COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Dig. Field Description, Contents, Meaning</u>
28	(1C) 4	CVTSTOR	Address of the notify storage online routine. This routine is used by the VARY storage online command routine to notify the system that storage is being brought online.
32	(20) 4	CVTVRYOF	Address of the vary storage offline routine. Deferred VARY storage offline requests are carried out by this routine as storage areas are placed on the dynamic free storage area queue.

Data Control Blocks

Data control blocks (DCBs) describe the current use of a data set. In general, DCBs consist of three segments: a device interface segment, a processing program interface segment (the foundation segment), and an access method interface segment. The foundation segment is basic to the format of all the DCBs; its extent is fixed as being at decimal displacements 40-48 (hexadecimal 28-30).

The following information may be found in the DCB:

- a. Buffer construction and handling methods, and device dependent information.
- b. Exit information, consisting of addresses of routines you may want to use for special I/O purposes.
- c. Data set attributes, such as record length, record format, block size and data set organization.

The primary sources of information to be placed in the DCB are:

- A DCB macro instruction.
- A data definition (DD) statement.
- A data set label.

If more than one source specifies a particular field, only one source is used. A DD statement takes precedence over a data set label; a DCB macro instruction over both.

Separate diagrams and descriptions are presented for the following uses of DCBs:

- QSAM, BSAM, BPAM, EXCP Access Method
- ISAM
- BDAM
- QTAM
- BTAM
- GAM
- TCAM

DATA CONTROL BLOCK -- QSAM, BSAM, BPAM,
EXCP ACCESS METHOD

The data control block is the block within which data pertinent to the current use of a data set is stored. There is substantial similarity between the formats of DCBs for use with BSAM, QSAM, BPAM, and EXCP.

Figure 5A illustrates the formats of the various device type segments; Figure 5B the foundation segments; and Figure 5C, the access method segments. Following all these illustrations are descriptions of fields in each of the segments.

DATA CONTROL BLOCK -- SAM

Device Interface Segment

Direct - Access Storage Devices

0 (0)				DCBRELAD PDS: TTRN of Member SYS1.LOGREC: Address of Parameter Table
4 (4)		5 (5)		
DCBKEYCN Keyed Block Constant				
DCBFDAD Full Direct Access Address				
		13 (D)		
		DCBDVTBL Address of Device Table Entry		
16 (10)		17 (11)	18 (12)	19 (13)
DCBKEYLE Key Length		DCBDEVT Device Type	DCBTRBAL Bytes Left in Current Track	

Magnetic Tape

0 (0)				Reserved
12 (C)				DCBBLKCT Block Count
16 (10)		17 (11)	18 (12)	19 (13)
DCBTRTCH Tape Recording Technique		DCBDEVT Device Type	DCBDEN Tape Density	Reserved

Paper Tape

8 (8)				DCBLCTBL Translate Table Address
12 (C)				Reserved
16 (10)		17 (11)	18 (12)	19 (13)
DCBCODE Paper Tape Code		DCBDEVT Device Type	Reserved	(P.T. Flags) Paper Tape Flags

Card Reader, Card Punch

16 (10)		17 (11)	18 (12)	19 (13)
DCBMODE, DCBSTACK Code, Stacker		DCBDEVT Device Type	(PRTOV Mask) Overflow Mask (3525 with print feature)	DCBFUNC 3525 Function Indicators

Printer

16 (10)		17 (11)	18 (12)	19 (13)
DCBPRTSP Spacing		DCBDEVT Device Type	(PRTOV Mask) Overflow Mask	Reserved

(Continued)

Figure 5A. Data Control Block - QSAM, BSAM, BPAM, EXCP - Device Type Segments (Part 1 of 2)

DATA CONTROL BLOCK -- SAM

Device Interface Segment (Continued)

Optical Reader

0 (0) Reserved	1 (1) DCBWTOID WTO Identification Number (MCS Support)		
4 (4) Reserved	5 (5) DCBERRCN Address of Optical Reader Error Counters		
8 (8) Reserved	9 (9) DCBDSPLY Address of DSPLY Module		
12 (C) Reserved	13 (D) DCBRDLNE/DCBRESN Address of RDLNE or RESCN Module		
16 (10) DCBORBYT Access Method Work Area	17 (11) DCBDEVT Device Type	18 (12) DCBEIB Error Indicator	19 (13) Reserved 19 (13)

1419 Magnetic Character Reader

1275 Optical Reader Sorter

Before OPEN

0 (0) DCBSSID Stacker Select Routine Name

After OPEN

0 (0) Reserved	1 (1) DCWTOID WTO Identification Number (MCS Support) or MICB Address (After First READ)		
4 (4) Reserved	5 (5) DCBSSAD Address of User's Stacker Select Routine		
8 (8) DCBMRFG Buffer Indicator	9 (9) DCBIMAGE Parameter List Address		
12 (C) DCBMRIND Counter and Flags	13 (D) DCBECBLT Address of ECB List		
16 (10) DCBMRFLG Flag Byte	17 (11) DCBDEVT Device Type	18 (12) DCBAPPIN Appendage Indicator	19 (13) Reserved 19 (13)

Figure 5A. Data Control Block - QSAM, BSAM, BPAM, EXCP - Device Type Segments (Part 2 of 2)

DATA CONTROL BLOCK -- SAM

Common Interface

20 (14)	DCBBUFNO Number of Buffers	21 (15)	DCBBUFCB Address of Buffer Pool Control Block
24 (18)	DCBBUFL Buffer Length	26 (1A)	DCBDSORG Data Set Organization

Chained Scheduling

28 (1C)	DCBIOBAD Address of IOB Prefix	31 (1F)
---------	-----------------------------------	---------

IBM 1275,1419

28 (1C)	DCBIOBAD Address of IOB Prefix	31 (1F)
---------	-----------------------------------	---------

Spanned Records

28 (1C)	DCBQSLM Flags	29 (1D)	DCBODEBA Address of Old DEB	31 (1F)
---------	------------------	---------	--------------------------------	---------

IBM 3525

28 (1C)	DCBLNP Line Position Counter	29 (1D)	DCBODEBA Address of Old DEB	31 (1F)
---------	---------------------------------	---------	--------------------------------	---------

Foundation Extension

32 (20)	DCBHIARC, DCBFTEK, DCBBFALN	33 (21)	DCBEODAD Address of User's EOF Routine	
36 (24)	DCBRECFM Record Format	37 (25)	DCBEXLST Address of User's Exit List	39 (27)

Foundation

Before OPEN

40 (28)	DCBDDNAM DD Statement Name					
48 (30)	DCBOFLGS Flags for Open	49 (31)	DCBIFLG Error Flags for IOS	50 (32)	DCBMACR Type of I/O Macro Instruction and Options	51 (33)

After OPEN

40 (28)	DCBTIOT Offset to DD Entry in TIOT	42 (2A)	DCBMACRF Type of I/O Macro Instruction and Options
44 (2C)	DCBIFLGS Error Flags for IOS	45 (2D)	DCBDEBAD Address of DEB
48 (30)	DCBOFLGS Flags for Open		

Figure 5B. Data Control Block - QSAM, BSAM, BPAM, EXCP - Foundation Segments

DATA CONTROL BLOCK -- SAM

Access Method Segments

EXCP Access Method Interface			
	49 (31)	Reserved	
52 (34)	DCBOPTCD Option Codes	53 (35)	Reserved
60 (3C)	DCBEOEA ID of End-of-Extent Appendage	62 (3E)	DCBPCIA ID of Program-Controlled-Interruption Appendage
64 (40)	DCBSIOA ID of SIO Appendage	66 (42)	DCBCENDA ID of Channel-End Appendage
68 (44)	DCBXENDA ID of Abnormal-End Appendage	70 (46)	Reserved
			71 (47)
BSAM, BPAM, Interface			
	49 (31)	DCBREAD, DCBWRITE Address of Read or Write Module	
52 (34)	DCBOPTCD Option Codes	53 (35)	DCBCHECK Address of Check Module
56 (38)	DCBIOBL IOB Length	57 (39)	DCBSYNAD Address of User's Synchronous Error Routine
60 (3C)	DCBCIND1 Condition Flags	61 (3D)	DCBCIND2 Condition Flags
		62 (3E)	DCBBLKSI Maximum Block Size
64 (40)	DCBWCPO Write Channel Program Offset	65 (41)	DCBWCPL Write Channel Program Length
		66 (42)	DCBOFFSR Read CCW Offset
		67 (43)	DCBOFFSW Write CCW Offset
68 (44)	DCBIOBA Normal Scheduling: Address of IOB Prefix, Chained Scheduling: Address of ICB, 1419/1275 Address of MICB		
72 (48)	DCBNCP No. of Channel Programs	73 (49)	DCBEOBR Address of Read End-of-Block Module
76 (4C)	DCBEOBW Address of Write End-of-Block Module or Address of Segment Work Area Control Block		
80 (50)	DCBDIRCT Directory Block Length	82 (52)	DCBLRECL Logical Record Length or Block Size
	DCBUSASI (ASCII Tapes)	81 (51)	DCBUFOF (ASCII Tapes)
84 (54)	DCBCNTRL, DCBNOTE, DCBPOINT Address of CNTRL or NOTE/POINT Module		
			87 (57)

Continued

Figure 5C. Data Control Block - QSAM, BSAM, BPAM, EXCP - Access Method Segments (Part 1 of 2)

DATA CONTROL BLOCK -- SAM

Continued

QSAM Access Method Interface			
	49 (31)	DCBGET, DCBPUT Address of GET or PUT Module	
52 (34) DCBOPTCD Option Codes	53 (35)	DCBGERR, DCBPERR Address of Synchronizing Routine	
56 (38) DCBIOBL IOB Length	57 (39)	DCBSYNAD Address of User's Synchronizing Routine	
60 (3C) DCBCIND1 Condition Flags	61 (3D) DCBCIND2 Condition Flags	62 (3E) DCBBLKSI Maximum Block Size	
64 (40) DCBWCPO Write Channel Program Offset	65 (41) DCBWCPL Write Channel Program Length	66 (42) DCBOFFSR Read CCW Offset	67 (43) DCBOFFSW Write CCW Offset
68 (44) DCBIOBA Address of IOB Prefix (When Normal Scheduling is Used)			
72 (48) DCBEOBAD, DCBLCCW Address of End of Buffer or of Last CCW in List			
76 (4C) DCBRECAD, DCBCCCW Address of Current or Next Logical Record or CCW			
80 (50) DCBQSWS DCBUSASI (Flags)	81 (51) DCBUBOF Block Prefix Length	82 (52) DCBLRECL Logical Record Length or Block Size	
	81 (51) DCBDIRCQ Directory Count		
84 (54) DCBEROPT Error Option Flags	85 (55) DCBCNTRL Address of CNTRL		
88 (58) Reserved		90 (5A) DCBPRECL Physical Record Length	
92 (5C) DCBEOB Address of End-of-Block Module			
95 (5F)			

Figure 5C. Data Control Block - QSAM, BSAM, BPAM, EXCP - Access Method Segments (Part 2 of 2)

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEVICE INTERFACE SEGMENTS</u>			
<p>Note: The size of the device interface segment is determined by the DEVD operand value coded or implied in the DCB macro instruction. A device interface segment of any size, resulting from any DEVD operand value, can exist when the data control block is to be used to process a TSO terminal data set. OPEN stores hexadecimal "4F" in the DCBDEVT field (offset 17) when a TSO terminal data set is to be processed (indicated by TERM=TS on the DD statement).</p>			
<u>DIRECT-ACCESS STORAGE DEVICES INTERFACE</u>			
0	(0) 4	DCBRELAD	<p>Partitioned organization data set: Address (in the form TTRN) of member currently used.</p> <p>SYS1.LOGREC data set - if channel check handler option has been specified in the system generation process: Address of a 12 byte parameter table in the expansion of the macro instruction IGFCATAP (and also SGIEC202). In MFT systems this table is in CSECT IEAQFXOO, in MVT systems in CSECT IEAAIHOO.</p>
4	(4) 1	DCBKEYCN	Keyed block overhead constant.
5	(5) . 8	DCBFDAD	Full disk address in the form of MBBCCHHR of the record that was just read or written.
13	(D) . 3	DCBDVTBL	Address of entry in the I/O device characteristics table for the device being used.
16	(10) 1	DCBKEYLE	Key length of the data set.
17	(11) . 1	DCBDEVT	Device type.
		0010 0001	2311 Disk Drive
		0010 0010	2301 Parallel Drum
		0010 0011	2303 Serial Drum
		0010 0100	2302 Disk Storage
		0010 0101	2321 Data Cell Drive
		0010 1000	2314 Disk Storage Facility
		0010 0110	2305-1 Disk Storage Facility - Model 1
		0010 0111	2305-2 Disk Storage Facility - Model 2
		0010 1001	3330 Disk Storage
18	(12) . . 2	DCBTRBAL	Track balance. Number of bytes remaining on current track after a write operation (This quantity maybe negative if there are no bytes remaining on the track).
<u>MAGNETIC TAPE INTERFACE</u>			
0	(0) 12		Reserved for I/O supervisor.
12	(C) 4	DCBBLKCT	Block count for each volume.
16	(10) 1	DCBTRTCH	Tape recording technique for 7-track tape.
			<u>Code</u>
		0010 0011	E Even parity.
		0011 1011	T BCD/EBCDIC translation.
		0001 0011	C Data conversion.
		0010 1011	ET Even parity and translation.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>																
<u>MAGNETIC TAPE INTERFACE (Continued)</u>																			
17	(11) . 1	DCBDEVT	Device type.																
		1000 0001	2400 series magnetic tape unit (7-track or 9-track).																
		1000 0011	3400 series magnetic tape unit (7-track or 9-track).																
18	(12) . . 1	DCBDEN	Tape density - 2400/3400 series magnetic tape units.																
			<table border="1"> <thead> <tr> <th>Code</th> <th>7-tracks</th> <th>9-tracks</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>200 bpi</td> <td>-</td> </tr> <tr> <td>1</td> <td>556 bpi</td> <td>-</td> </tr> <tr> <td>2</td> <td>800 bpi</td> <td>800 bpi</td> </tr> <tr> <td>3</td> <td>-</td> <td>1600 bpi</td> </tr> </tbody> </table>	Code	7-tracks	9-tracks	0	200 bpi	-	1	556 bpi	-	2	800 bpi	800 bpi	3	-	1600 bpi	
Code	7-tracks	9-tracks																	
0	200 bpi	-																	
1	556 bpi	-																	
2	800 bpi	800 bpi																	
3	-	1600 bpi																	
19	(13) . . . 1		Reserved.																
<u>PAPER TAPE INTERFACE</u>																			
8	(8) 4	DCBLCTBL	Address of translate table.																
12	(C) 4		Reserved.																
16	(10) 1	DCBCODE	Paper tape code being used. The appropriate translate table is made available.																
			<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>No conversion</td> </tr> <tr> <td>I</td> <td>IBM BCD</td> </tr> <tr> <td>F</td> <td>Friden</td> </tr> <tr> <td>B</td> <td>Burroughs</td> </tr> <tr> <td>C</td> <td>National Cash Register</td> </tr> <tr> <td>A</td> <td>ASCII (8-track)</td> </tr> <tr> <td>T</td> <td>Teletype</td> </tr> </tbody> </table>	Code	Description	N	No conversion	I	IBM BCD	F	Friden	B	Burroughs	C	National Cash Register	A	ASCII (8-track)	T	Teletype
Code	Description																		
N	No conversion																		
I	IBM BCD																		
F	Friden																		
B	Burroughs																		
C	National Cash Register																		
A	ASCII (8-track)																		
T	Teletype																		
17	(11) . 1	DCBDEVT	Device type.																
		0101 0000	2671 Paper Tape Reader.																
18	(12) . . 1		Reserved.																
19	(13) . . . 1		Paper tape flags (P.T. Flags).																
		xxx.	(Reserved bits)																
		...1	Invalid character in last record read.																
	 1...	End of record character reached in translation.																
	1..	End of record character detected during read.																
	1.	Upper case translate.																
	0.	Lower case translate.																
	1	Error detected on read.																

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>CARD READER, CARD PUNCH INTERFACE</u>			
16	(10) 1	DCBMODE, DCBSTACK	
			<u>Code</u>
		xxxx	Mode of operation for 1442 Card Read Punch.
		1000	C Column binary mode.
		0100	E EBCDIC mode.
		.... xxxx	Stacker selection
		.... 0001	1 Stacker 1
		.... 0010	2 Stacker 2
		xxxx	Mode of operation for 3505 Card Reader.
		0010	O Optical mark read mode.
		0001	R Read column eliminate mode.
17	(11) . 1	DCBDEVT	Device type.
		0100 0011	1442 Card Read Punch
		0100 0011	2596 Card Read Punch
		0100 0001	2540 Card Reader
		0100 0010	2540 Card Punch
		0100 0100	2501 Card Reader
		0100 0101	2520 Card Read Punch
		0100 0110	3505 Card Reader
		0100 1100	3525 Card Punch
18	(12) . . 1		3525 Card Punch with print feature: Test-for-printer-overflow mask (PRTOV mask). If printer overflow is to be tested for, the PRTOV macro instruction sets the mask as follows:
			<u>Code</u>
		0010 0000	9 Test for Channel 9 overflow.
		0001 0000	12 Test for Channel 12 overflow.
19	(13) . . . 1	DCBFUNC	Function indicators for the 3525 specified by the FUNC parameter.
		1...	I - Interpret (punch and print two lines)
		.1..	R - Read.
		..1.	P - Punch.
		...1	W - Print.
		.... 1...	D - Data protection.
		.... .1..	X - This data set is to be printed. This may be coded with PW or RPW to distinguish the data set to be printed from the data set to be punched.
		.... ..1.	T - Two line print support requested; the second print line is located on card line three.
		.... ...x	(Reserved bit)
<u>PRINTER INTERFACE</u>			
16	(10) 1	DCBPRTSP	Number indicating normal printer spacing.
			<u>Code</u>
		0000 0001	0 No spacing.
		0000 1001	1 Space one line.
		0001 0001	2 Space two lines.
		0001 1001	3 Space three lines.
17	(11) . 1	DCBDEVT	Device type.
		0100 1000	1403 Printer and 1404 Printer (continuous form support only)
		0100 1010	1443 Printer
		0100 1001	3211 Printer
19	(13) . . . 1		Reserved.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			1285,1287,1288 <u>OPTICAL READER INTERFACE</u>
0	(0) 1		Reserved.
1	(1) .3	DCBWTOID	A binary identification number assigned by the communications task to a message issued by a write-to-operator (WTO) macro. This number is used by the delete operator message (DOM) macro when the message is no longer required (MCS support).
4	(4) 1		Reserved.
5	(5) . 3	DCBERRCN	Address of 32 bytes of declared storage specified by the user in his assembly program. This storage will be used by the programming support as eight 4-byte counters in which totals of certain 1285, 1287, and 1288 error conditions are accumulated.
8	(8) 1		Reserved.
9	(9) . 3	DCBDSPLY	Address of DSPIY (BSAM) routine used for keyboard entry of a complete field.
12	(C) 1		Reserved.
13	(D) . 3	DCBRESCN, DCBRDLNE	Address of the RESCN (BSAM) or RDLNE (QSAM) routine used to force on-line correction of unreadable characters.
16	(10) 1	DCBORBYT 1... .. .1.. .. ..1. .... ...x xxxx	Optical reader byte used by BSAM/QSAM. SYNAD in control End of file (EOF). Buffers primed (QSAM). (Reserved bits)
17	(11) . 1	DCBDEVT 0101 1010 0101 1011 0101 1100	DEVICE Type. 1285 Optical Reader. 1287 Optical Reader. 1288 Optical Reader.
18	(12) . . 1	DCBEIB .1.. .... ..1. .... ...1 1... .... .1.. .... ..1. 1 x... ..	Error indicator byte. The 1287 or 1288 scanner was unable to locate the reference mark. 1287: A stacker select command was given after the allotted time had elapsed and the document has been put in the reject pocket. 1288 unformatted only: End-of-page has occurred. A nonrecoverable error has occurred. An equipment check resulted in an incomplete read. A wrong-length record condition has occurred. QSAM: The operator entered one or more characters from the keyboard. BSAM: A hopper empty condition has occurred. A data check has occurred. Reserved.
19	(13) . . . 1		Reserved.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>1419 MAGNETIC CHARACTER READER AND 1275 OPTICAL READER SORTER INTERFACE</u>
			<u>BEFORE DCB IS OPENED</u>
0	(0) 8	DCBSSID	Name of user's stacker select routine.
			<u>AFTER DCB IS OPENED</u>
0	(0) 1		Reserved.
1	(1) . 3	DCBWTOID	A binary identification number assigned by the communications task to a message issued by a write-to-operator (WTO) macro. This number is used by the delete operator message (DOM) macro when the message is no longer required (MCS support). After the first READ has been issued, contains the address of the magnetic interrupt control block (MICB) being used by the appendages.
4	(4) 1		Reserved.
5	(5) . 3	DCBSSAD	The address of the user's stacker select routine.
8	(8) 1	DCBMRFG	Buffer indicator:
		xx..	A binary counter which indicates into which buffer status information is to be posted.
		..xx xxxx	(Reserved bits)
9	(9) . 3	DCBIMAGE	Address of a parameter list used to communicate between the user's processing routines and his stacker select routines.
12	(C) 1	DCBMRIND	Indicator and counter byte.
		xxx.	A binary counter of the number of documents read after disengage.
		...1	DCB was altered when SYNAD routine was entered due to secondary control unit (SCU) error.
		.... 1...	Pocket light has been turned on.
		.... .1..	Pocket light 0-6 is being set on.
		.... ..1.	Error recovery procedure (ERP) is executing for the primary control unit (PCU).
		.... ...1	Error recovery procedure (ERP) is executing for the secondary control unit (SCU).
13	(D) . 3	DCBECLT	Address of an ECB list passed to the WAIT macro by the CHECK macro when no 1419/1275 is available for processing.
16	(10) 1	DCBMRFLG	Flag byte.
		1...	First or second secondary control unit (SCU) command chain is being used.
		.1..	Debugging mode in use.
		..1.	Disengage requested by the user.
		...1	Disengage requested.
		.... xx..	A binary counter indicating first, second, or third primary control unit (PCU) command chain is being used.
		.... ..1.	A write-to-operator (WTO) message must be deleted.
		.... ...1	Unit exception.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>1419 MAGNETIC CHARACTER READER AND 1275 OPTICAL READER SORTER INTERFACE (Continued)</u>			
17	(11) . 1	DCBDEVT 0100 1111 0101 1101 0101 1111	Device type. TSO Terminal. 1419 Magnetic Character Reader. 1275 Optical Reader Sorter.
18	(12) . . 1	DCBAPPIN	An indicator used by the appendages to pass information about one channel chain to an appendage associated with another channel chain. See <u>IBM System/360 Operating System IBM 1419 Magnetic Character Reader, IBM 1275 Optical Reader Sorter, Device Dependent BSAM PLM, GY21-0012</u> , for information concerning the use of this field.
19	(13) . . . 1		Reserved.
END OF DEVICE INTERFACE SEGMENTS			
<u>COMMON INTERFACE</u>			
20	(14) 1	DCBBUFNO	Number of buffers required for this data set. May range from 0 to a maximum of 255.
21	(15) . 3	DCBBUFBC	Address of buffer pool control block.
24	(18) 2	DCBBUFL	Length of buffer. May range from 0 to a maximum of 32,767.
26	(1A) . . 2	DCBDSORG	Data set organization to be used. <u>Code</u>
26	(1A)	Byte 1 1... .. .1.. .. ..1. .... ...x xx.. .... ..1. .... ...1	IS Indexed sequential organization. PS Physical sequential organization. DA Direct organization. (Reserved bits) PO Partitioned organization. U Unmovable - the data contains location dependent information.
27	(1B)	Byte 2 1... .. .xxx xxxx	GS Graphics organization. (Reserved bits)
28	(1C) 4	DCBIOBAD	Address of the IOB when chained scheduling is used or for 1419/1275.
28	(1C) 1	DCBLNP	3525 printer line position counter.
28	(1C) 1	DCBQSLM	QSAM locate mode logical record interface - UPDAT processing of spanned records: 1... .. Only one device is allocated to this data set. .1.. .. Update complete, free old DEB. ..10 Update to take place. ..11 No update to take place. ..01 Old DEB address must be saved.
Note: Logical record interface processing involves use of a record area in which record segments are combined. In this processing mode, GET and PUT refer to records, not record segments.			
29	(1D) . 3	DCBODEBA	Address of the old DEB (for spanned records and IBM 3525).

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION</u>			
32 (20)	1	DCBHIARC, DCBBFTEK, DCBBFALN	
			<u>Code</u>
	x... .x..		Buffer pool location. coded in the DCB macro instruction:
	0... .0..	none	Before OPEN - After OPEN - No choice made in the DCB macro instruction.
	0... .1..	0	If no choice is made in the DD statement either (as shown by the JFCBHIAR field), the OPEN routine resets these two bits from 00 to 01. Hierarchy 0 main storage. (See also: After OPEN, above.)
	1... .0..	1	Hierarchy 1 main storage.
	.xxx		Buffering technique:
	.1.0	S	Simple buffering.
	.0.1	E	Exchange buffering.
	.110	A	QSAM locate mode processing of spanned records: OPEN is to construct a record area if it automatically constructs buffers. See the note under DCBIOBAD.
	.010	R	BSAM create BDAM processing of unblocked spanned records: Software track overflow. OPEN forms a segment work area pool and stores the address of the segment work area control block in DCBEOBW (offset 76). (However, see bit 51.7.) WRITE uses a segment work area to write a record as one or more segments.
			BSAM input processing of unblocked spanned records with keys: Record offset processing. READ reads one record segment into the record area. The first segment of a record is preceded in the record area by the key. Subsequent segments are at an offset equal to the key length.
	.... x...		(Reserved bit)
	.... ..XX		Buffer alignment:
	.... ..10	D	Doubleword boundary.
	.... ..01	F	Fullword not a doubleword boundary, coded in the DCB macro instruction.
	.... ..11	F	Fullword not a doubleword boundary, coded in the DD statement.
33 (21)	. 3	DCBEOBAD	End-of-data address. Address of a user-provided routine to handle end-of-data conditions.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Field Alignment</u>	<u>Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION (Continued)</u>			
36	(24)	1	DCBRECFM
			Record Format:
			<u>Code</u>
10..			F Fixed record length.
01..			V Variable record length.
11..			U Undefined record length.
001.			D ASCII variable record length.
..1.			T Track overflow.
...1			B Blocked records. May not occur with undefined (U).
.... 1...			S Fixed length record format: Standard blocks. (No truncated blocks or unfilled tracks are embedded in the data set.) Variable length record format: Spanned records.
.... .10.			A ASA control character.
.... .01.			M Machine control character.
.... .00.			No control character.
.... ...1			Key length (KEYLEN) was specified in the DCB macro instruction. This bit is inspected by the Open routine to prevent overriding a specification of KEYLEN=0 by a nonzero specification in the JFCB or data set label.
37	(25)	. 3	DCBEXLST
			Exit List. Address of a user-provided list.
<u>FOUNDATION SEGMENT</u>			
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
40	(28)	8	DCBDDNAM
			This 8 byte name must be the same as that appearing in the name field of the data definition statement which defines the data set associated with this DCB. It is used by the open routine to locate the JFCB.
48	(30)	1	DCBOFLGS
			Flags used by the OPEN routine.
1...			Last I/O operation was a WRITE.
0...			Last I/O operation was a READ or POINT. For direct-access devices, this means that the track balance field is invalid.
.1..			Last I/O operation was in READ backward mode.
..1.			Set to <u>1</u> by EOVS when it calls the CLOSE routine for concatenation of data sets with unlike attributes. An OPEN has been successfully completed.
...1			Set to <u>1</u> by a problem program to indicate a concatenation of unlike attributes.
.... 1...			Tape mark has been read.
.... .1..			Set to <u>0</u> by an I/O support function when that function takes a user exit. It is set to <u>0</u> to inhibit other I/O support functions from processing this particular DCB.
.... ..0.			Set to <u>1</u> on return from the user exit to the I/O support function which took the exit.
.... ..1.			Set to <u>1</u> by an I/O support function if the DCB is to be processed by that function.
.... ...1			

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Address</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
49	(31) . 1	DCBIFLG	Used by I/O supervisor in communicating error conditions and in determining corrective procedures.
		00..	Not in error procedure.
		01..	Error correction in process.
		11..	Permanent error condition.
		..10	Channel 9 printer carriage tape punch sensed.
		..01	Channel 12 printer carriage tape punch sensed.
		.... 00..	Always use I/O supervisor error routine.
		.... 11..	Never use I/O supervisor error routine.
		.... 01..	Never use I/O supervisor error routine.
		.... 10..	Never use I/O supervisor error routine.
		.... ..XX	(Reserved bits)
50	(32) . . 2	DCBMACR	Macro instruction reference. Major macro instructions and various options associated with them. Used by the open routine to determine access method. Used by the access method executors in conjunction with other parameters to determine which load modules are required.
<u>EXCP ACCESS METHOD</u>			
		Byte 1	<u>Code</u>
50	(32)	1...	Execute channel program (EXCP).
		.1..	Foundation extension is present with EXCP.
		..1.	Appendages are required with EXCP.
		...1	Common interface is present with EXCP.
		.... .1..	User's program maintains accurate block count.
		.... x.xx	(Reserved bits)
		Byte 2	
51	(33)	xxxx	(Reserved bits)
		.... 1...	Five word device interface is present with EXCP.
		.... .1..	Four word device interface is present with EXCP.
		.... ..1.	Three word device interface present with EXCP.
		.... ...1	One word device interface is present with EXCP.
		Byte 1	<u>BSAM - Input</u>
50	(32)	00..	Always zero for BSAM.
		..1.	R READ
		...x x..x	(Reserved bits)
		.... .1..	P POINT (which implies NOTE).
		.... ..1.	C CNTRL
		Byte 2	<u>BSAM - Output</u>
51	(33)	00..	Always zero for BSAM.
		..1.	W WRITE
		.... 1...	L Load mode BSAM (create BDAM data set).
		.... .1..	P POINT (which implies NOTE).
		.... ..1.	C CNTRL
		.... ...1	BSAM create BDAM processing of unblocked spanned records, with BFTEK=R specified: The user's program has provided a segment work area pool and stored the address of the segment work area control block in DCBEOBW (offset 76).
		....x	Reserved.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
DCBMACR (Cont'd.)			
50	(32)	Byte 1	<u>QSAM - Input</u>
		0... ..	Always zero for QSAM.
		.1..	G GET
		..0.	Always zero for QSAM.
		...1	M Move mode.
		.... 1...	L Locate mode.
		.... .1..	T Substitute mode.
.... ..1.	C CNTRL		
.... ...1	D Data mode.		
51	(33)	Byte 2	<u>QSAM - Output</u>
		0... ..	Always zero for QSAM.
		.1..	P PUT
		..0.	Always zero for QSAM.
		...1	M Move mode.
		.... 1...	L Locate mode.
		.... .1..	T Substitute mode.
.... ..1.	C CNTRL		
.... ...1	D Data mode.		
50	(32)	Byte 1	<u>BPAM - Input</u>
		00..	Always zero for BPAM.
		..1.	R READ
		.... .1..	P POINT (which implies NOTE).
.... x.xx	(Reserved bits)		
51	(33)	Byte 2	<u>BPAM - Output</u>
		00..	Always zero for BPAM.
		..1.	W WRITE
		.... .1..	P POINT (which implies NOTE).
.... x.xx	(Reserved bits)		
<u>FOUNDATION SEGMENT -- AFTER OPEN</u>			
40	(28) 2	DCBTIOT	Offset from the TIOT origin to the TIOELNGH field in the TIOT entry for the DD statement associated with this DCB.
42	(2A) . . 2	DCBMACRF	Contents and meaning are the same as those of the DCBMACR field in the foundation segment before OPEN.
44	(2C) 1	DCBIFLGS	Contents and meaning are the same as those of the DCBIFLG field in foundation segment before OPEN.
45	(2D) . 3	DCBDEBAD	Address of the associated DEB.
<p><u>Note:</u> The above fields are overlaid on the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.</p>			
48	(30) 1	DCBOFLGS	Contents and meaning are the same as those of the DCBOFLGS field in the foundation segment before OPEN.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE SEGMENTS</u>			
<u>EXCP ACCESS METHOD INTERFACE</u>			
49	(31) . 3		Reserved.
52	(34) 1	DCBOPTCD	Option Codes
		<u>Code</u>	
	xxxx x.xx		(Reserved bits)
	.... .1..		Z Magnetic tape devices: use reduced error recovery procedure. Direct access storage devices: Use search direct (SD).
53	(35) . 7		Reserved.
60	(3C) 2	DCBEOEA	End-of-extent appendage ID (Identification) (See note).
62	(3E) . . 2	DCBPCIA	Program-controlled-interruption appendage ID (Identification) (See note).
64	(40) 2	DCBSIOA	Start-I/O appendage ID (Identification) (See note).
66	(42) . . 2	DCBCENDA	Channel-end appendage ID (Identification) (See note).
68	(44) 2	DCBXENDA	Abnormal-end appendage ID (Identification) (See note).
70	(46) . . 2		Reserved. <u>Note:</u> The ID is that of an executable load module in the SVC library. The module is loaded by the Open routine. Its address is placed into the appropriate slot in an appendage vector table constructed by the Open routine. If the ID is blank, its slot in the appendage vector table will contain the address of a return-point in I/O supervisor.
<u>BSAM, BPAM INTERFACE</u>			
49	(31) . 3	DCBREAD, DCBWRITE	Address of READ or WRITE module.
52	(34) 1	DCBOPTCD	Option codes
		<u>Code</u>	
	1...		W Write-validity check (DASD).
	.1..		U Allow a data check caused by an invalid character (1403 printer with UCS feature).
	..1.		C Chained scheduling using the program controlled interruption.
	...1		H 1287/1288 Optical Reader: Hopper empty exit. Input tape files: Requests the testing for and bypassing of any embedded DOS checkpoint records encountered. (This code can only be specified in a JCL statement.)
	.... 1...		Q Translation to or from ASCII.
	.... .1..		Z Magnetic tape devices: use reduced error recovery procedure. Direct access storage devices: Use search direct (SD).
	.... ..1.		T BSAM only: User totaling.
	.... ....X		(Reserved bit)
53	(35) . 3	DCBCHECK	Address of the CHECK module.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BSAM, BPAM INTERFACE (Continued)</u>			
56	(38) 1	DCBIOBL	IOB length in double words.
57	(39) . 3	DCBSYNAD	Address of user's synchronous error routine to be entered when a permanent error occurs.
60	(3C) 1	DCBCIND1	Condition indicators. 1... Track overflow in use. .1.. Search direct. ..1. End of volume - used by EOB routines. ....1 End of file - used by TSO routines. xxxx End of volume - used by channel-end appendage routines. (Reserved bits)
61	(3D) . 1	DCBCIND2	Condition indicators: 1... Partitioned data set: STOW has been performed. .1.. Sequential data set: Update. ..1. Direct organization data set: Last I/O was a write record zero. Sequential data set: UPDATE EOF is indicated. PUT entered from CLOSE while in update mode (QSAM only). ...1 Permanent I/O error. 1... OPEN acquired buffer pool. .... .1.. Chained scheduling being supported. .... ..1. FEOV bit. .... ....0 Always set to 0 for BSAM/BPAM.
62	(3E) . . 2	DCBBLKSI	Maximum block size. Maximum value: 32,764. For fixed-length blocked record format, it must be a multiple of the length given in DCBLRECL. For variable-length records, this must include the 4 byte block length field.
64	(40) 1	DCBWCP0	Write channel program offset. Offset of write channel program from the start of the IOB.
65	(41) . 1	DCBWCP1	Length of write channel program.
66	(42) . . 1	DCBOFFSR	Offset of the read CCW from the BSAM/BPAM prefix of the IOB.
67	(43) . . . 1	DCBOFFSW	Offset of the write CCW from the BSAM/BPAM prefix of the IOB.
68	(44) 4	DCBIOBA	Normal scheduling: Address of BSAM/BPAM prefix of IOB. Chained scheduling: Address of ICB. 1419/1275: Address of the magnetic interrupt control block (MICB) currently being processed by the READ routine. TSO: The TSO terminal data set has been opened for input and is format U. These four (4) bytes simulate the low-order four bytes of IOBCSW field (IOB+12). Byte 1 and byte 2 contain status information. Byte 3 and byte 4 contain the residual count (DCBBLKSI minus the actual message length).

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BSAM, BPAM INTERFACE (Continued)</u>			
72	(48) 1	DCBNCP	Number of channel programs. Number of READ or WRITE requests which may be issued prior to a CHECK; the number of IOBs generated. Maximum number: 99.
73	(49) . 3	DCBEOBW	Address of the end-of-block module for read.
76	(4C) 4	DCBEOBW	Address of the end-of-block module for write. BSAM create BDAM processing of unblocked spanned records, with BFTEK=R specified: Address of the segment work area control block.
80	(50) 2	DCBDIRECT	Directory count. This count is one less than the number of bytes used in last directory block. May range from 0 to a maximum of 255. If the last directory block is unused, this count field is zero.
80	(50) 1	DCBUSASI .1.. .... ..xx x... x... .xxx	ASCII tapes: Flags DCBBLBP- The block prefix is a four byte field containing the block length in unpacked decimal (specified by BUFOFF=L). DCBQADF1, DCBQADF2, DCBQADF3 - These three bits are used to perform sequence checking with the multiple function (read, punch, and/or print) support for 3505/3525. (Reserved bits)
81	(51) . 1	DCBBUFOF	Block prefix length (0-99), specified by BUFOFF=n or BUFOFF=L
82	(52) . . 2	DCBLRECL	Logical record length. For fixed-length blocked record format, allows BSAM to read truncated records. For undefined records, contains blocksize which is not record length.
84	(54) 4	DCBCNTRL, DCBNOTE, DCBPOINT	Address of the CNTRL or of the NOTE/POINT module.
<u>QSAM INTERFACE</u>			
49	(31) . 3	DCBGET, DCBPUT	Address of GET module or PUT module.
52	(34) 1	DCBOPTCD	Option codes. <u>Code</u>
		1...	W Write-validity check (DASD).
		.1..	U Allow a data check for an invalid character (1403 with UCS).
		..1.	C Chained scheduling using the program controlled interruption.
		...1	O 1285/1287 Optical Reader: On-line correction.
		...1	H For input tape files: Requests the testing for and bypassing of any embedded DOS checkpoint records encountered. (This code can only be specified on a JCL statement.)
		.... 1...	Q Translation to or from ASCII.
		.... .1..	Z Magnetic tape devices: Use reduced error recovery procedure. Direct access devices: Use search direct (SD), not search previous, on rotational position sensing device (RPS).
		.... ..1.	T User totaling.
		.... ...x	(Reserved bit)

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>QSAM INTERFACE (Continued)</u>			
53	(35) . 3	DCBGERR,DCBPERR	Address of the synchronizing routine for GET or of the synchronizing routine for PUT.
56	(38) 1	DCBIOBL	IOB length in double words.
57	(39) . 3	DCBSYNAD	Address of the user's synchronous error routine to be entered when a permanent error occurs.
60	(3C) 1	DCBCIND1	Condition indicators. 1... Direct access: Track overflow in use. 2540 Card Punch: Data set was opened but no data was written. .1.. Search direct. ..1. End of volume - used by EOB routines. ...1 End of volume - used by channel-end appendage routines. .... ...1 Exchange buffering supported. xxx. (Reserved bits)
61	(3D) . 1	DCBCIND2	Condition indicators. 1... STOW has been performed. .1.. Last I/O was a write record zero. ..1. CLOSE in process. ...1 Permanent I/O error. 1... OPEN acquired buffer pool. .... .1.. Chained scheduling supported. .... ..1. FEOV bit. .... ...1 This is a QSAM DCB.
62	(3E) . . 2	DCBBLKSI	Maximum block size. Maximum value: 32,764. For fixed-length blocked record format, it must be a multiple of DCLRECL. For variable-length records this must include, 4 byte block length field provided by the access method.
64	(40) 1	DCBWCPO	Write channel program offset; offset of write channel program from the start of the IOB. When using BDAM-create with track overflow this field contains the number of remaining tracks in the current extent.
65	(41) . 1	DCBWCPL	Length of write channel program.
66	(42) . . 1	DCBOFFSR	Offset of the read CCW from the QSAM prefix of the IOB.
67	(43) . . . 1	DCBOFFSW	Offset of the write CCW from the QSAM prefix of the IOB.
68	(44) 4	DCBIOBA	Normal scheduling: Address of QSAM prefix of IOB. Chained scheduling: Address of IOB.
72	(48) 4	DCBEOBAD	Simple buffering: End of buffer address. Address of last byte of the current buffer.
72	(48) 4	DCBLCCW	Exchange buffering: Address of the last CCW in the list.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>QSAM INTERFACE (Continued)</u>			
76	(4C) 4	DCBRECAD	Locate mode logical record interface processing of spanned records (see note under DCBIOBAD, offset 28): 1... TRUNC macro has been issued. .1.. First GET after OPEN. 1111 Simple buffering and spanned record processing: RELSE macro has been issued. . 3 Address of the current or next logical record.
76	(4C) 4	DCBCCCW	Exchange buffering: Address of the current or next CCW.
80	(50) 1	DCBQSW	Flags. (When ASCII tapes are used, this field is named DCBUSASI.) .... ...1 TRUNC entry point entered. .1.. DCBBLEP - The block prefix is a four byte field containing the block length in unpacked decimal (specified by BUFOFF=L). ..xx x... DCBQADF1, DCBQADF2, DCBQADF3 - These three bits are used to perform sequence checking with the multiple function (read, punch, and/or print) support for 3505/3525. x... .xx. (Reserved bits)
81	(51) . 1	DCBBUFOF	Block prefix length (0-99), specified by BUFOFF=n or BUFOFF=L.
81	(51) . 1	DCBDIRCQ	Directory count. This count (0-255) is one less than the number of bytes used in the last directory block. If the last directory block is unused, this count field will be zero.
82	(52) . . 2	DCBLRECL	Format F records: Record length. Format U records: Block size. Format V records - Unspanned record format - GET, PUTX: Record length. PUT: Actual or maximum record length. Spanned record format - Locate mode - GET: Segment length. PUT: Actual or minimum segment length. Logical record interface: Before OPEN: Maximum logical record length. After GET: Record length. Before PUT: Actual or maximum record length.

DATA CONTROL BLOCK -- ISAM

This data control block (DCB) is used by the indexed sequential access-method (ISAM) routines and holds data pertinent to the use of a data set that is maintained by the ISAM routines. The common interface and the foundation sections serve the same purpose in all DCBs although the formats may vary slightly for different access method routines. Figure 6 illustrates the format of this DCB. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- ISAM

Device Interface

16 (10)	DCBKEYLE Key Length	17 (11)	DCBDEVT Device Type	18 (12)	DCBTRBAL Track Balance	19 (13)
---------	------------------------	---------	------------------------	---------	---------------------------	---------

Common Interface

20 (14)	DCBBUFNO Buffer Required	21 (15)	DCBBUFCB Address of the Buffer Pool
24 (18)	DCBBUFL Buffer Length	26 (1A)	DCBDSORG Data Set Organization
28 (1C)	Reserved		31 (1F)

Foundation Extension

32 (20)	DCBHIARC, DCBBFTEK, DCBBFALN	33 (21)	DCBEODAD Address of EODAD Routine
36 (24)	DCBRECFM Record Format	37 (25)	DCBEXLST Address of the Exit List
			39 (27)

Foundation

Before OPEN			
40 (28)	DCBDDNAM DD Statement Data Set Name		
48 (30)	DCBOFLGS Open Routine Flags	49 (31)	DCBIFLG I/O Supervisor Flags
		50 (32)	DCBMACR Macro Instruction Code
			51 (33)
After OPEN			
40 (28)	DCBTIOT Offset in TIOT Table to DD Entry	42 (2A)	DCBMACRF Macro Instruction Code
44 (2C)	DCBIFLGS I/O Supervisor Flags	45 (2D)	DCBDEBAD Address of the DEB
48 (30)	DCBOFLGS Open Routine Flags		

Access Method Interface - ISAM

	49 (31)	DCBGET, DCBPUT Address of GET or PUT Module	
52 (34)	DCBOPTCD Option Code	53 (35)	DCBMAC DCBMACRF Overflow
		54 (36)	DCBNTM Index Size
		55 (37)	DCBCYLOF No. of Overflow Tracks
56 (38)	DCBSYNAD Address of User's Synchronous Error Routine		
60 (3C)	DCBRKP Relative Key Position	62 (3E)	DCBBLKSI Block Size

Continued

Figure 6. Data Control Block - ISAM (Part 1 of 4)

DATA CONTROL BLOCK -- ISAM

Continued

64 (40)		DCBMSWA Address of Work Area	
68 (44) DCBSMSI Size of Area for Highest Level Index		70 (46) DCBSMSW Size of Work Area	
72 (48) DCBNCP No. of Channel Programs	73 (49) DCBMSHI Address of Area for Highest Level Index		
76 (4C) DCBSETL BISAM: Address of CHECK Module QISAM: Address of SETL Module			
80 (50) DCBEXCD1 Condition Flags	81 (51) DCBEXCD2 Condition Flags	82 (52) DCBLRECL Logical Record Length	
84 (54) DCBESETL Address of ESETL Routine			
88 (58) DCBLRAN Address of READ K or WRITE K or Read Exclusive Module			
92 (5C) DCBLWKN Address of WRITE KN Module			
96 (60) DCBREUSE Work Area for Register Contents			
100 (64) DCBPUTX Work Area for Register Contents			
104 (68) DCBREIX Address of Read Exclusive Module			
108 (6C) DCBFREED Address of Dynamic Buffering Module			
112 (70) DCBHIRT! Number of Index Entries	113 (71) DCBFTMI2 Direct-Access Address of Second-Level Master Index		
120 (78) DCBLEMI2 Direct-Access Address of Last Entry in Second-Level Master Index			
		125 (7D) DCBFTMI3 Direct-Access Address of Third-Level Master Index	
128 (80)			

Continued

Figure 6. Data Control Block - ISAM (Part 2 of 4)

DATA CONTROL BLOCK -- ISAM

Continued

132 (84)		DCBLEMI3 Direct-Access Address of Last Entry in Third-Level Master Index	
	137 (89) DCBNLEV No. of Index Levels	138 (8A) DCBFIRSH HHR of First Prime Data Record	
Continued	141 (8D) DCBHMASK 2301, not 2301	142 (8E) DCBLDT HH of Last Prime Data Track	
144 (90) DCBHRCM Highest R for Indexes	145 (91) DCBHRPD Highest R for Prime Data	146 (92) DCBHIROV Highest R for Overflow Variable Length Records: Unused	147 (93) DCBHIRSH Last R of Shared Track
148 (94) DCBTDC Tag Deletion Count		150 (96) DCBNCRHI Bytes Needed for Highest-Level Index	
152 (98) DCBRORG3 Count of Access to Overflow Records Other than the First			
156 (9C) DCBNREC No. of Logical Records in Prime Data Area			
160 (A0) DCBST Status Indicators	161 (A1) DCBFTCI Direct-Access Address of First Track of Cylinder Index		
168 (A8) DCBHIOV Highest R for Independent Overflow	169 (A9) DCBFMTI1 Direct-Access Address of First Track of First-Level Master Index		
176 (B0) DCBNTHI Size of Highest Index	177 (B1) DCBFTHI Direct-Access Address of First Track of Highest-Level Index		
184 (B8) DCBLPDA Direct-Access Address of Last Prime Data Record in Prime Data Area			

Continued

Figure 6. Data Control Block - ISAM (Part 3 of 4)

DATA CONTROL BLOCK -- ISAM

Continued

192 (C0)		DCBLETI Direct-Access Address of Last Active Normal Entry of Track Index on Last Cylinder	
197 (C5)	DCBOVDEV Device Type for Independent Overflow	198 (C6)	DCBNBOV No. of Bytes Left on Overflow Track
200 (C8)		DCBLECI Direct-Access Address of Last Active Entry in Cylinder Index	
205 (CD)	Reserved	206 (CE)	DCBRORG2 No. of Tracks Left in Overflow Area
208 (D0)		DCBLEM11 Direct-Access Address of Last Active Entry in First-Level Master Index	
213 (D5)	Reserved	214 (D6)	DCBNOREC No. of Logical Records in Overflow Area
216 (D8)		DCBLIOV Direct-Access Address of Last Record in Overflow Area	
224 (E0)	DCBRORG1 No. of Full Cylinder Overflow Areas	226 (E2)	Reserved
228 (E4)		DCBWKPT1 Pointer to Work Area or Channel Program	
232 (E8)		DCBWKPT2 Pointer to Work Area or Channel Program	
236 (EC)		DCBWKPT3 Pointer to Work Area or Channel Program	
240 (F0)		DCBWKPT4 Pointer to Work Area or Channel Program	
244 (F4)		DCBWKPT5 Pointer to Work Area or Channel Program	
248 (F8)		DCBWKPT6 Pointer to Work Area or Channel Program	
			251 (FB)

Figure 6. Data Control Block - ISAM (Part 4 of 4)

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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DEVICE INTERFACE

16	(10) 1	DCBKEYLE		Key length.
17	(11) . 1	DCBDEVT		Device type.
		0000 0001		2311 Disk Drive.
		0000 0010		2301 Parallel Drum.
		0000 0011		2303 Serial Drum.
		0000 0100		2302 Disk Storage.
		0000 0101		2321 Data Cell Drive.
		0000 1000		2314 Disk Storage Facility.
		0000 0110		2305-1 Disk Storage Facility - Model 1.
		0000 0111		2305-2 Disk Storage Facility - Model 2.
		0000 1001		3330 Disk Storage.
18	(12) . . 2	DCBTRBAL		Track balance. Number of bytes remaining on current track.

COMMON INTERFACE

20	(14) 1	DCBBUFNO		Number of buffers required for this data set: 0-255.
21	(15) . 3	DCBBUFCB		Address of buffer pool control block.
24	(18) 2	DCBBUFL		Length of buffer: 0 - 32,767.
26	(1A)	DCBDSORG		Before OPEN: Data set organization to be used. After OPEN: Data set organization in use.

Byte 1

Code

26	(1A)	1...		IS Indexed sequential organization.
		.1..		PS Physical sequential organization.
		..1.		DA Direct organization.
		...x xx..		(Reserved bits)
		.... ..1.		PO Partitioned organization.
		.... ...1		U Unmovable - the data contains location dependent information.

Byte 2

27	(1B)	1...		GS Graphics Organization.
		.xxx xxxx		(Reserved bits)

28	(1C) 4			Reserved.
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DATA CONTROL BLOCK -- ISAM

Offset Bytes and Field Hex.
Alignment Name Dig. Field Description, Contents, Meaning

FOUNDATION EXTENSION

32	(20)	1	DCBHIARC, DCBBFTEK, DCBBFALN	
				<u>Code</u>
			x... .x..	Buffer pool location, coded in the DCB macro instruction:
			0... .0..	Before OPEN -
				none No choice made in the DCB macro instruction.
				After OPEN -
				If no choice is made in the DD statement either (as shown by the JFCBHIAR field), the OPEN routine resets these two bits from 00 to 01.
			0... .1..	0 Hierarchy 0 main storage.
				(See also: After OPEN, above.)
			1... .0..	1 Hierarchy 1 main storage.
			.xxx x..	(Reserved bits)
			.... ..xx	Buffer alignment:
			.... ..10	D Doubleword boundary.
			.... ..01	F Fullword not a doubleword boundary, coded in the DCB macro instruction.
			.... ..11	F Fullword not a doubleword boundary, coded in the DD statement.
33	(21)	. 3	DCBEODAD	Address of a user-provided routine to handle end-of-data conditions.
36	(24)	1	DCBRECFM	Record format.
				<u>Code</u>
			10..	F Fixed length records.
			01..	V Variable length records.
			11..	U Undefined length records.
			..1.	T Track overflow.
			...1	B Blocked records.
				may not occur with undefined (U).
			.... 1...	S Standard records. No truncated blocks or unfilled tracks are embedded in the data set.
			.... .10.	A ASA control character.
			.... .01.	M Machine control character.
			.... .00.	No control character.
			.... ...1	Key length (KEYLEN) was specified in the DCB macro instruction; this bit is inspected by the open routine to prevent overriding a specification of KEYLEN=0 by a non-zero specification in the JFCB or data set label.
37	(25)	. 3	DCBEXLST	Exit List. Address of a user-provided list.

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Diq. Field Description, Contents, Meaning</u>
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FOUNDATION SEGMENT

FOUNDATION SEGMENT -- BEFORE OPEN

40	(28)	8	DCBDDNAM	This 8 byte name must be the same as that appearing in the name field of the data definition statement which defines the data set associated with this DCB. It is used by the OPEN routine to locate the JFCB.
48	(30)	1	DCBOFLGS	Flags used by the OPEN routine.
			1... ..	Last I/O operation was a WRITE.
			0... ..	Last I/O operation was a READ or POINT. For direct access devices, this means that the track balance field is invalid.
			.1.. ..	Last I/O operation was in READ backward mode.
			..1.	Set to <u>1</u> by EOVRoutine when it calls the CLOSE routine for concatenation of data sets with unlike attributes.
			...1	An OPEN has been successfully completed.
			.... 1...	Set to <u>1</u> by a problem program to indicate a concatenation of unlike attributes.
			.... .1..	Tape mark has been read.
			.... ..0.	Set to <u>0</u> by an I/O support function when that function takes a user exit. It is set to <u>0</u> to inhibit other I/O support functions from processing this particular DCB.
			.... ..1.	Set to <u>1</u> on return from the user exit to the I/O support function which took the exit.
			.... ...1	Set to <u>1</u> by an I/O support function if the DCB is to be processed by that function.
49	(31)	. 1	DCBIFLG	Used by I/O supervisor in communicating error conditions and in determining corrective procedures.
			00..	Not in error procedure.
			01..	Error correction in process.
			11..	Permanent error condition.
			..10	Channel 9 printer carriage tape punch sensed.
			..01	Channel 12 printer carriage tape punch sensed.
			.... 00..	Always use I/O supervisor error routine.
			.... 11..	Never use I/O supervisor error routine.
			.... 01..	Never use I/O supervisor error routine.
			.... 10..	Never use I/O supervisor error routine.
			.... ..xx	(Reserved bits)

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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FOUNDATION SEGMENT -- BEFORE OPEN (Continued)

50	(32) . . 2	DCBMACR		Macro instruction reference: specifies the major macro instructions and various options associated with them. Used by the OPEN routine to determine access method. Used by the access method executors in conjunction with other parameters to determine which load modules are required.
----	------------	---------	--	---

Code

50	(32)	Byte 1 00.0 0... .1. .... .... .1.. .... ..1. .... ...x		<u>BISAM</u> Always zero for BISAM. R READ S Dynamic buffering. C CHECK (Reserved bit)
----	------	--	--	---

51	(33)	Byte 2 00.0 0000 .1.		<u>BISAM</u> Always zero for BISAM. W WRITE
----	------	---------------------------------	--	---

50	(32)	Byte 1 0.0. .0.. .1. .... ...1 1... .... ..xx		<u>QISAM</u> Always zero for QISAM. G GET M Move mode of GET. L Locate mode for GET. (Reserved bits)
----	------	--	--	---

51	(33)	Byte 2 1... .... .1. .... ..0. .... ...1 1... .... .1.. .... ..1. .... ...1		<u>QISAM</u> S SETL P PUT or PUTX. Always zero for QISAM. M Move mode of PUT. L Locate mode of PUT. U Update in place (PUTX). K SETL by key. I SETL by ID.
----	------	---	--	--

FOUNDATION SEGMENT -- AFTER OPEN

40	(28) 2	DCBTIOT		A two byte field containing the offset from the TIOT origin to the TIOELNGH field in the TIOT entry for the DD statement associated with this DCB.
----	--------	---------	--	--

42	(2A) . . 2	DCBMACRF		Contents and meaning are the same as those of the DCBMACR field in the foundation before OPEN.
----	------------	----------	--	--

44	(2C) 1	DCBIFLGS		Contents and meanings are the same as those of the DCBIFLG field in the foundation before OPEN.
----	--------	----------	--	---

45	(2D) . 3	DCBDEBAD		Address of the associated DEB.
----	----------	----------	--	--------------------------------

Note: The above fields overlay the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.

48	(30) 1	DCBOFLGS		Contents and meanings are the same as those of the DCBOFLGS field in the foundation before OPEN.
----	--------	----------	--	--

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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ACCESS METHOD INTERFACE -- ISAM

49	(31) . 3	DCBGET, DCBPUT		Address of GET module or of PUT module.
52	(34) 1	DCBOPTCD		Option codes: <u>Code</u> 1... .. W Write Validity check. .1.. U Full-track index write. ..1. M Master Indexes. ...1 I Independent overflow area. 1... Y Cylinder overflow area. .... ..1. L Delete option. .... ...1 R Reorganization criteria. .... .x.. Reserved.
53	(35) . 1	DCBMAC		Extension of the DCBMACRF field for ISAM. <u>Code</u> xxxx ...x (Reserved bits) 1... U Update for read. .... .1.. U Update type of write. .... ..1. A Add type of write.
54	(36) . . 1	DCBNTM		Number of tracks that determine the development of a master index. Maximum permissible value: 99.
55	(37) . . . 1	DCBCYLOF		The number of tracks to be reserved on each prime data cylinder for records that overflow from other tracks on that cylinder. Refer to the section on allocating space for an ISAM data set in <u>Data Management Services manual, GC26-3746</u> , to determine how to calculate the maximum number.
56	(38) 4	DCBSYNAD		Address of user's synchronous error routine to be entered when uncorrectable errors are detected in processing data records.
60	(3C) 2	DCBRKP		Relative position of the first byte of the key within each logical record. Maximum permissible value: logical record length minus key length.
62	(3E) . . 2	DCBBLKSI		Block size.
64	(40) 4	DCBMSWA		Address of a main storage work area for use by the control program when new records are being added to an existing data set.
68	(44) 2	DCBSMSI		Number of bytes in area reserved to hold the highest level index.
70	(46) . . 2	DCBSMSW		Number of bytes in work area used by control program when new records are being added to the data set.
72	(48) 1	DCBNCP		Number of copies of the READ-WRITE (type K) channel programs that are to be established for this data control block (99 maximum).
73	(49) . 3	DCBMSHI		Address of a main storage area to hold the highest level index.
76	(4C) 4	DCBSETL		Address of SETL module for QISAM. Address of CHECK module for BISAM.

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE -- ISAM (Continued)</u>			
80	(50) 1	DCBEXCD1	First byte in which exceptional conditions detected in processing data records are reported to the user.
		1...	Lower key limit not found.
		.1..	Invalid device address for lower limit.
		..1.	Space not found.
		...1	Invalid request.
		.... 1...	Uncorrectable input error.
		.... .1..	Uncorrectable output error.
		.... ..1.	Block could not be reached (input).
		.... ...1	Block could not be reached (update).
81	(51) . 1	DCBEXCD2	Second byte in which exceptional conditions detected in processing data records are reported to the user.
		1...	Sequence check.
		.1..	Duplicate record.
		..1.	DCB closed when error was detected.
		...1	Overflow record.
		.... 1...	PUT: length field of record larger than length indicated in DCBLRECL.
		.... .xxx	(Reserved bits)
82	(52) . . 2	DCBLRECL	Logical record length for fixed-length record formats. Variable-length record formats: Maximum logical record length or an actual logical record length changed dynamically by the user when creating the data set.
84	(54) 4	DCBESETL	Address of the ESETL routine in the GET module.
88	(58) 4	DCBLRAN	Address of READ-WRITE K module or exclusive module.
92	(5C) 4	DCBLWKN	Address of WRITE KN module.
96	(60) 4	DCBREUSE	Work area for temporary storage of register contents.
100	(64) 4	DCBPUTX	Work area for temporary storage of register contents.
104	(68) 4	DCBRELY	Address of read exclusive module.
108	(6C) 4	DCBFREED	Address of dynamic buffering module.
112	(70) 1	DCBHIRTI	Number of index entries that fit on a prime data track.
113	(71) . 7	DCBFTMI2	Direct access device address of the first track of the second level master index (in the form MBBCCHH).
120	(78) 5	DCBLEMI2	Direct access device address of the last active entry in the second level master index (in the form CCHHR).
125	(7D) . 7	DCBFTMI3	Direct access device address of the first track of the third level master index (in the form MBBCCHH).
132	(84) 5	DCBLIMI3	Direct access device address of the last active entry in the third level master index (in the form CCHHR).
137	(89) . 1	DCBNLEV	Number of levels of index.

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE -- ISAM (Continued)</u>				
138	(8A) . . 3	DCBFIRSH		HHR of the first data record on each cylinder. Variable length record processing: The R portion of this field is always X'01'.
141	(8D) . 1	DCBHMASK	07 FF	Device is a 2301 drum. Device is other than a 2301 drum.
142	(8E) . . 2	DCBLDT		HH is the last prime data track on each cylinder.
144	(90) 1	DCBHIRCM		Highest possible R for tracks of the cylinder and master indices.
145	(91) . 1	DCBHIRPD		Highest R on any prime track in the data set. For variable-length records this represents the greatest number of physical records on any prime track in the data set.
146	(92) . . 1	DCBHIROV		Fixed-length record format: Highest possible R for overflow data tracks. Variable-length record format: unused.
147	(93) . . . 1	DCBHIRSH		Fixed-length record format: R of the last data record on a shared track, if applicable. Variable-length record format: unused.
148	(94) 2	DCBTDC		User supplied number of records tagged for deletion. This field is merged to and from the format 2 DSCB for BISAM, QISAM scan mode, and resume load.
150	(96) . . 2	DCBNCRHI		Number of storage locations needed to hold the highest level index.
152	(98) 4	DCBRORG3		For each use of the data set, the number of READ or WRITE accesses to an overflow record which is not the first in a chain of such records.
156	(9C) 4	DCBNREC		Number of logical records in the prime data area.
160	(A0) 1	DCBST		Status indicators. 1... Single schedule mode. .1.. Key sequence checking is to be performed. ..1. Loading has completed. Set to 1 by the close routine and to 0 by the first execution of the put routine. ...1 The extension of the data set will begin on a new cylinder. x... (Reserved bit) .... .1.. First macro instruction not yet received. .... ..1. Last block full. .... ...1 Last track full.
161	(A1) . 7	DCBFTCI		Direct access device address of the first track of the cylinder index (in the form MBBCCHH).
168	(A8) 1	DCBHIIOV		Fixed-length record format: Highest possible R for independent overflow data tracks. Variable-length record format: Unused.
169	(A9) . 7	DCBFTMI1		Direct access device address of the first track of the first level master index (in the form MBBCCHH).

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>Access Method Interface -- ISAM (Continued)</u>				
176	(B0) 1	DCBNTHI		Number of tracks of high-level index.
177	(B1) . 7	DCBFTHI		Direct access device address of the first track of the highest level index (in the form MBBCCHH).
184	(B8) 8	DCBLPDA		Direct access device address of the last prime data record in the prime data area (in the form MBBCCHHR).
192	(C0) 5	DCBLETI		Direct access device address of the last active normal entry of the track index on the last active cylinder (in the form CCHHR).
197	(C5) . 1	DCBOVDEV		Device type for independent overflow.
		0000 0001		2311 Disk Drive.
		0000 0010		2301 Parallel Drum.
		0000 0011		2303 Serial Drum.
		0000 0100		2302 Disk Storage.
		0000 0101		2321 Data Cell Drive.
		0000 1000		2314 Disk Storage Facility.
198	(C6) . . 2	DCBNBOV		Fixed-length record format: Reserved for future use. Variable-length record format: If the independent overflow option is selected, contains, in binary, the number of bytes left on the current track of the independent overflow area.
200	(C8) 5	DCBLECI		Direct access device address of the last active entry in the cylinder index (in the form CCHHR).
205	(CD) . 1			Reserved.
206	(CE) . . 2	DCBRORG2		Number of tracks (partially or wholly) remaining in the independent overflow area.
208	(D0) 5	DCBLEMI1		Direct access device address of the last active entry in the first level master index (in the form CCHHR).
213	(D5) . 1			Reserved.
214	(D6) . . 2	DCBNOREC		Number of logical records in an overflow area.
216	(D8) 8	DCBLIOV		Direct access device address of the last record written in the independent overflow area (MBBCCHHR).
224	(E0) 2	DCBRORG1		Number of cylinder overflow areas that are full.
226	(E2) . . 2			Reserved.
228	(E4) 4	DCBWKPT1		A pointer to a work area or to a constructed channel program for which space is obtained by GETMAIN macro instructions issued by open executors.
232	(E8) 4	DCBWKPT2		Additional pointer as in DCBWKPT1.
236	(EC) 4	DCBWKPT3		Additional pointer as in DCBWKPT1.
240	(F0) 4	DCBWKPT4		Additional pointer as in DCBWKPT1.
244	(F4) 4	DCBWKPT5		Additional pointer as in DCBWKPT1.
248	(F8) 4	DCBWKPT6		Additional pointer as in DCBWKPT1.

DATA CONTROL BLOCK -- BDAM

The data control block for BDAM is given below. The common interface and foundation sections are the same for all DCBs. The direct access storage device and BDAM interface sections complete this format of the DCB.

Figure 7 illustrates the format of the data control block used in BDAM. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- BDAM

Device Interface

16 (10) DCBKEYLE Key Length	17 (11) DCBREL No. of Tracks or Blocks	19 (13)
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Common Interface

20 (14) DCBBUFNO No. of Buffers Required	21 (15) DCBBUFCB Address of Buffer Pool Control Block	
24 (18) DCBBUFL Buffer Length	26 (1A) DCBDSORG Data Set Organization	
28 (1C) DCBIOBAD First IOB Address		31 (1F)

Foundation Extension

32 (20) DCBHIARC, DCBBTFEK, DCBFALN	33 (21) Reserved	
36 (24) DCBRECFM Record Format	37 (25) DCBEXLST Exit List Address	39 (27)

Foundation

Before OPEN		
40 (28) DCBDDNAM DD Statement Name		
48 (30) DCBOFLGS Open Flags	49 (31) DCBIFLG IOS Flags	50 (32) DCBMACR Type of I/O Macro Instruction and Options
		51 (33)
After OPEN		
40 (28) DCBTIOT Offset to DD Entry in TIOT	42 (2A) DCBMACRF Type of I/O Macro Instruction and Options	
44 (2C) DCBIFLGS IOS Flags	45 (2D) DCBDEBAD Address of DEB	
48 (30) DCBOFLGS Open Flags		

Figure 7. Data Control Block - BDAM (Part 1 of 2)

DATA CONTROL BLOCK -- BDAM

BDAM Interface	
	47 (31) DCBREAD, DCBWRITE Address of Read or Write Module
52 (34) DCBOPTCD Option Codes	53 (35) DCBCHECK Address of Check Module
56 (38)	DCBSYNAD Address of SYNAD Routine
60 (3C) Reserved	62 (3E) DCBBLKSI Maximum Block Size
64 (40)	DCBIOBSQ Address of First IOB on Unscheduled Queue
68 (44)	DCBSQND Address of Last IOB on Unscheduled Queue
72 (48)	DCBIOBUQ Address of First IOB on Unposted Queue
76 (4C)	DCBUQND Address of Last IOB on Unposted Queue
80 (50) Reserved	81 (51) DCBLIMCT No. of Tracks/No. of Relative Blocks to be Searched
84 (54) DCBXCNT	85 (55) DCBXARG Address of Read Exclusive List
88 (58) DCBMVXNO	89(59) DCBDRDX Address of Read Exclusive Module
92 (5C)	DCBDFOR Address of Format Module
96 (60)	DCBDFBK Address of Feedback Module
100 (64)	DCBDYNB Address of Dynamic Buffer Module or of Segment Work Area

Figure 7. Data Control Block - BDAM (Part 2 of 2)

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEVICE INTERFACE</u>			
16	(10) 1	DCBKEYLE	Key length.
17	(11) . 3	DCBREL	Number of relative tracks or blocks in this data set.
<u>COMMON INTERFACE</u>			
20	(14) 1	DCBBUFNO	Number of buffers required for this data set. May range from 0 to 255. If unblocked spanned records are used, the number of segment work areas required for this data set.
21	(15) . 3	DCBBUFCE	Address of buffer pool control block or of dynamic buffer pool control block.
24	(18) 2	DCBBUFL	Length of buffer. May range from 0 to 32,767.
26	(1A) . . 2	DCBDSORG	Data set organization being used.
26	(1A)	Byte 1 xx.x xxx. ..1. .... .... ..1	<u>Code</u> (Reserved bits) DA Direct organization. U Unmovable - the data contains location dependent information.
27	(1B)	Byte 2	Reserved.
28	(1C) 4	DCBIOBAD	Address of the standard fields of the first IOB in the pool of IOBS.
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBHIARC, DCBBFTEK, DCBBFALN	
		x... .x..	<u>Code</u> Buffer pool location, coded in the DCB macro instruction: Before OPEN -
		0... .0..	none No choice made in the DCB macro instruction. After OPEN -
		0... .1..	0 Hierarchy 0 main storage. (See also: After OPEN, above.)
		1... .0..	1 Hierarchy 1 main storage.
		..x.	Buffering technique.
		..1.	R Unblocked spanned records: Software track overflow. OPEN forms a segment work area pool. (However, see bit 51.7). The number of segment work areas is determined by DCBBUFNO (offset 20). OPEN stores the address of the segment work area control block in DCBDYNB (offset 100) if dynamic buffering is not used, or in the dynamic buffer pool control block (see DCBBUFCE, offset 21) if dynamic buffering is used. WRITE uses a segment work area to write a record as one or more segments. READ uses a segment work area to read a record that was written as one or more segments.

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION (Continued)</u>			
32	(20)	1	DCBHIARC, DCBBFTEK, DCBBFALN (continued)
		.... ..XX	Buffer alignment:
		.... ..10	D Doubleword boundary.
		.... ..01	F Fullword not a doubleword boundary, coded in the DCB macro instruction.
		.... ..11	F Fullword not a doubleword boundary, coded in the DD statement.
		.x.x x...	(Reserved bits)
33	(21)	. 3	Reserved.
36	(24)	1	DCBRECFM Record format.
			<u>Code</u>
		10..	F Fixed record length.
		01..	V Variable record length.
		11..	U Undefined record length.
		..1.	T Track overflow.
		...1	B Blocked (allowed only with V).
		.... 1...	S Spanned (allowed only with V).
		.... .00.	Always zeros.
		.... ....1	Key length (KEYLEN) was specified in the DCB macro instruction. This bit is inspected by the OPEN routine to prevent overriding a specification of KEYLEN=0 by a nonzero specification in the JFCB or data set label.
37	(25)	. 3	DCBEXLST Exit list. Address of a user-provided exit list.

FOUNDATION SEGMENT

FOUNDATION SEGMENT -- BEFORE OPEN

40	(28)	8	DCBDDNAM This name must be the same as that appearing in the name field of the data definition statement which defines the data set associated with this DCB.
48	(30)	1	DCBOFLGS Flags used by the OPEN routine.
		1...	The data set is being opened for INPUT or OUTPUT.
		.x.. .x..	(Reserved bits)
		..0. 0....	Always set to <u>0</u> .
		...1	An OPEN has been successfully completed.
		.... ..0.	Set to <u>0</u> by an I/O support function when that function takes a user exit. It is set to <u>0</u> to inhibit other I/O support functions from processing this particular DCB.
		.... ..1.	Set to <u>1</u> on return from user exit to the I/O support function which took the exit.
		.... ....1	Set to <u>1</u> by an I/O support function if the DCB is to be processed by that function.

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
49 (31)	. 1	DCBIFLG	Used by I/O supervisor in communicating error conditions and in determining corrective procedures.
		00..	Not in error procedure.
		01..	Error correction in process.
		11..	Permanent error condition.
		..00	Always zeros.
		.... 00..	Always use I/O supervisor error routine.
		.... 11..	Never use I/O supervisor error routine.
		.... 10..	Never use I/O supervisor error routine.
		.... 01..	Never use I/O supervisor error routine.
		.... ..xx	(Reserved bits)
50 (32)	. . 2	DCBMACR	Macro instruction reference. Major macro instructions and various options associated with them that will be used.
		Byte 1	<u>Code</u>
50 (32)		00..	Always zero for BDAM.
		..1.	R READ
		...1	K Key segment with READ.
		.... 1...	I ID argument with READ.
		.... .1..	S System provides area for READ (dynamic buffering).
		.... ..1.	X Read exclusive.
		.... ...1	C CHECK macro instruction.
		Byte 2	<u>Code</u>
51 (33)		00..	Always zero for BDAM.
		..1.	W WRITE
		...1	K Key segment with WRITE.
		.... 1...	I ID argument with WRITE.
		.... .x..	Reserved.
		.... ..1.	A Add type of WRITE.
		.... ...1	Unblocked spanned records, with BFTEK=R specified and no dynamic buffering: The user's program has provided a segment work area pool and stored the address of the segment work area control block in DCBDYNB (offset 100).
<u>FUNDATION SEGMENT -- AFTER OPEN</u>			
40 (28)	2	DCBTIOT	Offset from the TIOT origin to the TIOELNGH field in the TIOT entry for the DD statement associated with this DCB.
42 (2A)	. . 2	DCBMACRF	Contents and meaning are the same as DCBMACR in the foundation before OPEN.
44 (2C)	1	DCBIFLGS	Contents and meaning are the same as DCBIFLG in the foundation before OPEN.
45 (2D)	. 3	DCBDEBAD	Address of the associated DEB. Note: The above fields overlay the DCBDDNM field during OPEN and are restored to their original form at CLOSE.
48 (30)	1	DCBOFLGS	Contents and meaning are the same as DCBOFLGS in the foundation before OPEN.

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE -- BDAM</u>			
49	(31) . 3	DCBREAD, DCBWRITE	Address of the READ/WRITE module.
52	(34) 1	DCBOPTCD	Option Codes: <u>Code</u> 1... .. Write validity check. .1.. .. Track overflow. ..1. .. E Extended search. ...1 .. F Feedback. 1... A Actual addressing. .... .1.. Dynamic buffering. .... ..1. Read exclusive. .... ...1 R Relative block addressing.
53	(35) . 3	DCBCHECK	Address of the CHECK module, IGG019LI.
56	(38) 4	DCBSYNAD	Address of SYNAD (synchronous error) routine.
60	(3C) 2		Reserved.
62	(3E) . . 2	DCBBLKSI	Maximum block size.
64	(40) 4	DCBIOBSQ	Address of first IOB on unscheduled queue for either; A WRITE-add request when another WRITE-add is in progress, or a READ-exclusive request when the READ-exclusive list is full.
68	(44) 4	DCBSQND	Address of last IOB on unscheduled queue.
72	(48) 4	DCBIOBUQ	Address of the first IOB on the unposted queue. This queue is for IOBs requesting a record already under READ exclusive control.
76	(4C) 4	DCBUQND	Address of the last job on the unposted queue that is maintained by the READ exclusive module.
80	(50) 1		Reserved.
81	(51) . 3	DCBLIMCT	Number of tracks or number of relative blocks to be searched (extended search option).
84	(54) 1	DCBXCNT	Number of entries in the READ exclusive list.
85	(55) . 3	DCBXARG	Address of the READ exclusive list.
88	(58) 1	DCBMVXNO	The total number of extents in a multivolume data set.
89	(59) . 3	DCBDRDX	Address of the READ exclusive module.
92	(5C) 4	DCBDFOR	Address of a FORMAT module.
96	(60) 4	DCBDFBK	Address of a FEEDBACK module.
100	(64) 4	DCBDYNB	Dynamic buffering: Address of the dynamic buffer module. Unblocked spanned records with BFTEK=R specified and no dynamic buffering: Address of the segment work area control block.

DATA CONTROL BLOCK -- QTAM

The format of a data control block (DCB) in QTAM is determined by the character of the data set and is shown by variations in the block segments. Figure 8 shows the format of the block by segments; descriptions of the fields follow the illustration.

QTAM Data Sets

QTAM message processing programs and QTAM message control programs use a data control block (DCB) to describe their respective data sets:

- Processing Program Message Queues.
- Direct-Access Storage Device (DASD) Message Queues.
- Line Groups.
- Checkpoint Data Set.

The checkpoint DCB is identical in format to that used for the DASD message queue; it is distinguished by the entry TPCHKPNT in the DCBDDNAM field in the foundation segment before open.

QTAM DCB Segments

The three segments of a DCB, and their uses in QTAM, shown and described here, are:

Prefix Segment --

- Line Group Interface.
- Processing Program Message Queue Interface.
- DASD Message Queue Interface, Checkpoint Data Set Interface.

Foundation Segment --

- Before OPEN.
- After OPEN.

Extension Segment --

- Line Group Extension (Polling List Origin).
- Processing Program Message Queue Extension.

DATA CONTROL BLOCK -- QTAM

WTTA Interface

16 (10) DCBBQFLG WTTA Flags	17 (11) DCBWTEOM EOM Character	18 (12) DCBWTEOT EOT Character	19 (13) DCBWTPAD No. of Padding Characters
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Data Set Interface

Line Group			
20 (14) DCBBUFRQ Buffers Requested	21 (15) DCBCLPS Address of the LPS Routine		
24 (18) DCBINTVL Intentional Interval	25 (19) DCBACLOC Offset	26 (1A) DCBDSORG Data Set Organization	
28 (1C) DCBDEVTP Device Type	29 (1D) DCBIOBAD Address of First IOB		
32 (20) DCBCPRI Priority	33 (21) DCBLCBAD Base for Addressing LCBs		
36 (24) DCBEIOBX Size of the LCB	37 (25) DCBEXLST Address of the Exit List		38 (27)
Processing Program Message Queue			
20 (14) DCBBUFRQ Buffers to be Filled	21 (15) DCBTRMAD Address of the Terminal Name		
24 (18) DCBSOWA Size of the Work Area		26 (1A) DCBDSORG Data Set Organization	
28 (1C) DCBSEGAD Address of Current Segment			
32 (20) DCBEODAD Address of the EODAD Routine			
36 (24) DCBRECFM Record Format	37 (25) DCBEXLST Address of the Exit List		39 (27)
DASD Message Queue, Checkpoint			
20 (14) DCBBUFNO Reserved	21 (15) DCBBUFCB Address of Terminal Table		
24 (18) DCBBUFL Length of the Data		26 (1A) DCBDSORG Data Set Organization	
28 (1C) DCBIOBAD Address of the IOB			

Figure 8. Data Control Block - QTAM (Part 1 of 2)

DATA CONTROL BLOCK -- QTAM

Foundation

Before OPEN

40 (28)		
DCBDDNAM DD Statement Data Set Name		
48 (30)	49 (31)	50 (32)
DCBOFLGS Open Routine Flags	DCBIFLGS I/O Supervisor Flags	DCBMACR Macro Instructions
		51 (33)

After OPEN

40 (28)		42 (2A)
DCBTIOT Offset in TIOT Table to DD Entry		DCBMACRF Macro Instruction
44 (2C)	45 (2D)	
DCBIFLGS I/O Supervisor Flags	DCDBEBAD Address of the DEB	
48 (30)	49 (31)	
DCBOFLGS Open Routine Flags	DCBREAD, DCBWRITE, DCBGET, DCBPUT Address of the Access Modules	
		51 (33)

Extension

Line Group

52 (34)	
DCBKSTAT Error Threshold	
56 (38)	
DCBCPOLL Polling List Origin	
59 (3B)	
DCBCPOLL DCBCPOLL DCBCPOLL	

Processing Program Message Queue

52 (34)	
DCBRECRD Not Used	
56 (38)	
DCBSYNAD Address of the SYNAD Routine	
60 (3C)	
DCBEOBLK Not Used	
63 (3F)	

Figure 8. Data Control Block - QTAM (Part 2 of 2)

DATA CONTROL BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>WTTA INTERFACE</u>			
16	(10) 1	DCBBQFLG	WTTA flag byte.
		x... .xxx	(Reserved bits)
		.1..	WRU feature is to be used.
		..1.	IAM feature is to be used.
		...1	WRU feature to be used in the send header subgroup.
		.... 1...	WRU feature is to be used in the end send subgroup.
17	(11) . 1	DCBWTEOM	The EOM character.
18	(12) . . 1	DCBWTEOT	The EOT character.
19	(13) . . . 1	DCBWTPAD	Number of padding characters required for motor-on delay.
<u>LINE GROUP INTERFACE</u>			
20	(14) 1	DCBBUFRQ	Number of buffers requested for a read or write operation.
21	(15) . 3	DCBCLPS	Address of the line procedure specification routine.
24	(18) 1	DCBINTVL	Number of seconds of intentional delay between passes through a polling list for nonswitched lines.
25	(19) . 1		Reserved.
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(1A)	Byte 1 xx.. xxxx ..01	<u>Code</u> (Reserved bits) CX Line group.
27	(1B)	Byte 2	Reserved.
28	(1C) 1	DCBDEVTP	Device type pointer.
29	(1D) . 3	DCBIOBAD	Address of first IOB.
32	(20) 1	DCBCPRI	Communication priority. Relative priority to be given to sending and receiving operations.
		xxxx x...	<u>Code</u> (Reserved bits)
		.... .1..	R Receiving has priority.
		.... ..1.	E Receiving and sending have equal priority.
		.... ...1	S Sending has priority.
33	(21) . 3	DCBLCBAD	Base for addressing LCBs. (Base = Address of first LCB minus length of one LCB).
36	(24) 1	DCBEIOBX	Extended IOB index. Size of a line control block (LCB).
37	(25) . 3	DCBEXLST	Address of the exit list.

DATA CONTROL BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PROCESSING PROGRAM MESSAGE QUEUE INTERFACE</u>			
20	(14) 1	DCBBUFRQ	Number of buffers to be filled from the direct access queue.
21	(15) . 3	DCBTRMAD	Address of a user-provided area in which the terminal name is stored.
24	(18) 2	DCBSOWA	Size of the user-provided work area.
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(1A)	Byte 1 xxxx x.xx.... .1..	<u>Code</u> (Reserved bits) MQ Problem program message queue.
27	(1B)	Byte 2	Reserved.
28	(1C) 4	DCBSEGAD	Address of current segment.
32	(20) 4	DCBEODAD	Address of a user-provided routine.
36	(24) 1	DCBRECFM	Record Format. <u>Code</u> R Record G Message S Segment
37	(25) . 3	DCBEXLST	Address of the exit list.
<u>DIRECT ACCESS STORAGE DEVICE (DASD) MESSAGE QUEUE INTERFACE, CHECKPOINT DATA SET INTERFACE</u>			
20	(14) 1	DCBBUFNO	Reserved
21	(15) . 3	DCBBUFCB	Address of the terminal table.
24	(18) 2	DCBBUFL	Size of the data in the buffer equated to IECKBUFL.
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(1A)	Byte 1 xxxx .xxx 1...	<u>Code</u> (Reserved bits) CQ Direct-access message queue
27	(1B)	Byte 2	Reserved.
28	(1C) 4	DCBIOBAD	Address of input/output block.

DATA CONTROL BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
40	(28) 8	DCBDDNAM	Data set name as used in data definition statement. Used by OPEN routine to locate address of job file control block (JFCB). <u>Note:</u> If the DD name is TPCHKPNT, this DCB is used for the checkpoint data set.
48	(30) 1	DCBOFLGS xxx. xxx. ...1 ........ ...1	Flags used by OPEN. (Reserved bits) OPEN has been successfully completed. This bit is set to 1 by an I/O support routine if the DCB is to be processed by that routine.
49	(31) . 1	DCBIFLGS	Used by IOS in communicating error conditions and in determining error procedures.
		00.. 01.. 11.. .... ..10 ......01 00.. 11.. 10.. 01.. .... ..xx	Not in error procedure. Error correction in process. Permanent error condition. Channel 9 printer carriage punch. Channel 12 printer carriage punch. Always use IOS error routine. Never use IOS error routine. Never use IOS error routine. Never use IOS error routine. (Reserved bits)
50	(32) . . 2	DCBMACR	Macro instruction reference -- specifies the major macro instructions and various options associated with them. Used by OPEN routine to determine the access method.
50	(32)	Byte 1 x..x xxxx .1.. .... ..1.	(Reserved bits) PUT for message queue. WRITE for line group.
51	(33)	Byte 2 x..x xxxx .1.. .... ..1.	(Reserved bits) GET for message queue. READ for line group.
<u>FOUNDATION SEGMENT -- AFTER OPEN</u>			
40	(28) 2	DCBTIOT	Points to the DD entry in the task I/O table for this DCB. It is the offset of the DD entry from the beginning of the task I/O table.
42	(2A) . . 2	DCBMACRF	Contents and meaning are the same as DCBMACR in the foundation before execution of OPEN.
44	(2C) 1	DCBIFLGS	Contents and meaning are the same as DCBIFLGS in the foundation before execution of OPEN.
45	(2D) . 3	DCBDEBAD	Address of the DEB associated with this DCB.
48	(30) 1	DCBOFLGS	Contents and meaning are the same as DCBOFLGS in the foundation before execution of OPEN.
49	(31) . 3	DCBREAD, DCBGET, DCBPUT, DCBWRITE	Address of the READ, GET, PUT, and WRITE module.

DATA CONTROL BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>LINE GROUP EXTENSION (POLLING LIST ORIGIN)</u>			
52	(34) 4	DCBKSTAT	Four threshold values for error counts.
52	(34)	Byte 1	Threshold value for number of transmissions.
53	(35)	Byte 2	Threshold value for number of data checks.
54	(36)	Byte 3	Threshold value for number of interventions required.
55	(37)	Byte 4	Threshold value for number of timeouts.
56	(38) n times	DCBCPOLL	A 4-byte field for each (n) polling list.
56	(38)	Byte 1 xxxx .xxx 1...	Adapter type (Reserved bits) WTTA
57	(39)	Byte 2-4	Address of the polling list.
<u>PROCESSING PROGRAM MESSAGE QUEUE EXTENSION</u>			
52	(34) 4	DCBRECRD	Not used by QTAM.
56	(38) 4	DCBSYNAD	Address of the user provided routine to be entered if a work unit is longer than the work area provided for input.
60	(3C) 4	DCBEOBLK	Not used by QTAM.

DATA CONTROL BLOCK -- BTAM

The data control block (DCB) used in BTAM is described in the following. The common interface and foundation extension exist for all DCBs. Figure 9 illustrates the format of this DCB; a description of the fields follows the illustration.

DATA CONTROL BLOCK -- BTAM

WTTA Interface

16 (10)	DCBBQFLG WTTA Flags	17 (11)	DCBWTEOM EOM Character	18 (12)	DCBWTEOT EOT Character	19 (13)	DCBWTPAD Number of Padding Characters
---------	------------------------	---------	---------------------------	---------	---------------------------	---------	--

Common Interface

20 (14)	DCBBUFNO Number of Buffers	21 (15)	DCBBUFCB Address of Buffer Pool Control Block
24 (18)	DCBBUFL Buffer Length	26 (1A)	DCBDSORG Data Set Organization
28 (1C)	DCBDEVTP Index to Device Entry in Device I/O Directory	29 (1D)	DCBIOBAD Base for Addressing IOBs

Foundation Extension

32 (20)	DCBHIARC, DCBBFTEK Buffering Technique	33 (21)	DCBERROP Error Recovery Procedures	34 (22)	DCBBUFCT Max Buffers (Dynamic Buffering)	35 (23)	Reserved
36 (24)	DCBEIOBX Size of IOB	37 (25)	DCBEXLST Address of User - Provided Exit List				

Foundation

Foundation Before OPEN

40 (28)	DCBDDNAM Name From DD Statement				
48 (30)	DCBOFLGS Open Flags	49 (31)	DCBIFLG IOS Error Flags	50 (32)	DCBMACR Type of I/O Macro Instruction and Options

Foundation After OPEN

40 (28)	DCBTIOT Offset to DD Entry in TIOT	42 (2A)	DCBMACRF Type of I/O Macro Instruction and Options
44 (2C)	DCBIFLGS IOS Error Flags	45 (2D)	DCBDEBAD Address of DEB
48 (30)	DCBOFLGS Open Flags		

BTAM Interface

48 (30)	49 (31)	DCBREAD, DCBWRITE Address of Read / Write Module
52 (34)		DCBLERB Address of Line Error Block

Figure 9. Data Control Block - BTAM (Part 1 of 2)

DATA CONTROL BLOCK -- BTAM

BSC Interface - Before Open

56 (38)	Reserved	57 (39)	DCBXCODE PTOP Flag	58 (3A)	Reserved
60 (3C)	DCBBSTSX Address of the Interface Resolution Routine				
64 (40)	Reserved				
					99 (63)

BSC Interface - After Open

56 (38)	DCBXMODE BSC Transmission Mode	57 (39)	DCBXCODE Control Station Flag Transmission Code	58 (3A)	DCBBSRSV DLE	59 (3B)	DCBBSWBT
60 (3C)	DCBBSTSX DLE	61 (3D)	DCBBSSTX STX	62 (3E)	DCBBSTEX DLE	63 (3F)	DCBBSETX ETX
64 (40)	DCBBSAK0 ACK-0			66 (42)	DCBBSAK1 ACK-1		
68 (44)	DCBBSENQ ENQ	69 (45)	DCBBSNAK NAK	70 (46)	DCBBSETB ETB	71 (47)	DCBBSDLE DLE
72 (48)	DCBBSEOT EOT	73 (49)	DCBBSYN SYN, SYN, SYN				
76 (4C)	DCBBSONL SOH %			78 (4E)	DCBBSAK WACK		
80 (50)	DCBBSRVI DLE @			82 (52)			
	Reserved						
							99 (63)

Figure 9. Data Control Block - BTAM (Part 2 of 2)

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>WTTA INTERFACE</u>			
16	(10) 1	DCBBQFLG	WTTA flag byte.
		x..x xxxx	(Reserved bits)
		.1..	WRU feature to be used.
		..1.	IAM feature to be used.
17	(11) . 1	DCBWTEOM	The EOM character.
18	(12) . . 1	DCBWTEOT	The EOT character.
19	(13) . . . 1	DCBWTPAD	Number of pad (LTRS) characters required for motor-on delay.
<u>COMMON INTERFACE</u>			
20	(14) 1	DCBBUFNO	Number of buffers obtained by the OPEN routine. Range: 0-255
21	(15) . 3	DCBBUFCB	Address of the buffer pool control block.
24	(18) 2	DCBBUFL	Buffer length. Range: 0 - 32,760 bytes
26	(1A) . . 2	DCBDSORG	Data set organization being used:
26	(1A)	Byte 1 xxx. xxxx ...1	<u>Code</u> (Reserved bits) CX Telecommunications -- line group.
27	(1B)	Byte 2	Reserved.
28	(1C) 1	DCBDEVTP	Index to the device entry in the device I/O directory.
29	(1D) . 3	DCBIOBAD	Base for addressing IOBs. (Base = Address of first IOB minus length of an IOB)
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBHIARC, DCBBFTEK	
		x... .x..	<u>Code</u> Buffer pool location, coded in the DCB macro instruction:
		0... .0..	Before OPEN - none No choice made in the DCB macro instruction.
		0... .1..	After OPEN - If no choice is made in the DD statement either (as shown by the JFCBHIAR field), the OPEN routine resets these two bits from 00 to 01.
		0... .1..	0 Hierarchy 0 main storage.
		1... .0..	1 Hierarchy 1 main storage.
		.xxx ..xx	(Reserved bits.)
		.... x...	Buffering Technique:
		.... 1...	D Dynamic buffering.

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION (Continued)</u>			
33	(21) . 1	DCBERROP	Error recovery procedure: <u>Code</u> (Reserved bits) T On-line test facilities to be used. C Threshold and cumulative error counts to be maintained. W Text-write errors to be retried. R Text-read errors to be retried. E Basic error procedures to be followed. N No error recovery procedures to be followed.
		xxx.	
		...1	
		.... 1...	
		.... .1..	
		.... ..1.	
		.... ...0	
		.... ...1	
34	(22) . . 1	DCBBUFCT	Contains maximum number of buffers to be obtained by BTAM for Read operation (dynamic buffering only).
35	(23) . . . 1		Reserved.
36	(24) 1	DCBEIOBX	Size of extended IOB. Size of an IOB associated with this DCB.
37	(25) . 3	DCBEXLST	Address of (a user-provided) exit list.
<u>FOUNDATION SEGMENT</u>			
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
40	(28) 8	DCBDDNAM	DD name of the data set. This name is matched to the name field of the data definition (DD) statement. (It is used by the OPEN routine to locate the appropriate DD entry in the task input/output table (TIOT).)
48	(30) 1	DCBOFLGS	Flags used by the OPEN routine: (Reserved bits) OPEN has been successfully completed. Set to 0 by an I/O support function when that function takes a user exit. (It is set to 0 to inhibit other I/O support functions from processing this particular DCB.) Set to 1 on return from the user exit to the I/O support function which took the exit.
		xxx. xx.x	
		...1	
		.... ..0.	
		.... ..1.	
49	(31) . 1	DCBIFLG	Flags used by I/O supervisor to communicate error conditions and to determine corrective procedures:
		00..	Not in error procedure.
		01..	Error correction in process.
		11..	Permanent error condition.
		..10	Channel 9 printer carriage tape punch sensed.
		..01	Channel 12 printer carriage tape punch sensed.
		.... 00..	Always use I/O supervisor error routine.
		.... 01..	Test IOS mask (IMSK) for error procedure.
		.... 11..	Never use I/O supervisor error routine.
		.... 10..	(OPEN sets
		.... 01..	these bits.)
		.... ..xx	(Reserved bits)

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
50	(32) . . 2	DCBMACR	Macro instruction reference:
50	(32)	Byte 1 xx.x xxxx .1.	(Reserved bits) READ
51	(33)	Byte 2 xx.x xxxx .1.	(Reserved bits) WRITE
<u>FOUNDATION SEGMENT -- AFTER OPEN</u>			
40	(28) 2	DCBTIOT	Offset of the TIOELNGH field to the TIOT reference point. The TIOELNGH field is located in the DD entry of the TIOT that was created from the DD statement associated with this DCB.
42	(2A) . . 2	DCBMACRF	Contents and meaning are the same as in DCBMACR field before OPEN.
44	(2C) 1	DCBIFLGS	Contents and meaning are the same as in DCBIFLG field before OPEN.
45	(2D) . 3	DCBDEBAD	Address of the associated DEB
<p><u>Note:</u> The above fields overlay the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.</p>			
48	(30) 1	DCBOFLGS	Contents and meaning are the same as in DCBOFLGS field before OPEN.
<u>ACCESS METHOD INTERFACE -- BTAM</u>			
49	(31) . 3	DCBREAD, DCBWRITE	Address of READ/WRITE routine.
52	(34) 4	DCBLERB	Address of line error block.
<u>BSC Interface -- Before Open</u>			
56	(38) 1		Reserved.
57	(39) . 1	DCBXC <small>ODE</small>	PTOP flag.
		x.xx xxxx .1..	(Reserved bits) If P <small>TOP</small> is specified in the SYS <small>GEN</small> procedure: Schedule an asynchronous exit to the interface resolution routine.
58	(3A) . . 2		Reserved.
60	(3C) 4	DCBB <small>ST</small> S <small>X</small>	If P <small>TOP</small> is specified in the SYS <small>GEN</small> procedure: Address of the interface resolution routine.
64	(40) 36		Reserved.

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BSC Interface -- After Open</u>			
56	(38) 1	DCBXMODE	Mode of transmission for binary synchronous communication (BSC). .1.. Intermediate block checking is to be performed. ..1. Transmission is through a 2701 Data Adapter Unit Dual Communication Interface B. 1... Transmission is in code B for a 2701 Data Adapter Unit Dual Code Feature. x..x .xxx Reserved.
57	(39) 1	DCBXCDE	BSC control station flag, transmission code. x... BSC control station flag. 0... This is the control station. 1... This is the remote station. .x.. If PTOp is specified in the SYSGEN procedure: .1.. Schedule an asynchronous exit to the interface resolution routine. ..1. 1... 6-bit Transcode is being used. ...1 .1.. USASCII transmission code is being used. 00.. EBCDIC transmission code is being used. xx (Reserved bits)
58	(3A) 1	DCBBSRSV	DLE control character.
59	(3B) 1	DCBBSWBT	Reserved.
60	(3C) 1	DCBBSTSx	DLE control character.
61	(3D) 1	DCBBSSTX	STX control character.
62	(3E) 1	DCBBSTEX	DLE control character.
63	(3F) 1	DCBBSETX	ETX control character.
64	(40) 2	DCBBSAK0	ACK-0 control character.
66	(42) 2	DCBBSAK1	ACK-1 control character.
68	(44) 1	DCBBSEnQ	ENQ control character.
69	(45) 1	DCBBSNAK	NAK control character.
70	(46) 1	DCBBSEtB	ETB control character.
71	(47) 1	DCBBSDL	DLE control character.
72	(48) 1	DCBBSEOT	EOT control character.
73	(49) 3	DCBBSsYN	SYN, SYN, SYN control characters.
76	(4C) 2	DCBBSONL	SOH % control characters.
78	(4E) 2	DCBBSSAK	WACK control characters.
80	(50) 2	DCBBSRVI	DLE a control characters.
82	(52) 18		Reserved.

DATA CONTROL BLOCK -- GAM

This data control block (DCB) is used by the graphics access method (GAM) routines. It has the common interface and foundation sections, which serve the same purposes for all access method routines, although the format may vary slightly among them. An interface section that contains information about a particular graphic device precedes the common section. Figure 10 illustrates the format of the DCB used in GAM. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- GAM

Graphic Device Interface

0 (0) Reserved		
12 (C) DCBBSA Buffer Restart Address	14 (E) DCBGTYPE Basic/Express	15 (F) Reserved
16 (10) DCBBFRST Buffer Start Address	18 (12) DCBBFRSZ Buffer Size	
		19 (13)

Common Interface

20 (14) Reserved	
	26 (1A) DCBDSORG Data Set Organization
28 (1C) DCBIOBAD Address of First IOB	
31 (1F)	

Foundation Extension

32 (20) DCBGNCP No. of I/O Instructions Before WAIT	33 (21) DCBPOLST Address of DCB List for Polling
36 (24) Reserved	37 (25) DCBEXLST Address of User's Exit List
39 (27)	

Foundation

Before OPEN		
40 (28) DCBDDNAM Name from DD Statement		
48 (30) DCBOFLG Open Flags	49 (31) DCBIFLG IOS Error Flags	50 (32) DCBMACR Type of Macro Instruction and Options
		51 (33)
After OPEN		
40 (28) DCBTIOT Offset to DD Entry in TIOT		42 (2A) DCBMACRF Type of I/O Macro Instruction and Options
44 (2C) DCBIFLGS IOS Error Flags	45 (2D) DCBDEBAD Address of DEB	
48 (30) DCBOFLGS Open Flags	49 (31) DCBGIOCR Address of I/O Control Routine	
		51 (33)

Figure 10. Data Control Block - GAM

DATA CONTROL BLOCK -- GAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>DEVICE-DEPENDENT INTERFACE</u>				
0	(0) 12			Reserved.
12	(C) 2	DCBBRSA		Blank before execution of the second I/O operation. Last buffer start address.
14	(E) . . 1	DCBGTYPE	00 01	Type of buffer management and attention handling. Express Basic
15	(F) . . . 1			Reserved.
16	(10) 2	DCBBFRST		Blank before execution of OPEN routine. Starting address for the buffer after execution of OPEN routine.
18	(12) . . 2	DCBBFRSZ		Blank before execution of OPEN routine. Size of buffer after execution of OPEN routine.
<u>COMMON INTERFACE</u>				
20	(14) 6			Reserved.
26	(1A) . . 2	DCBDSORG		Data set organization.
26	(1A)	Byte 1		All zeros.
27	(1B)	Byte 2 1... .... .xxx xxxx	<u>Code</u> GS	Graphics organization. (Reserved bits)
28	(1C) 4	DCBIOBAD		Blank before execution of OPEN routine. Address of the standard fields of the first input/output block (IOB) after execution of OPEN routine.
<u>FOUNDATION EXTENSION</u>				
32	(20) 1	DCBGNCP		Number of I/O instructions to be issued before a WAIT macro instruction.
33	(21) . 3	DCBPOLST		Address of area where a DCB list is to be constructed for polling purposes.
36	(24) 1			Reserved.
37	(25) . 3	DCBEXLST		Address of user's exit list.

DATA CONTROL BLOCK -- GAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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FOUNDATION SEGMENT

FOUNDATION SEGMENT -- BEFORE OPEN

40	(28)	8	DCBDDNAM	Eight byte name from the data definition statement that defines the data set associated with this DCB.
48	(30)	1	DCBOFLG	Flags used by the OPEN routine. 1... Last I/O operation was a GWRITE. 0... Last I/O operation was a GREAD. .x... (Reserved bit) ..1. Set to <u>1</u> by EOVS when it calls the CLOSE routine for concatenation of data sets with unlike attributes. ...1 An OPEN has been successfully completed. 1... Set to <u>1</u> by a program to indicate a concatenation of unlike attributes. .... .1.. Tape mark has been read. .... ..0. Set to <u>0</u> by an I/O support function when that function takes a user exit. It is set to <u>0</u> to inhibit other I/O support functions from processing this particular DCB. .... ..1. Set to <u>1</u> on return from the user exit to the I/O support function which took the exit. .... ...1 Set to <u>1</u> by an I/O support function if the DCB is to be processed by that function.
49	(31)	. 1	DCBIFLG	Set to zero by the graphics routines but used by I/O supervisor in communicating error conditions and in determining corrective procedures.
50	(32)	. . 2	DCBMACR	Major macro instructions and their associated options.
50	(32)	Byte 1	0010 0010	Read operation to be performed. Control operation to be performed with the read operation.
51	(33)	Byte 2	0010 0010	Write operation to be performed. Control operation to be performed with the write operation.

FOUNDATION SEGMENT -- AFTER OPEN

40	(28)	2	DCBTIOT	Offset from the TIOT origin to the DD entry associated with this DCB.
42	(2A)	. . 2	DCBMACRF	Contents and meaning are the same as DCBMACR field in the foundation segment before OPEN.
44	(2C)	1	DCBIFLGS	Contents and meaning are the same as DCBIFLG field in the foundation segment before OPEN.
45	(2D)	. 3	DCBDEBAD	Address of the associated DEB.
<p><u>Note:</u> The above fields are overlaid on the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.</p>				
48	(30)	1	DCBOFLGS	Contents and meaning are the same as DCBOFLG field in the foundation segment before OPEN.
49	(31)	. 3	DCBGIOCR	Address of the graphics input/output control routine.

DATA CONTROL BLOCK -- TCAM

The format of a telecommunication access method (TCAM) data control block is determined by the character of the data set it represents. The five types of DCBs used in TCAM message control programs and application programs are as follows:

- Line Groups
- Message Queues
- Checkpoint Data Set
- Message Logging
- Application Programs

The three segments of a TCAM DCB and their uses, described and shown in Figure 11 are:

Prefix Segment --

- Line Group Interface
- Message Queue Interface
- Checkpoint Data Set Interface

Foundation Segment --

- Before OPEN
- After OPEN

Extension Segment --

- Line Group Extension
- Message Queues/Checkpoint Extension

DATA CONTROL BLOCK -- TCAM

Data Set Interface

Line Group			
20 (14)	DCBBUFIN/DCBBUFOU	21 (15)	DCBMH Address of Message Handler for this Line Group
24 (18)	DCBINTVL Invitation Delay	25 (19)	DCBPCI PCI Code
		26 (1A)	DCBDSORG Data Set Organization
28 (1C)	DCBBUFMA Maximum No of Buffers for Data Transfer	29 (1D)	DCBIOBAD Address of AVT or Base for Addressing IOBs
32 (20)	DCBCPRI Priority of Sending/Receiving Operations	33 (21)	DCBTRANS Address of Translation Table
36 (24)	DCBEIOBX Size of an LCB	37 (25)	DCBEXLST Address of Exit List
Message Queues			
20 (14)	Reserved		26 (1A) DCBDSORG Data Set Organization
28 (1C)	Reserved	29 (1D)	DCBIOBAD Address of AVT
32 (20)	DCBTHRES	33 (21)	Reserved
	Reserved Continued	37 (25)	DCBEXLST Address of the Exit List
Checkpoint			
20 (14)	Reserved		26 (1A) DCBDSORG Data Set Organization
28 (1C)	Reserved	29 (1D)	DCBIOBAD Address of the AVT
32 (20)	Reserved		
		37 (25)	DCBEXLST Address of Exit List

Foundation

Before Open			
40 (28)	DCBDDNAM Data Set Name		
48 (30)	DCBOFLGS Flags Used by OPEN	49 (31)	DCBIFLGS IOS Error Conditions
		50 (32)	DCBMACR Macro Instruction Reference
After Open			
40 (28)	DCBTIOT Offset of DD Entry from Beginning of TIOT	42 (2A)	DCBMACRF Macro Instruction Reference
44 (2C)	DCBIFLGS IOS Error Conditions	45 (2D)	DCBDEBAD Address of DEB
48 (30)	DCBOFLGS Flags Used by OPEN		

Figure 11. Data Control Block -- TCAM (Part 1 of 2)

DATA CONTROL BLOCK -- TCAM

Extension

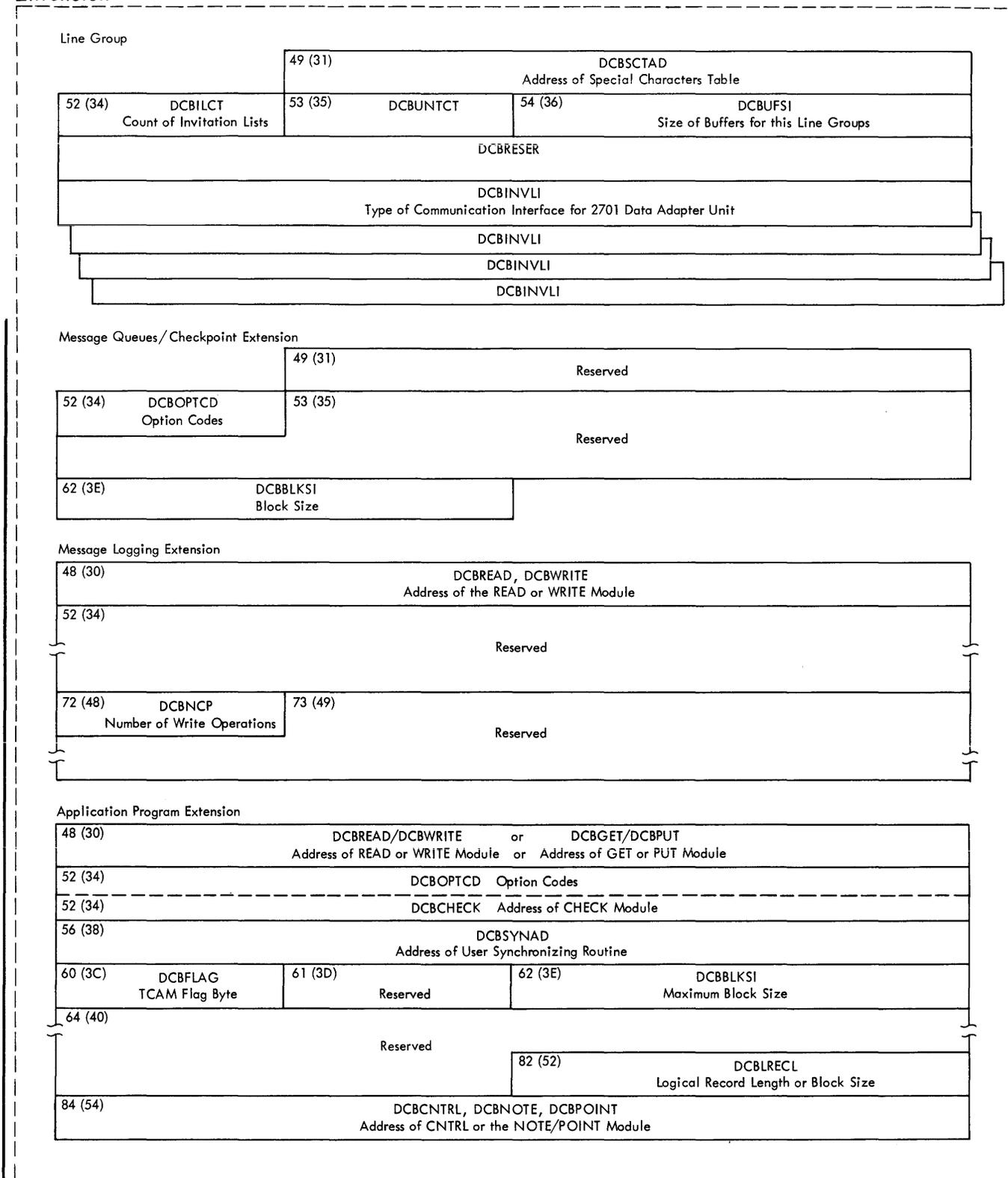


Figure 11. Data Control Block -- TCAM (Part 2 of 2)

DATA CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>LINE GROUP INTERFACE</u>			
20	(14) 1	DCBBUFIN/DCBBUFOU	
		xxxx	Number of buffers assigned initially for receiving operations, for each line in line group.
		.... xxxxx	Number of buffers assigned initially for sending operations, for each line in the line group.
21	(15) . 3	DCBMH	Address of the message handler for this line group.
24	(18) 1	DCBINTVL	Number of seconds of invitation delay.
25	(19) .1	DCBPCI	Program-controlled interruption handling.
			<u>Code PCI=</u>
		1...	(X,)
		.1...	(,X)
		..1.	(A,)
		...1	(,A)
		.... 1...	(N,)
		.... .1..	(,N)
		.... ..1.	(R,)
		.... ...1	(,R)
26	(1A) . . 2	DCBDSORG	Data set organization.
		Byte 0	Reserved.
		BYTE 1	<u>CODE</u>
		.1...	TX
28	(1C) 1	DCBBUFMA	Maximum number of buffers to be used for data transfer for each line in this group.
29	(1D) . 3	DCBIOBAD	Before OPEN: Address of address vector table (AVT). After OPEN: Base for addressing IOBs (Base=address of first IOB minus length of one LCB).
32	(20) 1	DCBCPRI	Relative priority to be given to sending and receiving operations.
			<u>Code</u>
		xxxx x...	(Reserved bits)
		.... .1..	R-Receiving has priority.
		.... ..1.	E-Receiving and sending have equal priority.
		.... ...1	S-Sending has priority.

DATA CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>LINE GROUP INTERFACE</u>			
33	(21) . 3	DCBTRANS	Address of translation table. The code parameter is taken from the "TRANS=" keyword. The V-type address constant of the corresponding table name is used to load the appropriate translation table.
		<u>Table</u>	<u>Code</u>
		IEDQ10	1030
		IEDQ11	1050
		IEDQ12	105F
		IEDQ13	1060
		IEDQ14	2260
		IEDQ15	2265
		IEDQ16	2740
		IEDQ17	274F
		IEDQ18	ITA2
		IEDQ19	ZSC3
		IEDQ20	TTYA
		IEDQ21	TTYB
		IEDQ22	TYC
		IEDQ23	6BIT
		IEDQ24	ASCI
		IEDQ25	EBCD
		IEDQ26	BC41
		IEDQ27	EB41
		IEDQ28	CR41
		user table	user table
36	(24) 1	DCBEIOBX	Extended IOB index (size of an LCB).
37	(25) . 3	DCBEXLST	Address of the exit list.
<u>DIRECT ACCESS STORAGE DEVICE MESSAGE QUEUE INTERFACE, CHECKPOINT DATA SET INTERFACE</u>			
20	(14) 6		Reserved.
26	(1A) . . 2	DCBDSORG	Data set organization
		Byte 0	Reserved.
		Byte 1	<u>Code</u>
		..1.	TQ
28	(1C) 1		Reserved.
29	(1D) . 3	DCBIOBAD	Before OPEN: Address of address vector table (AVT).
32	(20) 1	DCBTHRES	Non-reusable message queue records only: The percentage of non-reusable disk message queue records to be used before a flush shutdown of the system is initiated. For reusable message queue records and checkpoint records, this field is reserved.
33	(21) . 4		Reserved.
37	(25) . 3	DCBEXLST	Address of the exit list.

DATA CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT-BEFORE OPEN</u>			
40	(28) 8	DCBDDNAM	Data set name.
48	(30) 1	DCBOFLGS	Flags used by OPEN. (Reserved bits) ...1 ........ ...1 OPEN has been successfully completed. DCB is being processed by I/O support routine.
49	(31) . 1	DCBIFLGS	Used by the I/O supervisor in communicating error conditions and in determining corrective procedures. These flags are the same (when applicable) as they are in the SAM DCB.
50	(32) . . 2	DCBMACR	Macro instruction reference. Byte 1 x.xx xxxx .1.. (Reserved bits) GET Byte 2 x.xx xxxx .1.. (Reserved bits) PUT
<u>FOUNDATION SEGMENT-AFTER OPEN</u>			
40	(28) 2	DCBTIOT	Offset of DD entry from beginning of TIOT.
42	(2A) . . 2	DCBMACRF	Contents and meaning are the same as for DCBMACR before OPEN.
44	(2C) 1	DCBIFLGS	Contents and meaning are the same as for DCBIFLGS before OPEN.
45	(2D) . 3	DCBDEBAD	Address of DEB.
48	(30) 1	DCBOFLGS	The contents and meaning are the same as DCBOFLGS before OPEN.
<u>LINE GROUP EXTENSION</u>			
49	(31) . 3	DCBSCTAB	Address of special characters table (SCT).
52	(34) 1	DCBILCT	Count of invitation lists.
53	(35) . 1	DCBUNTCT	Before OPEN - numerical value of SCT. After OPEN - count of units for one buffer.
54	(36) . . 2	DCBUFSI	Size of all buffers used for this line group.

DATA CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>LINE GROUP EXTENSION (Continued)</u>			
56 (38)	4	DCBRESER	
		Byte 1	Number of bytes reserved in the buffer receiving the first incoming segment of a message.
		Byte 2	Number of bytes reserved in all buffers except the one containing the first segment of a message.
		Bytes 3-4	Reserved.
60 (3C)	4	DCBINVLI	n times
60 (3C)	1	Byte 1	Type of communication interface for 2701 Data Adapter Unit
		xx.x .xxx	(Reserved bits)
		..0.	[A,]
		.... 0...	[,A]
		..1.	[B,]
		.... 1...	[,B]
61 (3D)	. 3	Bytes 2-4	Address of the invitation list.
<u>MESSAGE QUEUES/CHECKPOINT EXTENSION</u>			
49 (31)	. 3		Reserved.
52 (34)	1	DCBOPTCD	
<u>CODE</u>			
		0010 0000	C -Checkpoint data set.
		0000 0010	L -Non-reusable message queue data set.
		0000 0001	R -Reusable message queue data set.
53 (35)	9		Reserved.
62 (3E)	2	DCBBLKSI	Block size.
<u>MESSAGE LOGGING EXTENSION</u>			
48 (30)	4	DCBREAD, DCBWRITE	Address of the READ or WRITE module.
52 (34)	20		Reserved.
72 (48)	1	DCBNCP	Number of write operations that can be performed.
73 (49)	15		Reserved.
<u>APPLICATION PROGRAM EXTENSION</u>			
48 (30)	4	DCBREAD, DCBWRITE	Address of the READ or WRITE module.
		DCBGET, DCBPUT	Address of the GET or PUT module.

DATA CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>APPLICATION PROGRAM EXTENSION (Continued)</u>			
52	(34) 1	DCBOPTCD	Option codes.
		1... ..	Source or destination name precedes message (after control byte) (TCAM process queue).
		.1.. ..	Work unit is a message. Default work unit is a record. (TCAM process queue).
		..1.	Control byte precedes work unit (TCAM process queue).
52	(34) 4	DCBCHECK	Address of the CHECK module.
56	(38) 4	DCBSYNAD	Address of the user synchronizing routine.
60	(3C) 1	DCBFLAG	TCAM flag byte.
		1... ..	value is X'80' - STOP = QUICK was specified by the user.
		.1.. ..	value is X'40' - STOP = FLUSH was specified by the user.
		11.. ..	value is X'C0' - STOP = BOTH was specified by the user.
		..xx xxxx	(Reserved bits)
61	(3D) 1		Reserved.
62	(3E) 2	DCBBLKSI	Maximum block size.
64	(40) 18		Reserved.
82	(52) 2	DCBLRECL	Logical record length or block size.
84	(54) 4	DCBCNTRL, DCBNOTE, DCBPOINT	Address of CNTRL or the NOTE/POINT module.

Data Extent Blocks

There are two kinds of data extent blocks -- an ordinary one, used in all access methods (including BTAM and the message control portion of QTAM), and another one used in the message processing portion of QTAM.

Accordingly, separate diagrams and descriptions are presented for the following uses of DEBs:

- Ordinary
- QTAM Message Processing Program

DATA EXTENT BLOCK -- ORDINARY

The data extent block (DEB) contains an extension of information in the DCB. Each DEB is associated with a DCB, and the two point to each other. The DEB contains information concerning the physical characteristics of the data set and other information that is used by the control program. Figure 12 illustrates the format of the DEB. Descriptions of the fields follow the illustrations.

This data extent block is used in all access methods and is used in QTAM by a message control program to describe a queue which is on a direct access storage device or to describe a line group. (QTAM processing programs use a DEB described separately.)

DATA EXTENT BLOCK -- ORDINARY

Appendage Table

-36 (-24)	DEBEOEA (1) Address of End-of-Extent Appendage
-32 (-20)	DEBSIOA (1) Address of Start I/O Appendage
-28 (-1C)	DEBPCIA (1) Address of PCI Appendage
-24 (-18)	DEBCEA (1) Address of Channel-End Appendage
-20(-14)	DEBXCEA (1) Address of Abnormal-End Appendage
	-17 (-11)

DEB Prefix

-16 (-10) DEBKARA I/O Support Work Area	-15 (-F) DEBDSCBA Address of DSCB
-8 (-8)	DEBDCBMK DCB Modification Mask
-4 (-4) DEBLNGTH Length of DEB	-3 (-3) Reserved
	-1 (-1)

Basic Section

0 (0) DEBNMSUB No. of Subroutines	1 (1) DEBTCBAD Address of TCB		
4 (4) DEBAMLNG Acc M S'n Length	5 (5) DEBDEBAD Address of Next DEB		
8 (8) DEBOFLGS Data Set Status	9 (9) DEBIRBAD Address of IRB		
12 (C) DEBOPATB Type of I/O	13 (D) DEBQSCNT PURGE - Quiesce Count	14 (E) DEBFLGS1 AFlag Field	15 (F) Reserved
16 (10) DEBNMEXT No. of Extents	17 (11) DEBUSRPG Address of First IOB in User Purge Chain		
20 (14) DEBPRIOR Priority	21 (15) DEBECBAD Address of Parameter List to Find Purge ECB		
24 (18) DEBPROTG, DEBDEBID Protection Key, DEB Id	25 (19) DEBDCBAD Address of DCB		
28 (1C) DEBXSCL Extent Scale	29 (1D) DEBAPPAD Address of I/O Appendage Vector Table	31 (1F)	

(1) Field names used only in BTAM and parts of QTAM.

Figure 12. Data Extent Block -- Ordinary (Part 1 of 5)

DATA EXTENT BLOCK -- ORDINARY

Device Dependent Section

Unit Record and Magnetic Tape Section (except 3525)

32 (20) DEBDVMOD Device Modifier	33 (21)	DEBUCBAD Address of UCB	35 (23)
--	---------	----------------------------	---------

Graphic Devices Section

32 (20) Reserved	33 (21)	DEBUCBAD Address of UCB	35 (23)
---------------------	---------	----------------------------	---------

DEBUCBAD

IBM 3525 Section

32 (20) DEBDVMOD Device Modifier	33 (21)	DEBUCBAD Address of UCB	
36 (24) DEBRDCB	37 (25)	DEBRDCBA Address of DCB for READ Associated Data Set	
40 (28) DEBPDCB	41 (29)	DEBPDCBA Address of DCB for PUNCH Associated Data Set	
44 (2C) DEBWDCB	45 (2D)	DEBWDCBA Address of DCB for PRINT Associated Data Set	47 (2F)

ISAM Device Section

32 (20) DEBNIEE No. of Extents	33 (21)	DEBFIEAD Address of First Index Extent	
36 (24) DEBNPEE No. of Extents	37 (25)	DEBFPEAD Address of First Prime Data Area Extent	
40 (28) DEBNOEE No. of Extents	41 (29)	DEBFOEAD Address of First Overflow Extent	
44 (2C) DEBRPSID	45 (2D)	DEBEXPT Address of ISAM Access Method Dependent Section	47 (2F)

Direct - Access Storage Device Section

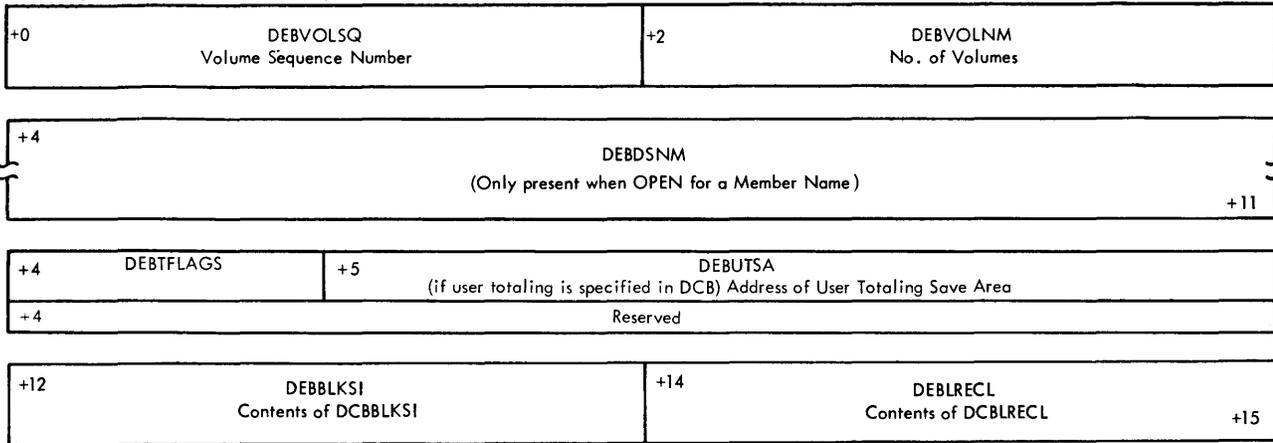
+0 DEBDVMOD File Mask	+1	DEBUCBAD Address of UCB	
+4 DEBBINUM Bin Number	+6	DEBSTRCC Cylinder Start Address	
+8 DEBSTRHH Read or Write Track Start Address	+10	DEBENDCC Cylinder End Address	
+12 DEBENDHH Read or Write Track End Address	+14	DEBNMTRK No. of Tracks Allocated in this Extent Split Cylinder Data Sets No. of Tracks Between Start Addr and End Addr of Extent	+15

Figure 12. Data Extent Block -- Ordinary (Part 2 of 5)

DATA EXTENT BLOCK -- ORDINARY

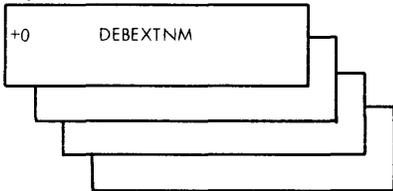
Access Method Dependent Section

EXCP, BSAM, QSAM Dependent Section

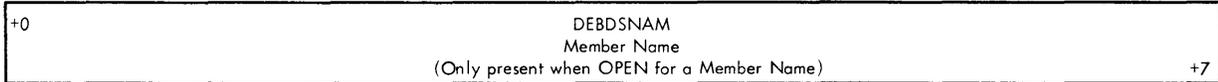


BPAM Dependent Sections

Input

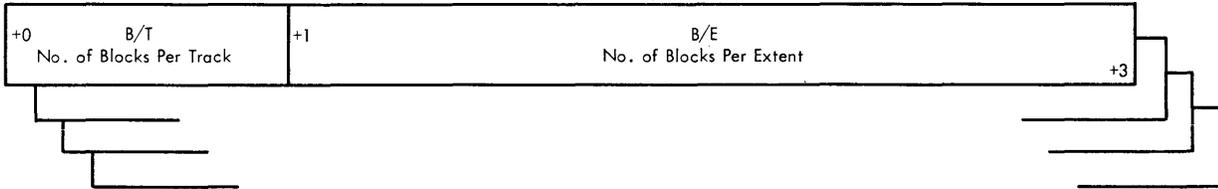


Output



BDAM Dependent Section

Fixed-Length Records, Relative Block Addressing (No Track Overflow)



Fixed-Length Records, Relative Block Addressing Track Overflow

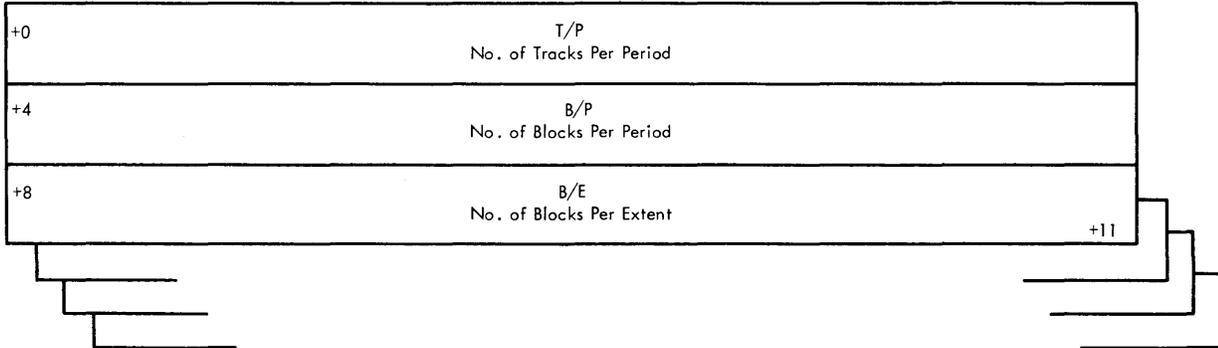
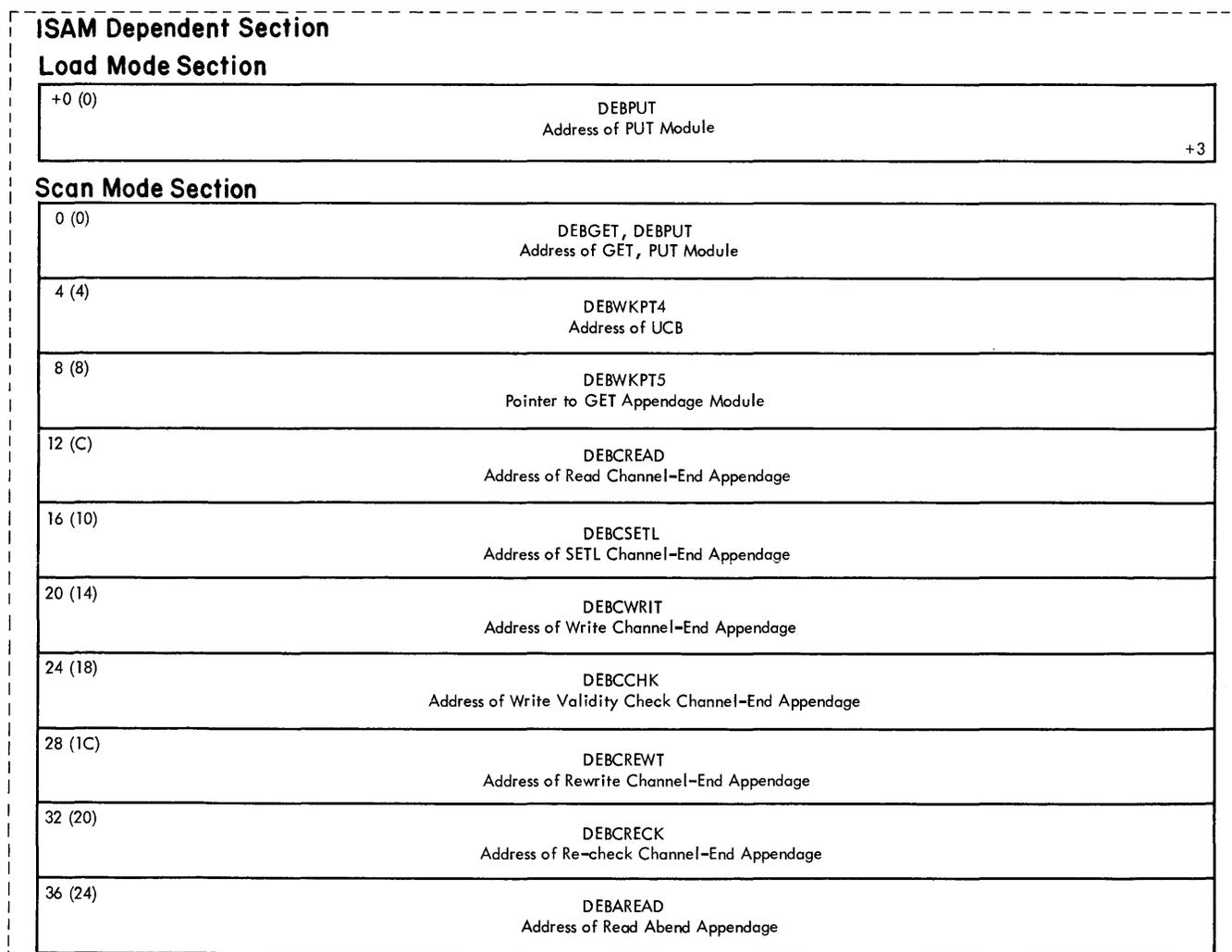
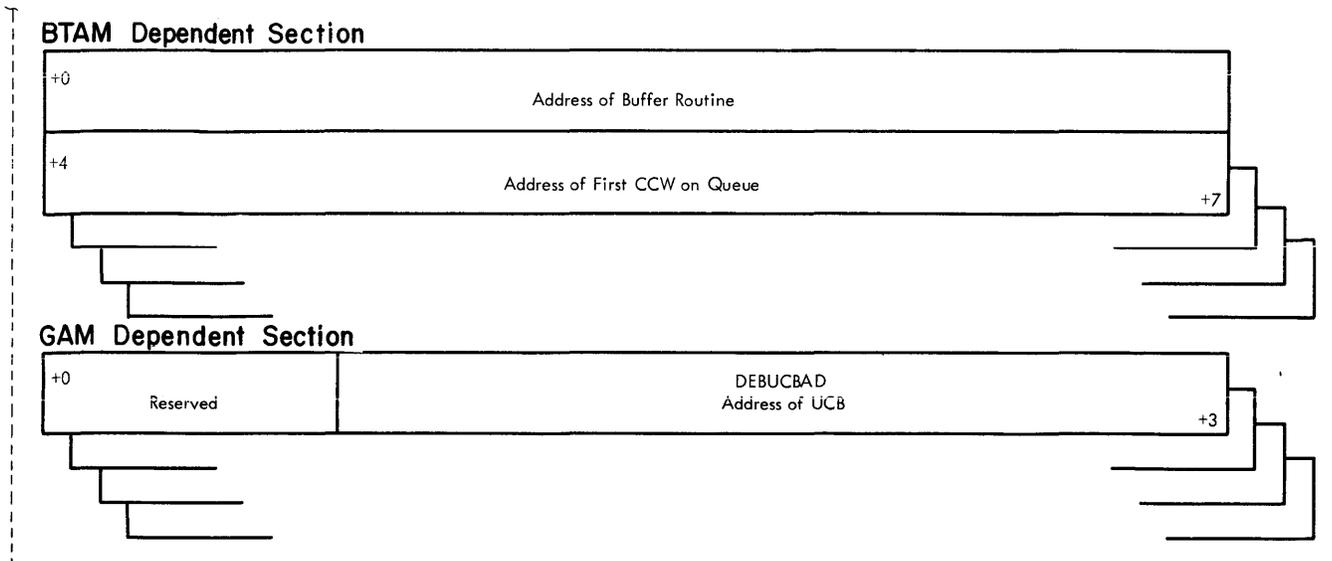


Figure 12. Data Extent Block -- Ordinary (Part 3 of 5)

DATA EXTENT BLOCK -- ORDINARY



Continued

Figure 12. Data Extent Block -- Ordinary (Part 4 of 5)

DATA EXTENT BLOCK -- ORDINARY

Continued

40 (28)	DEBASETL Address of SETL Abend Appendage
44 (2C)	DEBAWRIT Address of Write Abend Appendage
48 (30)	DEBACHK Address of Write Validity Check Abend Appendage
52 (34)	DEBAREWT Address of Rewrite Abend Appendage
56 (38)	DEBARECK Address of Re-check Abend Appendage

BISAM Mode Section

0 (0)	DEBDISAD Address of Privileged Module
4 (4)	DEBWKPT4 Address of Part 1 Appendage Module
8 (8)	DEBWKPT5 Address of Part 2 Appendage Module
12 (C)	DEBFREED Address of Dynamic Buffering Module
16 (10)	DEBRPSIO Address of RPS SIO Appendage Module

19 (13)

Subroutine Name Section

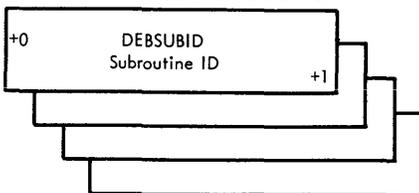


Figure 12. Data Extent Block -- Ordinary (Part 5 of 5)

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>APPENDAGE TABLE</u>			
<u>BSAM, QSAM, BPAM, BDAM, GAM</u>			
-36 (-24)	4	(End of Extent)	Address of the end-of-extent appendage routine.
-32 (-20)	4	(Start I/O)	Address of the start I/O appendage routine.
-28 (-1C)	4	(PCI)	Address of the program-controlled-interruption appendage routine.
-24 (-18)	4	(Channel End)	Address of the channel-end appendage routine.
-20 (-14)	4	(Abnormal End)	Address of the abnormal-end appendage routine.
<u>BTAM, QTAM MESSAGE CONTROL</u>			
-36 (-24)	4	DEBEOEA	Address of the end-of-extent appendage routine.
-32 (-20)	4	DEBSIOA	Address of the start I/O appendage routine.
-28 (-1C)	4	DEBPCIA	Address of the program-controlled-interruption appendage routine.
-24 (-18)	4	DEBCEA	Address of the channel-end appendage routine.
-20 (-14)	4	DEBXCEA	Address of the abnormal-end appendage routine.
END OF APPENDAGE TABLE			
<u>PREFIX SECTION</u>			
<u>DIRECT-ACCESS STORAGE DEVICES</u>			
-16 (-10)	1	DEBWKARA	I/O support work area.
-15 (-F)	. 7	DEBDCBA	DSCB address (BBCCHHR) used by I/O support.
<u>ALL DEVICES</u>			
-8 (-8)	4	DEBDCBMK	DCB modification mask used by I/O support.
-4 (-4)	1	DEBLNGTH	Length of DEB in double words.
-3 (-3)	. 3		Reserved.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEB PROPER</u>			
<u>BASIC SECTION</u>			
0	(0) 1	DEBNMSUB	Number of subroutines loaded by the open executor routines.
1	(1) . 3	DEBTCBAD	Address of the TCB for this DEB.
4	(4) 1	DEBAMLNG	Number of bytes in the access method dependent section. For BDAM this field contains the length expressed in number of words.
5	(5) . 3	DEBDEBAD	Address of the next DEB in the same task.
8	(8) 1	DEBOFLGS	Data set status flags.
		01..	Disposition is OLD
		10..	Disposition is MOD
		11..	Disposition is NEW
		..1.	Tape input: EOF encountered.
			DASD input: Format 1 DSCB bit 93.0 indicates that the current volume is the last volume of the data set.
		...1	Disk: Release unused external storage.
			Tape: Emulator tape with second generation format. The tape may contain blocks shorter than 12 characters.
		.... 1...	DCB modification
		.... .1..	Disk: Split cylinder
			Tape: 7 track emulator tape with possible mixed parity records.
		.... ..1.	Nonstandard labels
		.... ...1	Magnetic Tape Devices: Use reduced error recovery procedure.
			DASD: Concatenated partitioned organization data sets processed using BPAM.
9	(9) . 3	DEBIRBAD	IRB storage address used for appendage asynchronous exits.
12	(C) 1	DEBOPATB	The method of input/output processing and the disposition that is to be performed when an end of volume condition occurs.
		1...	Set by ABEND. Indicates a SYSABEND or SYSUDUMP data set.
		.0..	Always zero.
		..01	REREAD
		..11	LEAVE
		.... 0000	INPUT
		.... 1111	OUTPUT
		.... 0011	INOUT
		.... 0111	OUTIN
		.... 0001	RDBACK
		.... 0100	UPDAT
13	(D) . 1	DEBQSCNT	PURGE (SVC 16) - Quiesce count. Number of devices executing user's channel programs, as shown by bits 5 and 6 of UCBFL1 fields.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BASIC SECTION (Continued)</u>			
14	(E) . . 1	DEBFLGS1 1... .. .1.. .. .... .1.. ..xx x.xx	A flag field. Password was supplied during open processing. EOVS will not request a password for each additional volume of a multivolume data set. Set by EOVS to inform CLOSE that an end-of-file has been encountered and, therefore, deferred user label processing is allowed. EOVS processing occurred during CLOSE processing. Tested and set to zero by CLOSE; set to one by EOVS. (Reserved bits)
15	(F) . . . 1		Reserved.
16	(10) 1	DEBNMEXT	Number of extents specified in the DSCBs.
17	(11) . 3	DEBUSRPG	Address of first IOB in the user purge chain.
20	(14) 1	DEBPRIOR	Priority of the task.
21	(15) . 3	DEBECBAD	Address of a parameter list used to locate the purge ECB for an SVC purge request.
24	(18) 1	DEBPROTG, DEBDEBID xxxx 1111	Protection key. A hex "F" to identify this block as a DEB.
25	(19) . 3	DEBDCBAD	Address of DCB associated with this DEB.
28	(1C) 1	DEBEXSCL	Extent scale: 4 for direct access device and 2 for nondirect access device and communication device. This field is used to determine the size of the device dependent section.
29	(1D) . 3	DEBAPPAD	Address of the I/O appendage vector table.
<u>DEVICE DEPENDENT SECTION</u>			
<u>UNIT RECORD (EXCEPT 3505/3525) AND MAGNETIC TAPE</u>			
32	(20) 1	DEBDVMOD	Device modifier. Magnetic tape -- SET MODE operation code. Unit record -- Not used.
33	(21) . 3	DEBUCBAD	Address of a UCB associated with a given data set.
<u>IBM 3525 CARD PUNCH</u>			
32	(20) 1	DEBDVMOD	Device modifier. Magnetic tape -- SET MODE operation code. Unit record -- Not used.
33	(21) . 3	DEBUCBAD	Address of a UCB associated with a given data set.
36	(24) 4	DEBRDCB	
37	(25) . 3	DEBRDCBA	The address of the DCB for the READ associated data set.
40	(28) 4	DEBPDCB	

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>IBM 3525 CARD PUNCH (Continued)</u>			
41	(29) . 3	DEBPCBA	The address of the DCB for the PUNCH associated data set.
44	(2C) 4	DEBWDCB	
45	(2D) . 3	DEBWDCBA	The address of the DCB for the PRINT associated data set.
<u>TELECOMMUNICATIONS DEVICES</u>			
32	(20) n times 1		List of addresses (n) of UCBs for lines (n). Reserved.
	. 3	DEUCBAD	Address of the UCB for the line.
<u>GRAPHIC DEVICES</u>			
+0	1		Reserved.
+1	. 3	DEUCBAD ₁	Pointer to first UCB.
	1		Reserved.
	. 3	DEUCBAD _n	Pointer to last UCB.
<u>ISAM-DEPENDENT DEVICE SECTION</u>			
Present only if ISAM is used. Follows the basic section. Precedes the direct access storage device section. Counted as one extent in DEBNMEXT.			
32	(20) 1	DEBNIEE	Number of extents of independent index area.
33	(21) . 3	DEBFIEAD	Address of first index extent.
36	(24) 1	DEBNPEE	Number of extents of prime data area.
37	(25) . 3	DEBFPEAD	Address of the first prime data extent.
40	(28) 1	DEBNOEE	Number of extents of independent overflow area.
41	(29) . 3	DEBFOEAD	Address of the first overflow extent.
44	(2C) 4	DEBEXPT	
	1	DEBRPSID	Rotational position sensing (RPS) device indicators.
		1... ..	DEBRPSP-Prime data area is on RPS device.
		.1... ..	DEBRPSI-Independent index area is on RPS device.
		..1.	DEBRPSO-Independent overflow area is on RPS device.
		...1	DEBRPSAP-RPS SIO appendage has been loaded.
		.... xxxx	(Reserved bits).
	. 3	DEBEXPTA	Address of ISAM access method dependent section.
<u>DIRECT-ACCESS STORAGE DEVICES</u>			
EXTENT DESCRIPTION SEGMENTS: For each extent there is a 16-byte segment as follows.			
+0	1	DEBDVMOD	Device modifier: file mask.
+1	. 3	DEUCBAD	Address of UCB associated with this data extent.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>DIRECT-ACCESS STORAGE DEVICES (Continued)</u>
+4	2	DEBBINUM	Bin number.
+6	. . 2	DEBSTRCC	Cylinder address for the start of an extent limit.
+8	2	DEBSTRHH	Read/Write track address for the start of an extent limit.
+10	. . 2	DEBENDCC	Cylinder address for the end of an extent limit.
+12	2	DEBENDHH	Read/Write track address for the end of an extent limit.
+14	. . 2	DEBNMTRK	Number of tracks allocated to a given extent.

Note: For split cylinder data sets this field represents the number of tracks between the start address of the extent and the end address of the extent.

ACCESS METHOD DEPENDENT SECTION

Follows the device dependent section. (Note that for ISAM, there is a device section and an access method dependent section.)

BSAM, QSAM, EXCP Access Method

+0	2	DEBVOLSQ	Volume sequence number for multivolume sequential data sets.
+2	. . 2	DEBVOLNM	Total number of volumes in a multivolume sequential data set.
+4	8	DEBDSNM	Member name. This field appears only when an output data set has been opened for a member name and the DSCB specifies a partitioned data set.
+4	(4) 1	DEBTFLGS 1... .. .xxx xxxx	Flag field. Set by the channel-end appendage to indicate that it is bypassing embedded DOS checkpoint records in tape input files. (Reserved bits)
+5	(5) . 3	DEBUTSA	The address of the user totaling save area when OPTCD=T is specified in the DCB. These three bytes replace the member name field.
+8	(8) 4		Reserved.
+12	2	DEBBLKSI	Contains the contents of the DCBBLKSI field of the DCB when the first block was written by QSAM or BSAM processing format FS on DASD. Used to restore DCBBLKSI before writing EOD indicator.
+14	2	DEBLRECL	Contains the contents of the DCBLRECL field of the DCB (after DCB EXIT routine), when DCB is opened for QSAM input of format V or U. Used to restore DCBLRECL during CLOSE if DCBLRECL contents were non-zero before OPEN.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>BPAM</u>
			Only one of the following fields is present:
+0	(m-1)x1	DEBEXTNM	For a partitioned data set opened for input, <u>each one byte field</u> contains the extent number of the first extent entry for each data set except the first, if two or more data sets (m) are concatenated. The number of bytes in the field is equal to one less than the number of data sets concatenated.
+0	8	DEBDSNAM	For a partitioned data set opened for output for a member name, this field is the member name.
			<u>BDAM</u>
			<u>Only present for fixed-length records with the option of relative block addressing (but not track overflow)</u>
			There is one of these four byte fields for each extent described in the device dependent section.
+0	1	B/T	Number of blocks per track.
+1	. 3	B/E	Number of blocks per extent.
			<u>Only present for fixed-length records with the option of relative block addressing and track overflow</u>
			These fields occur only once within a DEB:
+0	4	T/P	Number of tracks per period.
+4	4	B/P	Number of blocks per period.
			The following field occurs once for each extent:
+8	4	B/E	Number of blocks per extent.
			<u>BTAM</u>
			This segment is always present for BTAM. It is used when a buffer pool or dynamic buffering is used; else the fields are zero.
+0	4		Address of the buffer routine.
+4	4		Address of the first CCW on the queue.
	4	n times	Address of following CCWs on the queue.
			<u>GAM</u>
+0	1		Reserved.
+1	. 3	DEBUCBAD	Address of UCB.

ISAM ACCESS METHOD DEPENDENT SECTION

Load Mode Section

+0	(0)	4	DEBPUT	Address of the PUT processing module.
----	-----	---	--------	---------------------------------------

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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ISAM ACCESS METHOD DEPENDENT SECTION (Continued)

<u>Scan Mode</u>	<u>Section</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
+0	(0) 4	DEBGET,DEBPUT	Address of the GET,PUT processing module.
+4	(4) 4	DEBWKPT4	Address of the UCB.
+8	(8) 4	DEBWKPT5	Pointer to the GET appendage module.
+12	(C) 4	DEBCREAD	Address of channel-end appendage for read.
+16	(10) 4	DEBCSETL	Address of the channel-end appendage for SETL.
+20	(14) 4	DEBCWRIT	Address of the channel-end appendage for write.
+24	(18) 4	DEBCCHK	Address of the channel-end appendage for write validity check.
+28	(1C) 4	DEBCREWT	Address of the channel-end appendage for rewrite.
+32	(20) 4	DEBCRECK	Address of the channel-end appendage for re-check.
+36	(24) 4	DEBAREAD	Address of the abnormal-end appendage for read.
+40	(28) 4	DEBASET L	Address of the abnormal-end appendage for SETL.
+44	(2C) 4	DEBAWRIT	Address of the abnormal-end appendage for write.
+48	(30) 4	DEBACHK	Address of the abnormal-end appendage for write validity check.
+52	(34) 4	DEBAREWT	Address of the abnormal-end appendage for re-write.
+56	(38) 4	DEBARECK	Address of the abnormal-end appendage for re-check.
BISAM	Section		
+0	(0) 4	DEBDISAD	Address of the privileged module entered when a BISAM macro instruction is executed.
+4	(4) 4	DEBWKPT4	Address of the part 1 appendage module (abnormal and channel-end appendages).
+8	(8) 4	DEBWKPT5	Address of the part 2 appendage module (abnormal and channel-end appendages).
+12	(C) 4	DEBFREED	Address of the dynamic buffering module.
+16	(10) 4	DEBRPSIO	Address of the RPS SIO appendage module.

END OF ACCESS METHOD DEPENDENT SECTIONS

SUBROUTINE NAME SECTION

Follows the access method dependent section, or the device dependent section if there is no access method dependent section.

	n times	DEBSUBID	Subroutine identification.
+0	2		Each access method subroutine, appendage subroutine, and IRB routine will have a unique eight-byte name. The low-order two bytes of each routine name will be in this field if the subroutine is loaded by the OPEN routines.

DATA EXTENT BLOCK -- QTAM MESSAGE
PROCESSING PROGRAM

This data extent block is used in QTAM by a message processing program to describe message process queues and destination queues, which are in main storage. (BTAM, and QTAM message control programs, use the ordinary DEB described previously.) It is an extension of the information in the DCB concerning the physical characteristics of the data set and other information that is used by the control program. Figure 12A shows the format of the DEB proper used for message processing queues; Figure 12B shows the DEB for destination queues.

DATA EXTENT BLOCK -- QTAM

Prefix

-16 (-10) Work area	-15 (-F) DSCB Address		
-8 (-8) DCB Mask			
-4 (-4) Length	-3 (-3) Reserved		-1 (-1)

Basic Section

0 (0) Reserved	1 (1) Address of TCB		
4 (4) Reserved	5 (5) Address of Next DEB		
8 (8) Reserved			
	17 (11) Address of Next Record		
20 (14) Reserved	21 (15) Address of Next DEB		
24 (18) ID	25 (19) Address of DCB		
28 (1C) Reserved	29 (1D) Address of DEB + 48		
32 (20) 1st Address of Dummy LCB			35 (22)

Queue Control Block

36 (24) Reserved	37 (25) Address of Dummy Entry			
40 (28) Reserved				
	45 (2D) Address of QPRIRITY Subtask			47 (2F)

Buffer Request Block

48 (30) Reserved			
52 (34) Priority	53 (35) Reserved		
56 (38) Op Code	57 (39) Address of QCB		
60 (3C) Hex Code	61 (3D) Address of DEB + 32		63 (3F)

64 (40) Size of Work Area	66 (42) Reserved		
87 (57)			

Figure 12A. Data Extent Block -- QTAM -- Message Process Queue

DATA EXTENT BLOCK -- QTAM

Prefix

-16 (-10) Work Area	-15 (-F) DSCB Address
-8 (-8) DCB Mask	
-4 (-4) Length	-3 (-3) Reserved
	-1 (-1)

Basic Section

0 (0) Reserved	1 (1) Address of TCB
4 (4) Reserved	5 (5) Address of Next DEB
8 (8) Reserved	21 (15) Address of Next DEB
24 (18) ID	25 (19) Address of DCB
28 (1C) Reserved	31 (1F)

Queue Control Block

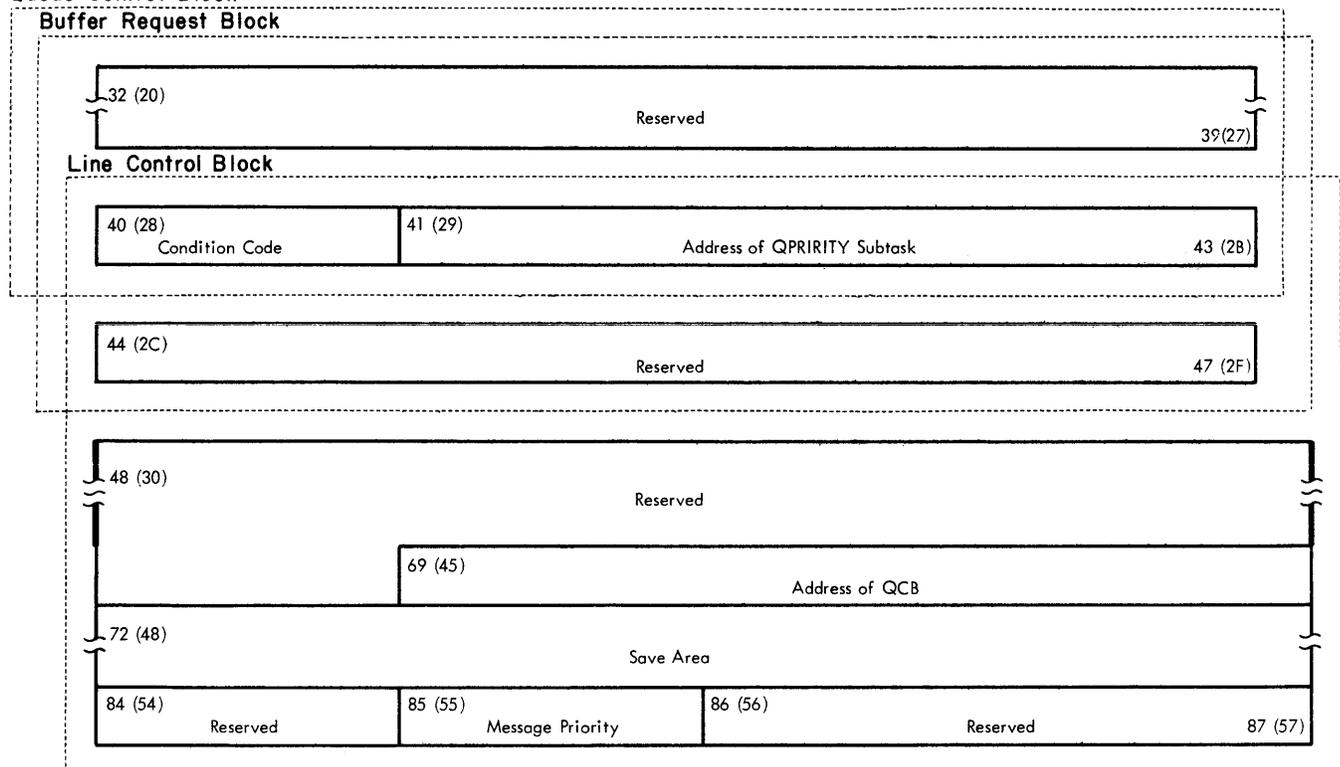


Figure 12B. Data Extent Block -- QTAM -- Destination Queue

DATA EXTENT BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
---------------	----------------------------	---

MESSAGE PROCESS QUEUE

PREFIX

-16	(-10) 1	Work area used by I/O support routines.
-15	(-F) . 7	Direct access device address used by I/O support routines. Format (BBCCHHR)
-8	(-8) 4	DCB modification mask used by I/O support routines.
-4	(-4) 1	Length of this DEB.
-3	(-3) . 3	Reserved.

DEB PROPER

BASIC SECTION

0	(0) 1	Reserved.
1	(1) . 3	Address of the TCB.
4	(4) 1	Reserved.
5	(5) . 3	Address of the next DEB in the same task.
8	(8) 9	Reserved.
17	(11) . 3	Address of the next available record of the process queue on the direct access device.
20	(14) 1	Reserved.
21	(15) . 3	Address of the next DEB on the chain of the process program's DEBs.
24	(18) 1	X'0F'; identifies this block as a DEB.
25	(19) . 3	Address of the DCB.
28	(1C) 1	Reserved.
29	(1D) . 3	Address of the beginning of the buffer request block (BRB) portion of this DEB.
32	(20) 4	Address of a dummy LCB.

QUEUE CONTROL BLOCK

36	(24) 1	Reserved.
37	(25) . 3	Address of dummy last entry in queue.
40	(28) 5	Reserved.
45	(2D) . 3	Address of QPRIRITY subtask.

DATA EXTENT BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
<u>BUFFER REQUEST BLOCK</u>		
48	(30) 4	Reserved.
52	(34) 1	Priority.
53	(35) . 3	Reserved.
56	(38) 1	X'08'; identifies the operation code for a TIC command.
57	(39) . 3	Address of the process queue control block on the direct access device.
60	(3C) 1	X'07'; indicates a dummy buffer request block.
61	(3D) . 3	Address of the beginning of the line control block portion of this DEB.

END OF BUFFER REQUEST BLOCK

64	(40) 2	Size of work area necessary for GET.
66	(42) . . 22	Reserved.

DESTINATION QUEUE

PREFIX

-16	(-10) 1	Work area used by I/O support routines.
-15	(-F) . 7	Direct access device address used by I/O support routines. Format (BCCCHR)
-8	(-8) 4	DCB modification mask used by I/O support routines.
-4	(-4) 1	Length of this DEB.
-3	(-3) . 3	Reserved.

DEB PROPER

BASIC SECTION

0	(0) 1	Reserved.
1	(1) . 3	Address of TCB.
4	(4) 1	Reserved.
5	(5) . 3	Address of the next DEB in the same task.
8	(8) 13	Reserved.
21	(15) . 3	Address of the next DEB on the chain of processing program's DEBs.
24	(18) 1	X'0F' identifies this block as a DEB.
25	(19) . 3	Address of the DCB.
28	(1C) 4	Reserved.

DATA EXTENT BLOCK -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
<u>BUFFER REQUEST BLOCK, QUEUE CONTROL BLOCK</u>		
32	(20) 8	Reserved.
<u>LINE CONTROL BLOCK</u>		
40	(28) 1	Condition code from the line control block.
41	(29) . 3	Address of QPRIRITY subtask.
END OF QUEUE CONTROL BLOCK		
44	(2C) 4	Reserved.
END OF BUFFER REQUEST BLOCK		
48	(30) 21	Reserved.
69	(45) . 3	Address of the queue control block for the destination queue.
72	(48) 12	Save area.
84	(54) 1	Reserved.
85	(55) . 1	Temporary location for the message priority code.
86	(56) . . 2	Reserved.
END OF LINE CONTROL BLOCK		
END OF QTAM DEB		

Data Extent Block -- TCAM

The TCAM data extent block (DEB) is a fixed length control block with a 36-byte prefix. The DEB describes the extents of its associated data set. The DEB contains the addresses of the DCB, UCB, and TCB. It also contains the number of extents associated with a data set.

The address of the DEBTCBAD field of the DEB is in the DCBDEBAD field of the DCB. The address of the beginning of the DEB prefix is DCBDEBAD-36(24).

Storage is allocated for the DEB and it is initialized at the time the data set is opened.

Figure 12C shows the format of the DEB. A description of the fields follows the figure.

DATA EXTENT BLOCK -- TCAM

-36 (-24)		DEBEOEA Address of End-of-Extent Appendage	
-32 (-20)		DEBSIOA Address of SIO Appendage	
-28 (+1C)		DEBPCIA Address of PCI Appendage	
-24 (-18)		DEBCEA Address of Channel End Appendage	
-20 (-14)		DEBXCEA Address of Abnormal and Normal Line End Appendage	
-16 (-10) DEBWKARA I/O Support Work Area	-15 (-F)	DEBDSCBA Address of DSCB	
-8 (-8)		DEBDCBMK DCB Modification Mask	
-4 (-4)		DEBLNGTH Length of DEB in Dobulewords	
0 (0) DEBNMSUB	1 (1)	DEBTCBAD Address of the TCB	
4 (4) DEBAMLNG Length of Access Method	5 (5)	DEBAMLNG	DEBDEBAD Address of Next DEB
8 (8) DEBOFLGS Data Set Flags	9 (9)	DEBOFLG	DEBIRB Address of the IRB
12 (C) DEBOPATB Type of I/O	13 (D)	DEBOPATB	DEBSYSPG Address of First IOB in System Purge Chain
16 (10) DEBNMEXT Number of Extents	17 (11)	DEBNMEXT	DEBUSRPG Address of First IOB in User Purge Chain
20 (14)	21 (15)	DEBPRIOR	DEBECBAD Address of Parameter List to Find Purge ECB
24 (18) DEBPROTG Protection Key DEB ID	25 (19)	DEBPROTG	DEBDCBAD
28 (1C) DEBXSCL Extent Scale	29 (1D)	DEBXSCL	DEBAPPAD Address of I/O AVT
32 (20) Reserved	33 (21)	DEBDVMOD	DEBUCBAD Address of UCB

35 (23)

Figure 12C. Data Extent Block -- TCAM

DATA EXTENT BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Name Field</u>	<u>Field Description, Contents, Meaning</u>
-36 (-24)	4	DEBEOEA	Address of the end-of-extent appendage routine.
-32 (-20)	4	DEBSIOA	Address of the start I/O appendage routine.
-28 (-1C)	4	DEBPCIA	Address of the program-controlled-interruption routine.
-24 (-18)	4	DEBCEA	Address of the channel end appendage routine.
-20 (-14)	4	DEBXCEA	Address of the abnormal normal line end appendage routine.
-16 (-10)	1	DEBWKARA	I/O support work area.
-15 (-F)	. 7	DEBDSCBA	Address of the DSCB.
-8 (-C)	4	DEBDCBMK	DCB modification mask used by IOS support.
-4 (-4)	4	DEBLNGTH	Length of the DEB in doublewords.
0 (0)	1	DEBNMSUB	Number of subroutines loaded by the OPEN routine.
1 (1)	. 3	DEBTCBAD	Address of the TCB.
+4 (4)	u	DEBAMING	Length of the access method section in doublewords.
+5 (5)	. 3	DEBDEBAD	Address of the next DEB
+8 (8)	1	DEBOFLGS	Data set flags. These flags are the same (when applicable) as they are in the ordinary DEB.
+9 (9)	. 3	DEBIRBAD	Address of the IRB.
+12 (C)	1	DEBOPATB 0011 xxxx	Type of I/O. INPUT (Reserved bits).
+13 (D)	. 3	DEBSYSPG	Address of first IOB in the system purge chain.
+16 (10)	1	DEBNMEXT	Number of extents for message queue and checkpoint data sets.
+17 (11)	. 3	DEBUSRPG	Address of the first IOB in the user purge chain.
+20 (14)	1	DEBPRIOR	Priority of the task; always zero for TCAM.
+21 (15)	. 3	DEBECBAD	Address of the parameter list used to locate the purge ECB for an SVC purge request.
+24 (18)	1	DEBPROTG xxxx 1111	Protection key DEB ID. Protection key. A hexadecimal "F" to identify this block as a DEB.
+25 (19)	. 3	DEBDCBAD	Address of the DCB.
+28 (1C)	1	DEBXSCL	Extent scale: 4 for direct access device and 2 for teleprocessing device.
+29 (1D)	. 3	DEBAPPAD	Address of the I/O appendage vector table.
+32 (20)	1	DEBDVMOD	Reserved.
+33 (21)	. 3	DEBUCBAD	Address of the UCB.

Data Event Control Blocks

Data event control blocks (DECB) contain information about an input or output operation requested by a READ or WRITE macro instruction.

Separate diagrams and descriptions are presented for the following uses of DECBs:

- BSAM
- BISAM
- BDAM
- QTAM
- BTAM

DATA EVENT CONTROL BLOCK -- BSAM

The data event control block (DECB) is created when a READ or WRITE macro instruction is expanded. It contains information about the input or output operation that is requested by the macro instruction. Figure 13A shows the format of the DECB used in BSAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BSAM

0 (0)	DECSDECB Event Control Block	
4 (4)	DECTYPE, DECBPTR Type of I/O Request or Address of next DECB	6 (6) DECLNGTH Length of Key and Data
8 (8)	DECDCBAD Address of DCB	
12 (C)	DECAREA Address of Key Data or of user specified channel program	
16 (10)	DECIOBPT Address of IOB	
20 (14)	DECNEXT Address of the Next Address Feedback Field	

23 (17)

Figure 13A. Data Event Control Block -- BSAM

DATA EVENT CONTROL BLOCK -- BSAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Name Field</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB	Event control block.
4	(4) 4	DECBPTR	For IBM 1419 Magnetic Character Reader and IBM 1275 Optical Reader Sorter: A pointer to the next DECB to be tested for completion by the CHECK macro instruction. (DECB chaining applies to the use of more than one device.) This field in the last DECB must be zero.
4	(4) 2	DECTYPE	For other than IBM 1419 Magnetic Character Reader and IBM 1275 Optical Reader Sorter: Type of I/O request.
		Byte 1	Type of length operand:
4	(4)	1... .. .xxx xxxx	S coded for length. (Reserved bits)
		Byte 2	Type of operation:
5	(5)	1... .. .1.. .... ..1. .... ...1 x.x.... .1.. ..1. ...1	READ SF READ SB WRITE SF WRITE SD (Reserved bits) WRITE SZ WRITE SFR
6	(6) . . 2	DECLNGTH	Length of key and data.
8	(8) 4	DECDCBAD	Address of the DCB to which this I/O request is related.

DATA EVENT CONTROL BLOCK -- BSAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Name Field</u>	<u>Field Description, Contents, Meaning</u>
12	(C) 4	DECAREA	Address of the key and data, or for 1287 or 1288 optical readers, the address of a user specified channel program.
16	(10) 4	DECIOBPT	Address of the IOB.
20	(14) 4	DECNEXT	
20	(14) 1		Reserved.
21	(15) . 3		Address of the next address feedback field. Present only if R is coded in the WRITE macro.

DATA EVENT CONTROL BLOCK -- BISAM

The data event control block (DECB) is created when a READ or WRITE macro instruction is expanded. It contains information about the input or output operation that is requested by the macro instruction. Figure 13B shows the format of the DECB used in BISAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BISAM

0 (0)			DECBECEB Event Control Block
4 (4)	DECBTYP1 Options	5 (5)	DECBTYP2 Type of I/O
		6 (6)	DECBLGTH No. of Bytes Read or Written
8 (8)			DECBCBA Address of DCB
12 (C)			DECBAEA Storage Address for Record
16 (10)			DECBLGR Address of Logical Record
20 (14)			DECKEY Address of Key Portion of Record
24 (18)	DECBECE1 Exceptional Condition Codes	25 (19)	DECBECE2 Exceptional Condition Codes

Figure 13B. Data Event Control Block -- BISAM

DATA EVENT CONTROL BLOCK -- BISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECBECB	Event control block.
0	(0)	Byte 1 1... .. .xxx xxxx	Awaiting completion of the event. Flag field. Awaiting completion of the event. (Reserved bits)
1	(1)	Byte 2-4	Address of the RB for the program awaiting the event.
0	(0)	Byte 1 x.xx xxxx .1.. ..	After completion of the event: Flag field. (Reserved bits) Event has completed (normally or abnormally). If the event completed abnormally, fields DECBEXC1 and DECBEXC2 will show the reason.
1	(1)	Byte 2-4	Reserved.
4	(4) 1	DECBTYP1 xxxx xx.. .... ..1. .... ...1	Options: (Reserved bits) Length coded as 'S'. Area coded as 'S'.
5	(5) . 1	DECBTYP2 1... .. .x.x ..xx ..1. 1... .... .1..	Type of I/O request. READ K (Reserved bits) READ KU. WRITE K. WRITE KN.
6	(6) . . 2	DECBLGTH	Number of bytes read or written.
8	(8) 4	DECBDCBA	Address of the data control block.
12	(C) 4	DECBAREA	Address of the area in storage for the record.
16	(10) 4	DECBLOGR	Address of the logical record.
20	(14) 4	DECBKEY	Address of the key portion of the record.
24	(18) 1	DECBEXC1 1... .. .1.. .... ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	Exceptional condition code. Record not found. Record length check. Space not found in which to add a record. Invalid request. Uncorrectable I/O error. Unreachable block. Overflow record. Duplicate record presented for inclusion in the data set.
25	(19) . 1	DECBEXC2 1. .....1 xxxx xx..	Exceptional condition code. Execution of the last channel program was instituted by an asynchronous routine. Previous macro instruction was READ KU. (Reserved bits)

DATA EVENT CONTROL BLOCK -- BDAM

The data event control block (DECB) is created when a READ or WRITE macro instruction is expanded. It contains information about the input or output operation that is requested by the macro instruction. Figure 13C shows the format of the DECB used in BDAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BDAM

0 (0)	DECSDECB Event Control Block	
4 (4)	DECTYPE Type of I/O Request	6 (6) DECLNGTH Length of Data
8 (8)	DECDCBAD Address of DCB	
12 (C)	DECAREA Address of the Data	
16 (10)	DECIOBPT Address of the IOB	
20 (14)	DECKYADR Address of the Key	
24 (18)	DECRCPT Address of Block Reference Field	
28 (1C)	DECNA Address of the Next Address Feedback Field	
		31 (1F)

Figure 13C. Data Event Control Block -- BDAM

DATA EVENT CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB	Event control block.
0	(0)	Byte 1 1... ... .xxx xxxx	Awaiting event completion. Waiting for completion of event. (Reserved bits)
1	(1)	Byte 2-4	Address of the request block for the program waiting for completion of the event.
0	(0)	Byte 1 x.xx xxxx .1..	After event completion: (Reserved bits) Event has completed.
1	(1)	Byte 2 1... .... .1.. .... ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	Record not found. Record length check. Space not found. Invalid request. (This condition also sets a bit in the next byte.) Uncorrectable I/O error. End of data. Uncorrectable error other than an I/O error. A READ with exclusive control was not preceded by a WRITE with exclusive control.
2	(2)	Byte 3 x... .... .1.. .... ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	(A reserved bit) A WRITE macro instruction was addressed to an input data set. An extended search was specified with the DCBLIMCT field set to zero. The block requested is not within the data set. A write-by-identification (DI) addressed record zero. A search-on-key (DK) was specified with the DCBKEYLE field set to zero or without an address for the key. A macro instruction used an option not set in the DCB. The key for the fixed-length record to be added begins with hex. FF.
3	(3)	Byte 4	Reserved.
4	(4) 4	DECTYPE	Type of I/O request.
		Byte 1 1... .... .1.. .... ..1. .... ...1 1... .... .1.. .... ..1. .... ...1	Verify. Overflow. Extended search. Feedback. Actual addressing. Dynamic buffering. Read exclusive. Relative block addressing.

DATA EVENT CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
		Byte 2	
		1... ..	S coded for key address.
		.1.. ..	S coded for block length.
		.... ..x	Reserved.
		.... x..	Type of operation -
		.... 0..	WRITE
		.... 1..	READ
		.... .x..	Type of search argument -
		.... .0..	Id.
		.... .1..	Key.
		.... .1..	Add option of WRITE operation.
		..11 ..	RU is suffixed to the type, indicating that the feedback address pointed to by DECNXADR can be the address of either the next data record or the next capacity record, whichever occurs first.
		..01 ..	R is suffixed to the type, indicating that the feedback address pointed to by DECNXADR is the address of the next data record.
6	(6) . . 2	DECLNGTH	Length of the data.
8	(8) 4	DEDCBAD	Address of the DCB to which this I/O request is related.
12	(C) 4	DECAREA	Address of the data.
16	(10) 4	DECIOBPT	Address of the IOB.
20	(14) 4	DECKYADR	Address of the key.
24	(18) 4	DECRCPT	Address of the block reference field.
28	(1C) 4	DECNA	
		Byte 1	Reserved.
		Bytes 2-4	Address of the next address feedback field. Present only if R or RU is coded in the READ macro.

DATA EVENT CONTROL BLOCK -- QTAM

The data event control block (DECB) is created when a READ or WRITE macro instruction is expanded. It contains information about the input or output operation that is requested by the macro instruction. Figure 13D shows the format of the DECB used in QTAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- QTAM

0 (0)			LINEDECB Always Zero
4 (4)	Reserved	5 (5)	Op Code
		6 (6)	Length of Input Area
8 (8)			
Address of DCB			
12 (C)			
Address of Data in Buffer			
16 (10)			
Reserved			
20 (14)	No. Messages Received	21 (15)	Address of Active Entry in Polling List
24 (18)	Reserved	25 (19)	Index, in DEB, to UCB
		26 (1A)	Reserved
28 (1C)			
Reserved			
32 (20)			
Address of Addressing Characters in Terminal Entry			
36 (24)	Reserved	37 (25)	Address of Polling List
			39 (27)

Figure 13D. Data Event Control Block -- QTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4 . . .	LINEDECB	Always zero.
4	(4) 1	....	Reserved.
5	(5) . 1	....	Operation code for the current segment.
6	(6) . . 2	....	Length of input area for the initial read.
8	(8) 4	....	Address of the DCB.
12	(C) 4	....	Starting address for data in a buffer.
16	(10) 4	....	Reserved.
20	(14) 1	....	Number of messages received.
21	(15) . 3	....	Address of currently active entry in the polling list.
24	(18) 1	....	Reserved.
25	(19) . 1	....	Index to the UCB address in the DEB.
26	(1A) . . 2	....	Reserved.
28	(1C) 4	....	Reserved.
32	(20) 4	....	Address of the addressing characters in the terminal entry.
36	(24) 1	....	Reserved.
37	(25) . 3	....	Address of the polling list.

DATA EVENT CONTROL BLOCK -- BTAM

The data event control block (DECB) is used in the execution of a READ or WRITE macro instruction. It contains information about the input or output operation that is requested by the macro instruction. Figure 13E shows the format of the DECB. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BTAM

0 (0)			DECSDECB Event Control Block		
4 (4)		DECTYPE Programming, Indicators, Code	6 (6)	DECLNGTH Buffer Length, Message Area Length	
8 (8)	DECBUFCT Buffer Count	9 (9)	DEDCBAD DCB Address		
12 (C)				DECAREA Buffer Address, Message Area Address	
16 (10)	DECSSENS0 Sense Byte	17 (11)	DECSSENS1 Reserved	18 (12)	DECCOUNT CSW Residual Count
20 (14)				DECCMCO, DECENTRY Error Command, Terminal List Address	
24 (18)	DECFLAGS Operations Status	25 (19)	DECRLN Relative Line No.	26 (1A)	DECRESPN Addressing Response, VRC/LRC Response
28 (1C)	DECTPCOD Operation	29 (1D)	DECERRST I/O Error Status	30 (1E)	DECCSWST CSW Status
32 (20)				DECADRPT Address of Previous Entry in Addressing List	
36 (24)				DECPOLPT Contents Depend on Use of Autopoll, Programmed Polling, or BSC	
BSC Extension					
40 (28)			Reserved	42 (2A)	DECWLNG Length of Data Area or of Tone Character Area
44 (2C)				DECWAREA Address of Data Area or of Area Containing the Tone Characters	47 (2F)

Figure 13E. Data Event Control Block -- BTAM

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB		Event control block.
4	(4) 2	DECTYPE		Programming indicators.
4	(4)	Byte 1		
		1... ..		READ, using Autopoll
		.xxx x...		(Reserved bits)
		.... .1..		'S' coded for terminal entry.
		.... ..1.		'S' coded for area.
		.... ...1		'S' coded for length.
5	(5)	Byte 2		
		1... ..		Reset for type code TIR, TTR, TVR, TLR, TSR, TIXR, TPR, TTXR
		.xx.		(Reserved bits)
		...1 1111		Operation

<u>Value</u>	<u>Type</u>	<u>Code</u>	<u>Operation</u>	<u>Type</u>
00	TB		Write break.	
01	TI		Read initial.	
02	TI		Write initial.	
03	TT		Read continue.	
04	TT		Write continue.	
05	TV		Read conversational.	
06	TV		Write conversational.	
07	TP		Read repeat (other than WTTA).	
07	TE		WTTA: Read continue with identification exchange.	
08	TA		Write positive acknowledgment.	
09	TS		Read skip.	
	TQM		Read inquiry monitor.	
0A	TN		Write negative acknowledgment.	
	TN		Write disconnect (TWX).	
	TR		Write reset (BSC).	
0B	TB		Read buffer.	
	TRM		Write reset monitor.	
0C	TL		Write at line address.	
	TIO		Write initial optical.	
0D	TIV		Write initial conversational.	
	TTA		Read continue with leading acknowledgment.	
0E	TS		Write erase.	
	TCO		Write invitational optical.	
0F	TTV		Write continue conversational.	
10	TD		Write disconnect.	
	TD		Write control (2750).	
11	TC		Read connect.	
	TM		Read modified.	
12	TIX		Write initial transparent.	
	TUS		Write unprotected erase.	
	TVO		Write conversational optical.	
13	TTL		Read continue with leading graphics.	
	TBP		Read buffer from position.	
14	TTX		Write continue transparent.	
15	TQ		Read inquiry.	
16	TQ		Write inquiry.	
17	TPL		Read repeat with leading graphics.	
19	TIQ		Read initial inquiry.	
	TMP		Read modified from position.	
1A	TW		Write wait before transmitting.	
1B	TRV		Read interrupt.	
1C	TC		Write connect.	
1D	TIVX		Write initial conversational transparent.	
1E	TCW		Read connect with tone.	
1F	TTVX		Write continue conversational transparent.	

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
				<u>Value Type Code Operation Type</u>
			82	TIR Write initial with reset.
			83	TTR Read continue with reset.
			84	TTR Write continue with reset.
			85	TVR Read conversational with reset.
			86	TVR Write conversational with reset.
			87	TPR Read repeat with reset.
			8C	TLR Write at line address with reset.
			8E	TSR Write erase and reset.
6	(6) . . 2	DECLNGTH		Length of buffer or message area.
8	(8) 1	DECBUFCT		Contains a running count of buffers obtained by BTAM for the current read operation. (Dynamic buffering only.) Use differs during BSC and 2760 online test.
8	(8) 1			During BSC and 2760 online test:
		0... ..		Online test requested by RFT message (BSC)
		1... ..		Online test initiated by ONLTST macro instruction (BSC)
		.0..		Sending test messages (BSC)
		.1..		Receiving test messages (BSC)
		..xx xxxx		Type 11 online test for 2760 Optical Image Unit. (Reserved bits)
9	(9) . 3	DECDCBAD		Address of associated DCB.
12	(C) 4	DECAREA		Address of buffer or message area.
16	(10) 1	DECSSENS0		Sense information.
17	(11) . 1	DECSSENS1		Reserved.
18	(12) . . 2	DECCOUNT		Residual count from CSW for last CCW executed.
20	(14) 1	DECCMCO, DECENTRY		Command for which the error occurred.
21	(15) . 3	DECENTRY		Address of the terminal list.
24	(18) 1	DECFLAGS		Operation status.
		xxx.		<u>One of These:</u> Start-Stop Operations (Reserved bits) BSC Operations:
		10..		Error status message was received.
		11..		WACK was received.
		.1..		Acknowledgment other than ACK-0 or ACK-1 received.
		..1.		Acknowledgment alternation incorrect.
		...1		<u>One of These:</u>
				TWX 33/35 station, BSC station:
				Incorrect ID received.
				Autopoll:
				Index byte received does not match an active one.
				BSC nonswitched point-to-point line:
				Contention occurred.
				WTTA:
				Contention occurred, or incorrect ID received.
		.... 1...		READ, dynamic buffering:
				No buffer was available. (Message lost.)

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
		DECFLAGS (Continued)		
		.... .1..		<u>One of These:</u> OPENLST, POLLING: Negative response to polling received. WRAPLST: All entries are inactive. Addressing: Negative response to addressing received. WTTA: Last message received ended with EOT or time-out. 2741: Power is off, or other intervention required condition exists.
		.... ..1.		WTTA: Message ended with WRU signal. BSC stations: Reverse interrupt (RVI) sequence was received (see also bit 1). 2741: Write operation was ended by terminal interrupt.
		.... ...1		WTTA: Contention condition was encountered. BSC stations: STX ENQ sequence was received. For local 3270, OLDTEP is using the device to run diagnostics.
<u>Note:</u> For ANR remote: If Bit 1=0 and Bit 6=1, then <u>ANR</u> Remote status message (SOH% R) was received.				
25	(19) . 1	DECRLN		Relative line number.
26	(1A) . . 2	DECRESPN		Response indicators (One of these).
26	(1A)	Byte 1 Byte 2		Stop - Start Operations: Response from a terminal to addressing. Vertical redundancy character and longitudinal redundancy character (VRC/LRC) response.
26	(1A)			BSC Operations: Response from a terminal to addressing.
28	(1C) 1	DECTPCOD		<u>Type of Terminal Command</u>
			00	Any command issued by on-line test routine or for a local 3270 device.
			01	Disable, when disable is the first command of a channel program. Dial. Enable. Prepare. Write pad character. Write wait before transmitting. Write tone for data sets that do not generate a data tone.
		(DECTPCOD Continues)		

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
28	(1C)	(DECTPCOD 05 Continued)	WTTA	Sense - WT telegraph terminals Write EOA EOT EOT EOT sequence before selection. Write EOT sequence before polling or addressing. Write response to text. Write EOA and 15 idle characters.
			2740, Basic 2760	Write EOA PRE o.
			03	Write polling, addressing, or broadcast characters. Poll
			TWX	Write turnaround sequence.
			TWX, BSC	Write CPU-ID sequence.
			BSC	Write ENQ
			04	Write space, sense (2740 SC - 2740 with station control).
			2260R	Write 2848 command.
			83B3	Write FIGS characters.
			1030	Write 1.
			WTTA	Write WRU. Write Identification. Write pad characters. Write LTRS characters.
			05	Read response to polling.
			06	Read response to addressing.
			07	TWX, BSC Read ID response.
			08	Write end-of-addressing character after addressing.
			1030	
			1050	
			2740	
			1060	
			2260R	
			BSC	Write response to Inquiry. Write response to text.
			2760	Write EOB character.
			09	NOP or TIC after Poll in a READ with SSALST, SSAWLST, AUTOLST, or AUTOWLST.
			0A	Read Index (Auto Poll). Read response to polling (programmed polling).
			0B	BSC Read inquiry.
			0C	BSC Read response to inquiry.

(DECTPCOD Continues)

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
28 (1C)		(DECTPCOD 10 Continued)11	2260R 2760	Write at line address. Read or write text. Write frame-change characters.
			12	Read skip or TIC for dynamic buffering.
			13 BSC	Write end-of-transparent-text characters.
			20	Start-Stop Read response to text.
			21	All reset commands.
			22	Read skip.
			23	Write break.
			24	Any command issued during OPEN, LOPEN, or CLOSE (Set Address, Enable, Disable, and Set Mode commands).
			25 BSC	Read response to text.
			40-4C 50-53 61-65	The last CCW executed was the first read or write text CCW to be executed in a channel program using dynamic buffering.
			80-8C 90-93 A1-A5	Indicates the final command in the channel program (not necessarily the last command executed).
29 (1D) . 1		DECERRST		I/O error status flags.
		1...		SIO resulted in a condition code of 3.
		.1..		Undefined error condition.
		..1.		An error condition occurred during an I/O operation initiated by the error recovery routines.
		...1		Diagnostic write/read operation ended because of error, (2701 only).
				An error occurred that makes the integrity of the device regeneration buffer doubtful (local 3270 only).
		.... 1...		Disable command issued to a switched line by error recovery routine because of permanent error on that line.
		.... ...1		3275 Dial RFT error bit. The RFT message has been transmitted the specific number of times, followed by a Write Reset. The response to the Write Reset indicates an error has occurred. (3275 with Dial feature only)
		.... .xx.		(Reserved bits)
30 (1E) . . 2		DECCSWST		Status bits from CSW for last CCW executed.
32 (20) 4		DECADRPT		Address of addressing list entry used in previous operation.

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
36 (24)	4	DECPOLPT		One of these: Programmed Polling: Address of the current entry in the polling list. Autopoll: Byte 1: Index to current entry in polling list. Bytes 2-4: Address of polling list. BSC On-Line test: Address of text data. <u>BSC Extension</u> Fields are present only if a sublist is coded for the area and length operands of the READ or WRITE macro instruction that defines the DECB.
40 (28)	2			Reserved.
42 (2A)	. . 2	DECWLNG		Length, in bytes, of the data area in leading-graphics and conversational type operations, or of the area containing the tone characters in read connect with tone (TCW) operations.
44 (2C)	4	DECWAREA		Address of the data area in leading-graphics and conversational operations, or of the area containing the tone characters, in read TCW operations.

Device Name Table

The device name table (DNT) contains all of the device names that are in use. This table is a part of the job management initiator/terminator routine. The information in this table and in the UCBS is used in allocation of devices as specified in DD cards. Figure 14 shows the format of the device name table. Descriptions of the fields follow the illustration.

DEVICE NAME TABLE

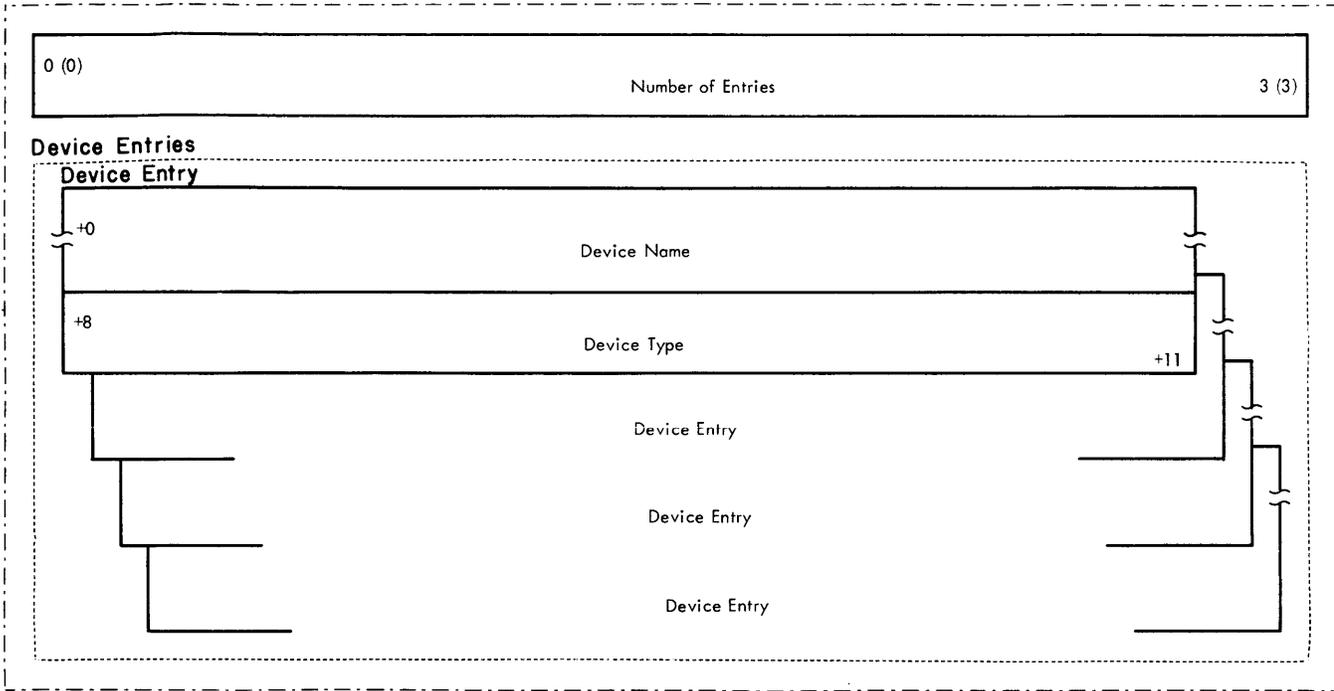


Figure 14. Device Name Table

DEVICE NAME TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4		Number of entries. The number of 12 byte entries in the table. Each device name has one entry.
			<u>THE FOLLOWING 12 BYTE FIELD IS REPEATED FOR EACH DEVICE</u>
+0	8		Device name. A device name which is in one of two classes: generic or user assigned. The name is left justified and padded with blanks to the right. <u>Generic name:</u> IBM generated name up to 8 characters in length. Examples: 2400 (2400 series 9-track Magnetic Tape Drive) 2311 (disk drive) <u>User assigned name:</u> User assigned name up to 8 characters in length. Examples: MAGTAPE
+8			Device type.
+8	4		<u>Generic name:</u> The contents of the field are the same as those of the UCBTYP field in the UCB except that optional features are not indicated; byte 2 contains zeros.
+8	2		<u>User assigned name:</u> A digit one higher than the digit for the preceding user assigned name. The first entry for a user assigned name will contain a 1 in this field.
+10	. . 1	xxxx xx..	If one device is associated with the device name, these bits will be the same as bits 0-5 of the device class field (byte 3) of the UCBTYP field. If more than one device is associated with the name, these bits will indicate the result of ORing the device class field of the UCBTYP field for each device.
		.... ..00	Always zero.
+11	. . . 1		Zero.

Data Set Control Blocks

The data set label for a data set residing on a direct access volume is called a data set control block (DSCB). One or more DSCBs are used to describe the data set. Each DSCB is 140 bytes, consisting of a 44 byte key and a 96 byte data portion.

The DSCBs describing all data sets on a volume make up the volume table of contents (VTOC).

Separate diagrams and descriptions are presented for the following uses of DSCBs:

- Format 1 -- Identifier DSCB
- Format 2 -- Index DSCB
- Format 3 -- Extension DSCB
- Format 4 -- VTOC DSCB
- Format 5 -- Free Space DSCB
- Format 6 -- Shared Extent DSCB

In addition, there is a format 0 DSCB, the free VTOC record. It has the same format as other DSCBs; however, it contains all binary zeros.

**FORMAT 1 -- IDENTIFIER DATA SET CONTROL
BLOCK**

The identifier data set control block (DSCB) describes the characteristics and up to three extents of a data set. For data sets having indexed sequential (IS) organization, additional characteristics are specified in an index (format 2) DSCB pointed to by the identifier (format 1) DSCB. Additional extents are described in an extension (format 3) DSCB pointed to by the format 1 DSCB (or format 2 when the data set has IS organization). A data set can have a maximum of 16 extents on one volume. Figure 15A shows the format of the identifier (format 1) DSCB. Descriptions of the fields follow the illustration.

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

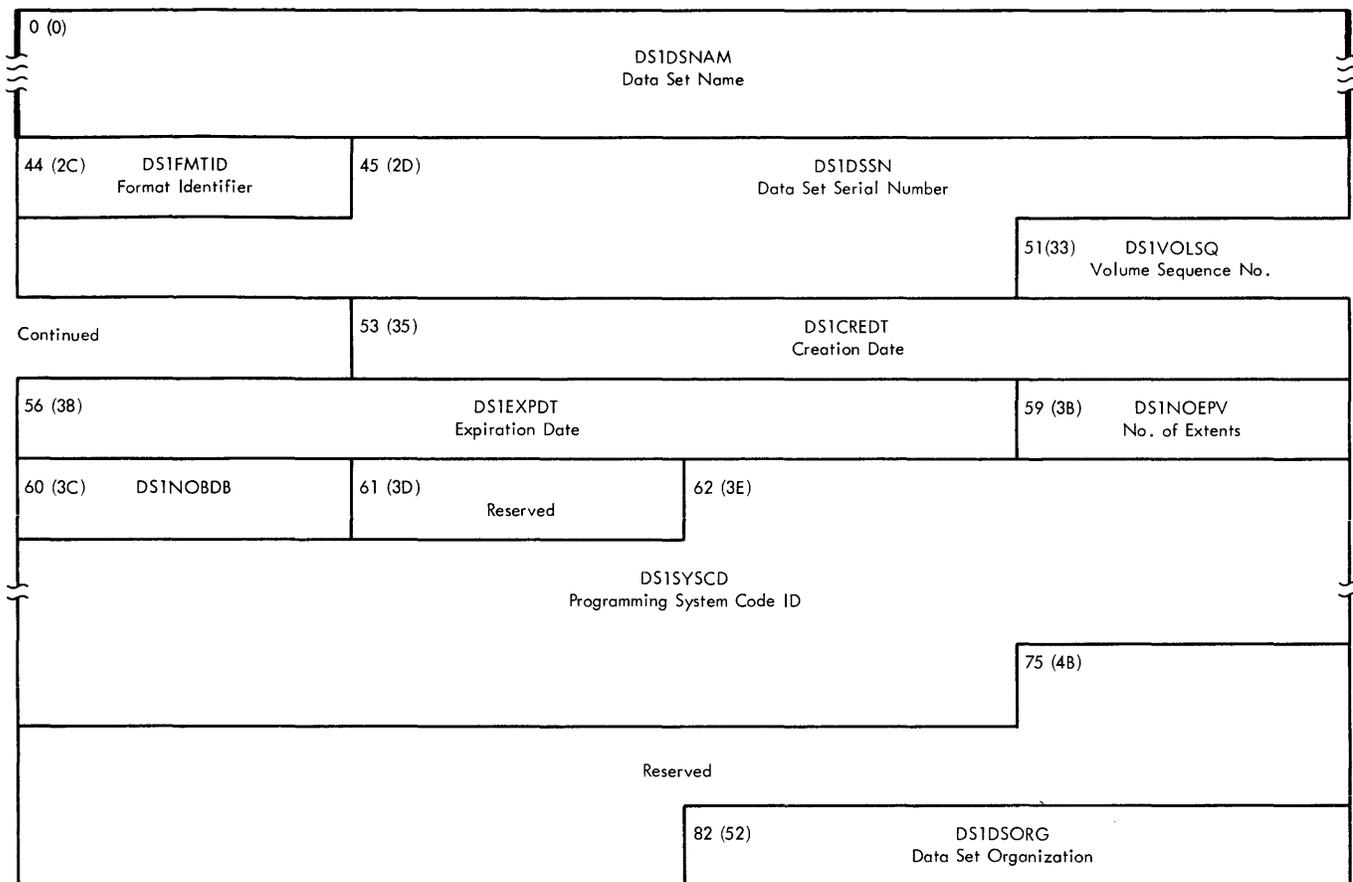


Figure 15A. Format 1 -- Identifier Data Set Control Block (Part 1 of 2)

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

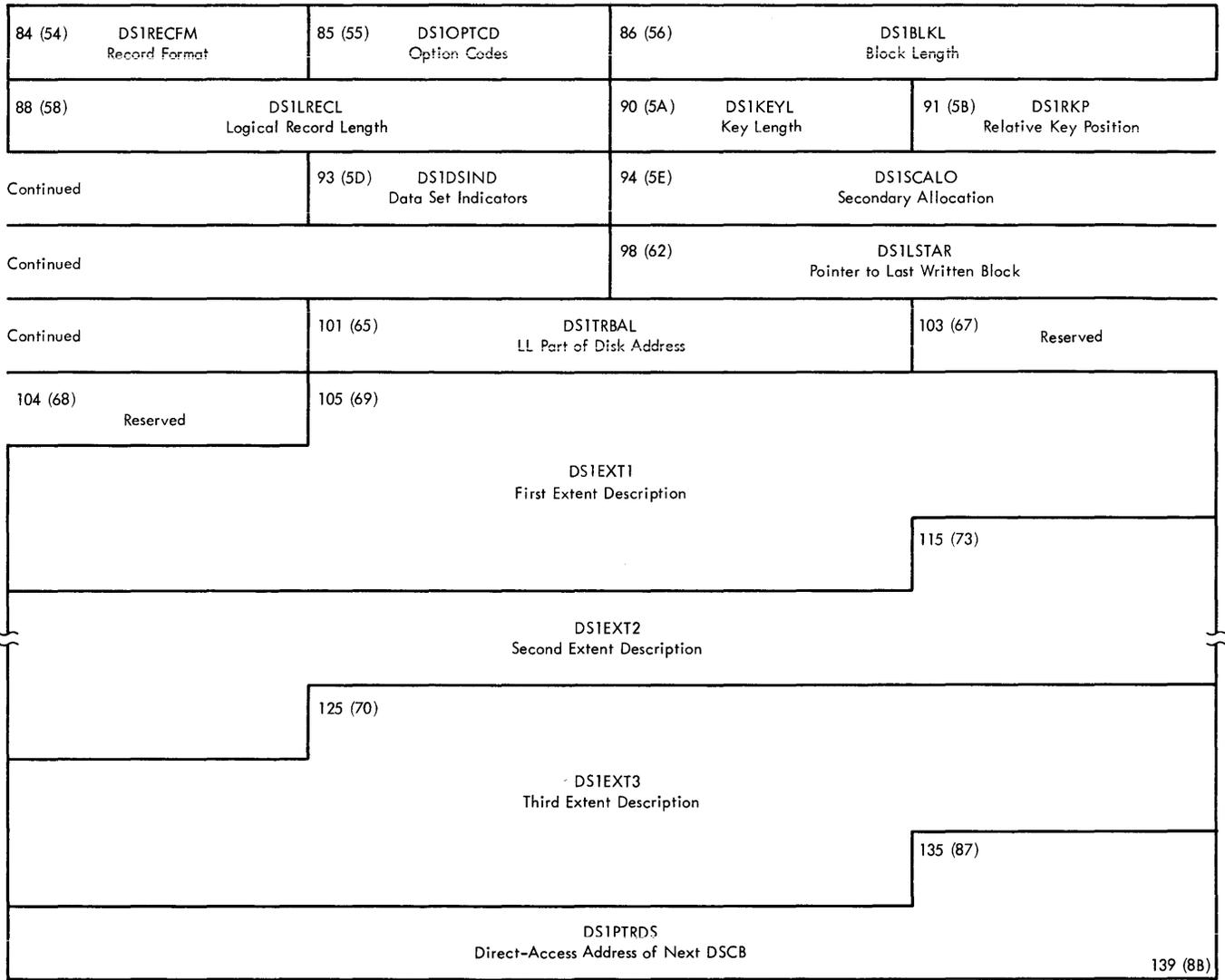


Figure 15A. Format 1 -- Identifier Data Set Control Block (Part 2 of 2)

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 44	DS1DSNAM		Data set name in EBCDIC.
44	(2C) 1	DS1FMTID		Format identifier; Hex F1 identifies this as a format 1 DSCB.
45	(2D) . 6	DS1DSSN		Data set serial number. This field is identical to the contents of the volume serial number field in the volume label of the first or only volume on which the data set resides.
51	(33) . . . 2	DS1VOLSQ		Volume sequence number in binary. Indicates the order of this volume relative to the first volume on which the data set resides.
53	(35) . 3	DS1CREDT		Creation date in binary, in the form ydd. y - year: 00 - 99 dd - day: 1 - 366
56	(38) 3	DS1EXPDT		Expiration date in binary, in the form ydd (as above). Indicates the year and the day of the year the data set may be purged. If neither a retention period nor an expiration date has been specified, ydd is zero.
59	(3B) . . . 1	DS1NOEPV		Number of separate extents in which the data set resides on this volume. This count does not include the extent describing a user's label track.
60	(3C) 1	DS1NOBDB		Number of bytes used in the last PDS directory block. A value of zero indicates that the last available block is not being used.
61	(3D) . 1			Reserved.
62	(3E) . . 13	DS1SYS CD		System code. An EBCDIC code that uniquely identifies the operating system. The first three characters are IBM. The remaining characters are the system code assigned to the creating system.
75	(4B) . . . 7			Reserved.
82	(52) . . 2	DS1DSORG		Data set organization.
		<u>Byte 1</u>	<u>Code</u>	
		1...	IS	Indexed sequential organization.
		.1..	PS	Physical sequential organization.
		..1.	DA	Direct organization.
		...1	CX	BTAM or QTAM line group.
		.... 1...	CQ	QTAM direct access message queue.
		.... .1..	MQ	QTAM problem program message queue.
		.... .1.	PO	Partitioned organization.
		.... ...1	U	Unmovable - the data contains location dependent information.

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
		Byte 2	<u>Code</u>	
83 (53)		1... ..	GS	Graphics organization.
		.1..	TX	TCAM line group.
		..1.	TQ	TCAM message queue.
		.... 1...	AM	VSAM organization.
		.... .1..	TR	TCAM 3705.
		...x ..xx		(Reserved bits.)
84 (54) 1		DS1RECFM		Record format.
			<u>Code</u>	
		10..	F	Fixed length record format.
		01..	V	Variable length record format.
		11..	U	Undefined length record format.
		..1.	T	Track overflow.
		...1	B	Blocked: may not occur with undefined (U).
		.... 1...	S	Fixed length record format: Standard blocks (no truncated blocks or unfilled tracks are embedded in the data set).
				Variable length record format: Spanned records.
		.... .10.	A	ANSI control character.
		.... .01.	M	Machine control character.
		.... .00.		No control character.
		.... ...x		(Reserved bit.)
85 (55) . 1		DS1OPTCD		Option code - same as DCBOPTCD field in DCB.
86 (56) . . 2		DS1BLKL		Block length for fixed length records or maximum block size for variable or undefined length records.
88 (58) 2		DS1LRECL		Format F records: Record length. Format U records: Zero. Format V records - Unspanned record format: Maximum record length. Spanned record format - Records up to 32,756 bytes: Maximum record length. Records exceeding 32,756 bytes: X'8000'.
90 (5A) . . 1		DS1KEYL		Key length. The length (1-255 bytes) of the key of the data records in the data set. A value of zero indicates that no key exists.
91 (5B) . . . 2		DS1RKP		Relative key position in the data block.
93 (5D) . 1		DS1DSIND		Data set indicators.
		1... ..		This is the last volume on which this data set normally resides
		..1.		Block length must always be a multiple of 8 bytes.
		...x .x..		Data set security.
		...1 .0..		Password is required to read or write.
		...1 .1..		Password is required to write but not to read.
		.x.. x.xx		(Reserved bits)

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
94	(5E) . . 4	DS1SCALO		Allocation parameters. Type of request issued for the initial allocation and to be used for subsequent extensions. Original request was: 00.. In tracks relative to a specific location. No secondary allocation will be allowed. 01.. In blocks (physical records). 10.. In tracks. 11.. In cylinders. ..xx (Reserved bits) 1.... For a contiguous extent. .... .1.. For the maximum contiguous extent on the volume. .... ..1. For the five (or less) largest extents that are greater than or equal to a specified minimum. .... ...1 In records, to be rounded up to a cylinder boundary.
95	(5F)	Byte 2-4		Secondary allocation quantity. Number of blocks, tracks, or cylinders to be requested at end of data set when processing a sequential or partitioned data set.
98	(62) . . 3	DS1LSTAR		The last-block pointer indentifies the last block written in a sequential or partitioned organization data set. It is in the format TTRLL (LL is defined under the next field name): TT - Relative address of track containing the last block. R - Block number on that track.
101	(65) . 2	DS1TRBAL		LL portion of the format given in DS1LSTAR. LL - Number of bytes remaining on track following the block. <u>Note:</u> If both fields contain binary zeros, the last block pointer does not apply.
103	(67) . . . 2			Reserved.
105	(69) . 10	DS1EXT1		Extent description for the first extent. This extent description is also used in format 3 and 4 DSCBS.
105	(69)	Byte 1		Data set extent type indicator. 00 Following 9 bytes do not indicate any extent. 01 The extent contains the data blocks (user's blocks), or is a prime area (for IS data sets). 02 The extent is an overflow area (for IS data sets only). 04 The extent is an index area (for IS data sets only). 40 The first extent description describes the user label extent. 80 The extent described is sharing one or more cylinders with one or more data sets. 81 The extent described begins and ends on cylinder boundaries, i.e., the extent is composed of one or more cylinders.

FORMAT 1 -- IDENTIFIER DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
106 (6A)		Byte 2		Extent sequence number (M) Uniquely identifies each separate extent on a given volume for a data set. For all organizations but indexed sequential, the first extent of the data set on each volume is identified with zero in this field. The first extent on each volume of an indexed sequential data set is identified with a value of one in the field. Additional extents on the volume are identified with sequentially increasing binary values. This field is always zero for an extent field pointing to a user label track.
107 (6B)		Bytes 3-6		Lower limit of this extent (CCHH). Contains the cylinder and the track address specifying the starting point of this extent.
111 (6F)		Bytes 7-10		Upper limit of this extent (CCHH). Contains the cylinder and track address specifying the ending point of this extent.
115 (73)	. . . 10	DS1EXT2		Extent description for the second extent. Same format as DS1EXT1 field.
125 (7D)	. 10	DS1EXT3		Extent description for the third extent. Same format as DS1EXT1 field.
135 (87)	. . . 5	DS1PTRDS		Pointer to a format 2 DSCB, if data set has IS organization, or pointer to a format 3 DSCB if data set has sequential or direct organization and more than 3 extents. This pointer has the format CCHHR. Contains binary zeros if no additional DSCB is pointed to.

FORMAT 2 -- INDEX DATA SET CONTROL BLOCK

The index data set control block (DSCB) describes characteristics of a data set having indexed sequential organization. It is pointed to by an identifier (format 1) DSCB which contains additional data set characteristics and up to three extent descriptions. Additional extents are described in an extension (format 3) DSCB pointed to by the format 2 DSCB. Figure 15B shows the format of the index (format 2) DSCB. Descriptions of the fields follow the illustration.

FORMAT 2 -- INDEX DATA SET CONTROL BLOCK

0 (0) Hex Code	1 (1) DS22MIND Starting Address of Second-Level Master Index		
8 (8)	DS2L2MEN Ending Address of Second-Level Master Index		
	13 (D)	DS23MIND Starting Address of Third-Level Master Index	
20 (14)	DS2L3MIN Ending Address of Third-Level Master Index		
	25 (19)	Reserved	
36 (24)	DS2LPDT Last Prime Track on the Last Prime Cylinder		
44 (2C) DS2FMTID Format Identifier	45 (2D) DS2NOLEV No. of Index Levels	46 (2E) DS2DVIND Master Index for these many tracks	47 (2F) DS21RCYL HHR of First Data Record On Each Cylinder
Continued	50 (32) DS2LTCYL HH of Last Data Record on Each Cylinder		
52 (34) DS2CYLOV No. of Tracks in Overflow	53 (35) DS2HIRIN Highest R of High-Level Index	54 (36) DS2HIRPR Highest R of Prime Data	55 (37) DS2HIROV Highest R of Overflow Tracks
56 (38) DS2RSHTR Last Data Record R on Shared Track	57 (39) DS2HIRT1 Highest R of Track Index	58 (3A) DS2HIOV High R of Independent Overflow	59 (3B) DS2TAGDT No. of Delete Records
Continued	61 (3D) DS2RORG3 No. of References to Succeeding Overflow Records		
64 (40) DS2NOBYT No. of Bytes for Highest-Level Index	66 (42) DS2NOTRK No. of Bytes	67 (43) DS2PRCTR No. of Records in Prime Data Area	
Continued	71 (47) DS2STIND Indicators		

Figure 15B. Format 2 -- Index Data Set Control Block (Part 1 of 2)

FORMAT 2 -- INDEX DATA SET CONTROL BLOCK

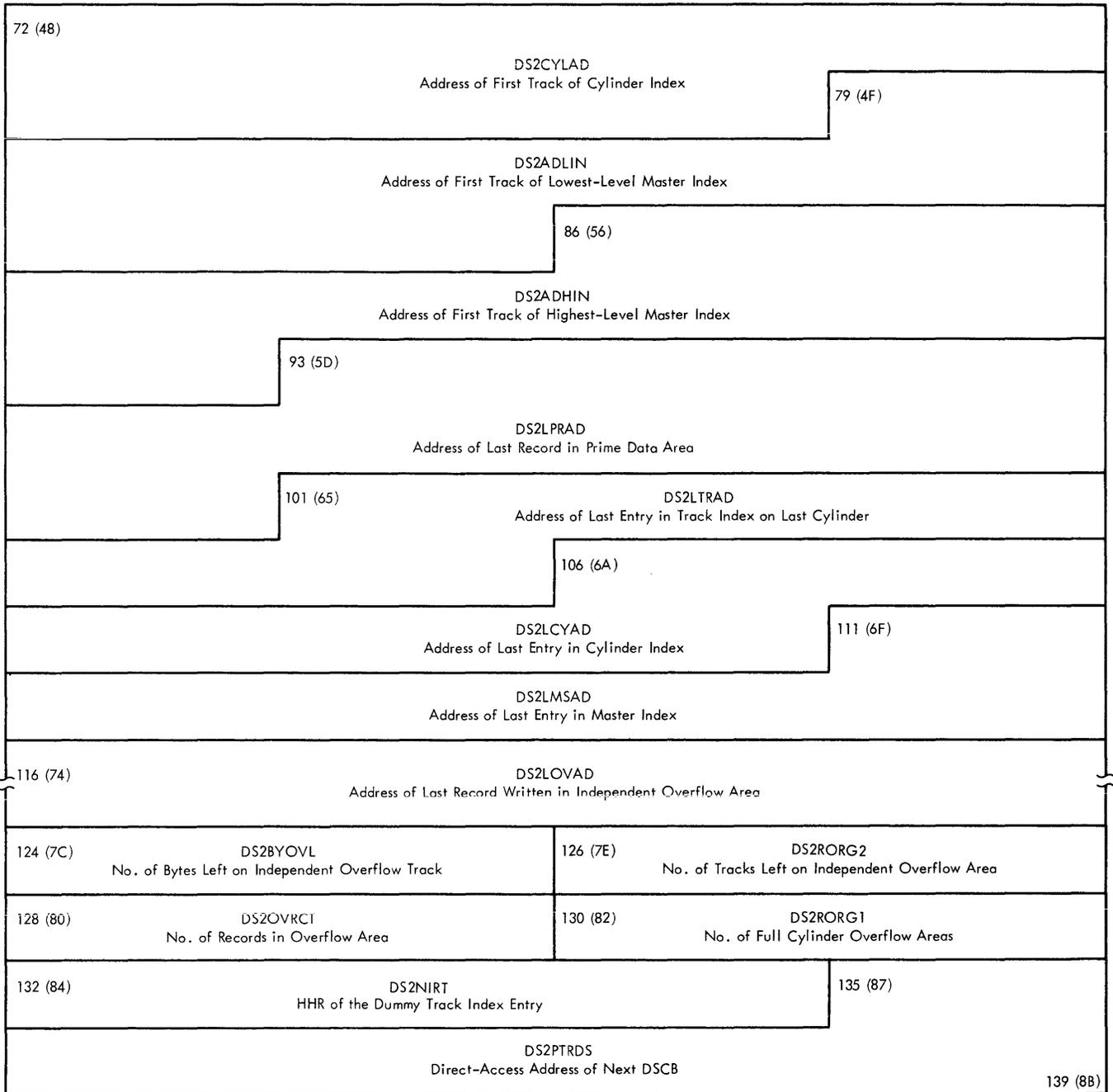


Figure 15B. Format 2 -- Index Data Set Control Block (Part 2 of 2)

FORMAT 2 -- INDEX DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1		02	Hex code 02 - provides a unique key field.
1	(1) . 7	DS22MIND		Address of the first track of the second level master index in the form MBBCCHH.
8	(8) 5	DS2L2MEN		CCHHR of the last active index entry in the second level master index.
13	(D) . 7	DS23MIND		Address of the first track of the third level master index in the form MBBCCHH.
20	(14) 5	DS2L3MIN		CCHHR of the last active index entry in the third level master index.
25	(19) . 11			Reserved.
36	(24) 8	DS2LPDT		Last prime track on the last prime cylinder.
44	(2C) 1	DS2FMTID		Format identification for format 2 DSCB. (EBCDIC "2".)
45	(2D) . 1	DS2NOLEV		Number of index levels. A binary number indicating how many levels of index are present with an indexed sequential data set.
46	(2E) . . 1	DS2DVIND		Number of tracks determining development of the master index.
47	(29) . . . 3	DS21RCYL		HHR of the first data record on each cylinder.
50	(32) . . 2	DS2LTCYL		HH of the last data track on each cylinder.
52	(34) 1	DS2CYLOV		Number of tracks of cylinder overflow area on each cylinder.
53	(35) . 1	DS2HIRIN		Highest possible R on a track containing high level index entries.
54	(36) . . 1	DS2HIRPR		Highest possible R on prime data tracks for format F records.
55	(7) . . . 1	DS2HIROV		Highest possible R on overflow data tracks for format F records.
56	(38) 1	DS2RSHTR		R of the last data record on a shared track.
57	(39) . 1	DS2HIRTI		Highest possible R on an unshared track of the track index.
58	(3A) . . 1	DS2HIIOV		Fixed-length record format: Highest possible R for independent overflow data tracks. Variable-length record format: Unused.
59	(3B) . . . 2	DS2TAGDT		User supplied number of records tagged for deletion. This field is merged to and from the DCB for BISAM, QISAM scan mode, and resume load.
61	(3D) . 3	DS2RORG3		A count of the number of READ and WRITE accesses, made during the last use of the data set, to an overflow record that is not first in a chain of such records.

FORMAT 2 -- INDEX DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
64	(40) 2	DS2NOBYT	Number of bytes needed to hold the highest-level index in main storage.
66	(42) . . 1	DS2NOTRK	Number of tracks occupied by the highest level index.
67	(43) . . . 4	DS2PRCTR	Number of records in the prime data area.
71	(47) . . . 1	DS2STIND	Status indicators.
		x..x xx..	(Reserved bits)
		.1..	Key sequence checking is to be performed.
		..1.	An initial load has been completed.
		.... ..1.	Last block full.
		.... ...1	Last track full.
72	(48) 7	DS2CYLAD	Address of the first track of the cylinder index in the form MBBCCHH.
79	(4F) . . . 7	DS2ADLIN	Address of the first track of the lowest level master index in the form MBBCCHH.
86	(56) . . 7	DS2ADHIN	Address of the first track of the highest level index in the form MBBCCHH.
93	(5D) . 8	DS2LPRAD	Address of the last record in the prime data area, in the form MBBCCHHR.
101	(65) . 5	DS2LTRAD	CCHHR of the last normal entry in the track index on the cylinder containing the last prime data record of the data set.
106	(6A) . . 5	DS2LCYAD	CCHHR of the last index entry in the cylinder index.
111	(6F) . . . 5	DS2LMSAD	CCHHR of the last index entry in the master index.
116	(74) 8	DS2LOVAD	Address of the last record written in the current independent overflow area, in the form MBBCCHHR.
124	(7C) 2	DS2BYOVL	Number of bytes remaining on the current independent overflow track.
126	(7E) . . 2	DS2RORG2	Number of tracks remaining in the independent overflow area.
128	(80) 2	DS2OVRCT	Number of records in the overflow area.
130	(82) . . 2	DS2RORG1	Number of cylinder overflow areas that are full.
132	(84) 3	DS2NIRT	HHR of the dummy track index entry.
135	(87) . . . 5	DS2PTRDS	Pointer to format 3 DSCB if a continuation is needed to describe this data set. This pointer has the format CCHHR.

FORMAT 3 -- EXTENSION DATA SET CONTROL BLOCK

The extension data set control block (DSCB) describes up to thirteen additional extents that cannot be described in an identifier (format 1) DSCB. It is pointed to by a format 1 or format 2 DSCB. Figure 15C shows the format of the extension (format 3) DSCB. Descriptions of the fields follow the illustration.

FORMAT 3 -- EXTENSION DATA SET CONTROL BLOCK

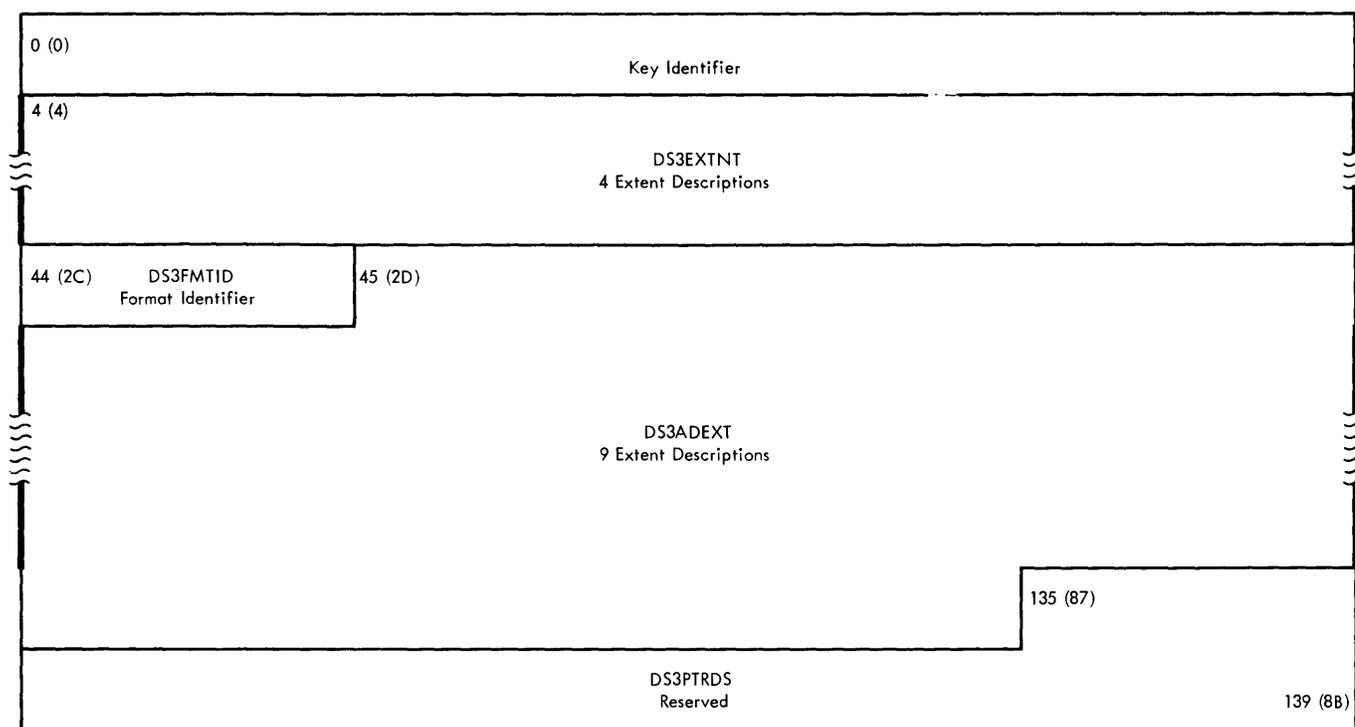


Figure 15C. Format 3 -- Extension Data Set Control Block

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	(Key identifier)	03	A hexadecimal 03 in each byte.
4	(4) 40	DS3EXTNT		Extent (in key) - four ten-byte fields identical to the DS1EXT1 field in the format 1 DSCB.
44	(2C) 1	DS3FMTID	F3	Format identifier - Hex F3.
45	(2D) . 90	DS3ADEXT		Additional extent - nine ten-byte fields identical to the DS1EXT1 field in the format 1 DSCB.
135	(87) . . . 5	DS3PTRDS		Reserved - contains binary zeros.

FORMAT 4 -- VTOC DATA SET CONTROL BLOCK

The VTOC data set control block (DSCB) describes the volume table of contents (VTOC) data set. It is always the first DSCB in the VTOC. Figure 15D shows the format of a VTOC (format 4) DSCB. Descriptions of the fields follow the illustration.

FORMAT 4 -- VTOC DATA SET CONTROL BLOCK

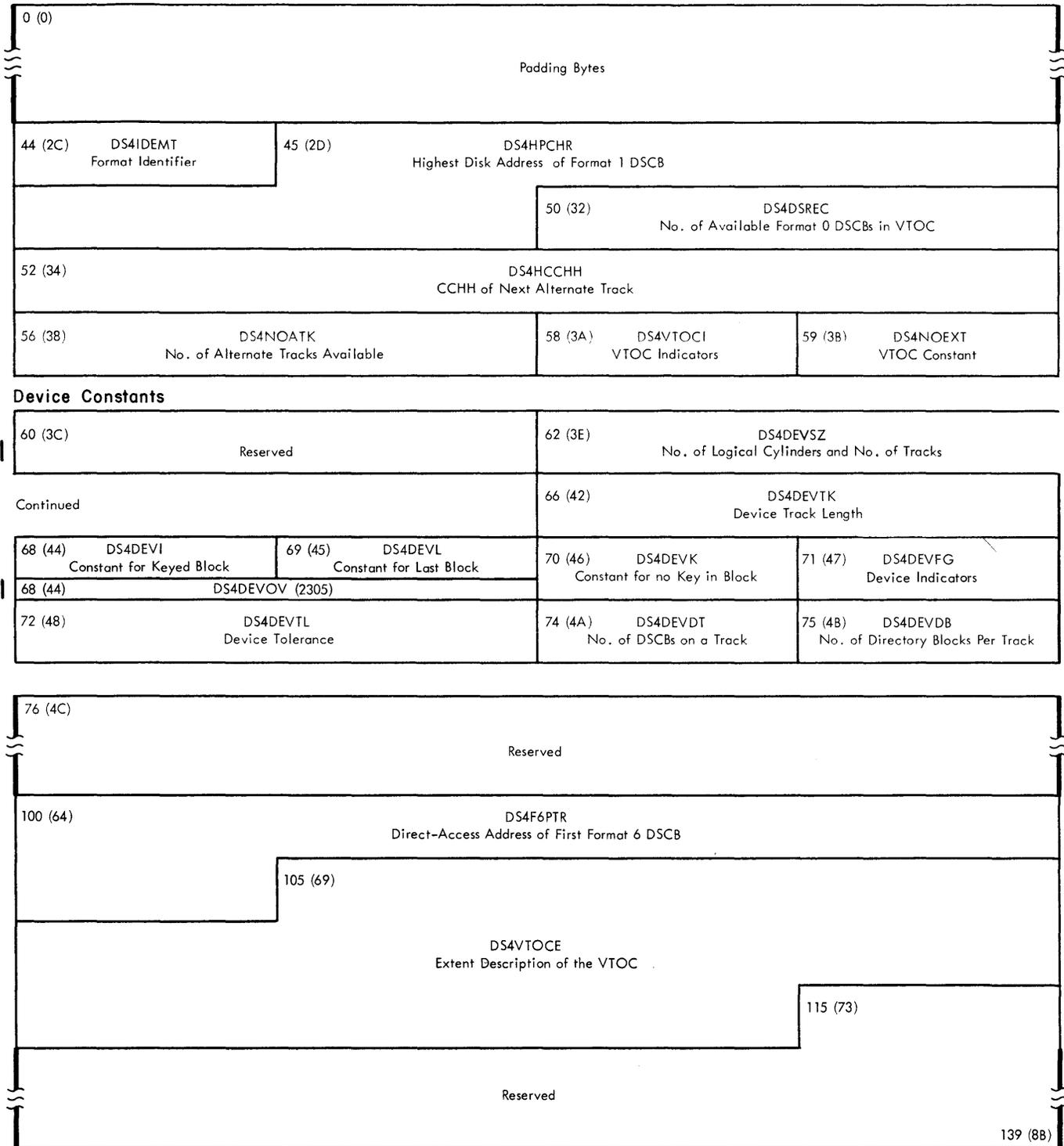


Figure 15D. Format 4 -- VTOC Data Set Control Block

FORMAT 4 -- VTOC DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 44	(Padding Bytes)	04	Hex 04 in each byte.
44	(2C) 1	DS4IDFMT	F4	Format identifier, Hex F4.
45	(2D) . 5	DS4HPCHR		Highest address previously used for a format 1 DSCB. The address is in the format CCHHR.
50	(32) . . 2	DS4DSREC		Number of available format 0 DSCBs in the VTOC.
52	(34) 4	DS4HCCHH		CCHH of next alternate track available.
56	(38) 2	DS4NOATK		Number of alternate tracks remaining.
58	(3A) . . 1	DS4VTOCI		VTOC indicators. 1... Either no format 5 DSCBs exist or they do not reflect the true status of the volume. 1... Accurate format 5 and 6 DSCBs now exist and bit 0 has been turned off. This volume may contain data sets produced by IBM System/360 Disk Operating System; IBM System/360 Operating System access methods may not be able to process these data sets. .... .1.. A DADSM function has been prematurely terminated. Possible VTOC errors exist. .xxx ..xx (Reserved bits)
59	(3B) . . . 1	DS4NOEXT	01	Hexadecimal constant '01' to indicate the VTOC is one extent.
60	(3C) 2			Reserved.
<u>Device Constants (DS4DEVxx)</u>				
The following fields describe the device on which this volume was mounted when the VTOC was created.				
62	(3E) . . 4	DS4DEVSZ		Device size.
62	(3E)	Bytes 1-2		Number of logical cylinders. A logical cylinder is the smallest collection of two or more tracks that can be processed by a set file mask CCW (hex 1F).
64	(40)	Bytes 3-4		Number of tracks per logical cylinder.
66	(42) . . 2	DS4DEVTK		Device track length. Number of available bytes on a track exclusive of home address and record zero.

FORMAT 4 -- VTOC DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
68	(44) 2	DS4DEVOV	Overhead bytes for any keyed block on the 2305. If bit 4 of the device indicators field (bit 71.4 of DSCB4) is set to one, this field (DS4DEVOV) is used as a single two byte field containing a binary count of the number of bytes (overhead bytes) occupied by the count field, gaps, and check bytes of a keyed record. If bit 71.4 is zero, the field (DS4DEVOV) consists of the following subfields:
68	(44) 1	DS4DEVI	Contains a count of the number of bytes (overhead bytes) occupied by the count field, gaps, and check bits of a keyed record that <u>is not</u> the last record on a track.
69	(45) . 1	DS4DEVL	Contains a count of the number of bytes (overhead bytes) occupied by the count field, gaps, and check bits of a keyed record that <u>is</u> the last record on a track.
70	(46) .. 1	DS4DEVK	The number of overhead bytes to be subtracted from DS4DEVI, DS4DEVL, or DS4DEVOV if the block has no key field.
71	(47) . . . 1	DS4DEVFG	Device indicators. (Reserved bits). The keyed record overhead field (DS4DEVI) is used as a two-byte field to specify the overhead required by a keyed record as in the case of the 2305. The CCHH of an absolute address is used as a continuous binary value as in the case of the 2301. The CCHH of an absolute address is used as four (4) separate binary values as in the case of the 2321. A tolerance factor must be applied to all but the last record on the track.
		xxxx	
		.... 1...	
		.... .1..	
		.... ..1.	
		.... ...1	
			<u>Note:</u> If bits 5 and 6 are zero, the CC and HH of an absolute address (CCHHR) are used as halfword binary values as in the case of the 2311.
72	(48) 2	DS4DEVTL	Device tolerance. Value which when divided by 512 is used to determine effective length of a block on a track.
74	(4A) . . 1	DS4DEVDT	Number of full DSCBs that can be contained on one track (44 byte key plus 96 byte data length).
75	(4B) . . . 1	DS4DEVDB	Number of full PDS directory blocks that can be contained on one track (8 byte key plus 256 byte data length).
76	(4C) 24		Reserved.
100	(64) 5	DS4F6PTR	Pointer to the first format 6 DSCB. This pointer has the form CCHHR. It contains binary zeros when not in use.
105	(69) . 10	DS4VTOCE	VTOC extent. Contents and meaning are the same as DS1EXT1 in the format 1 DSCB.
115	(73) . . . 25		Reserved.

**FORMAT 5 -- FREE SPACE DATA SET CONTROL
BLOCK**

The free space data set control block (DSCB) describes the amount of available space on the volume that can be allocated to a data set. Up to 26 available extents can be recorded in one free space (format 5) DSCB. Additional extents are described in other format 5 DSCBs. The first format 5 DSCB follows the VTOC (format 4) DSCB. Figure 15E shows the format of the free space (format 5) DSCB. Descriptions of the fields follow the illustration.

FORMAT 5 -- FREE SPACE DATA SET CONTROL BLOCK

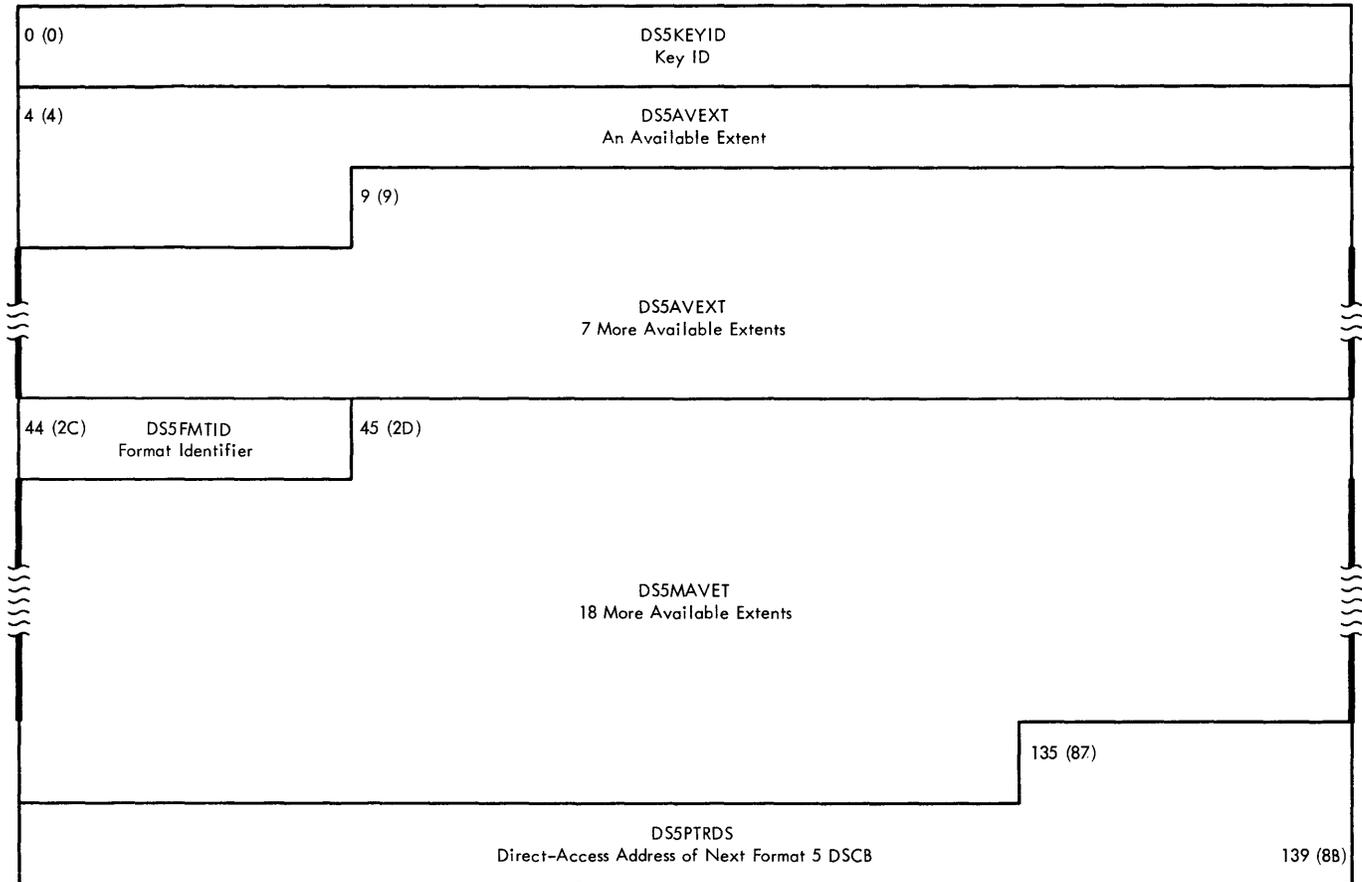


Figure 15E. Format 5 -- Free Space Data Set Control Block

FORMAT 5 -- FREE SPACE DATA SET CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DS5KEYID	05	Key identification - Hex 05 in each byte.
4	(4) 5	DS5AVEXT		Available extent. Describes an extent of space available for allocation to a data set.
4	(4)	Bytes 1-2		Relative track address, in binary, of the first track in the extent. The relative track address is relative to the first track on the volume, which has a relative track address of 0.
6	(6)	Bytes 3-4		The number, in binary, of entirely unused cylinders in this extent.
8	(8)	Byte 5		The number, in binary, of unused tracks in the extent in addition to those contained in the unused cylinders.
9	(9) . 35	DS5EXTAV		Available extents. 7 five-byte fields identical in format to the DS5AVEXT field. Each set, if it is used, describes a different extent. The extents are in the ascending order of their first track addresses.
44	(2C) 1	DS5FMTID		Format identifier - Hex F5.
45	(2D) . 90	DS5MAVET		Available extents. 18 five-byte fields identical in format to the DS5AVEXT field.
135	(87) . . . 5	DS5PTRDS		The CCHHR address of the next format 5 DSCB if it exists. If none exists, this field contains binary zeros.

**FORMAT 6 -- SHARED EXTENT DATA SET CONTROL
BLOCK**

The shared extent data set control block (DSCB) is used for shared cylinder allocation. It describes the extent of space (one or more contiguous cylinders) that are being shared by two or more data sets. Up to 26 extents can be described in one shared extent (format 6) DSCB. Additional extents are described in other format 6 DSCBs. The shared extent (format 6) DSCB is pointed to by the VTOC (format 4) DSCB. Figure 15F shows the format of the shared extent (format 6) DSCB. Descriptions of the fields follow the illustration.

FORMAT 6 -- SHARED EXTENT DATA SET CONTROL BLOCK

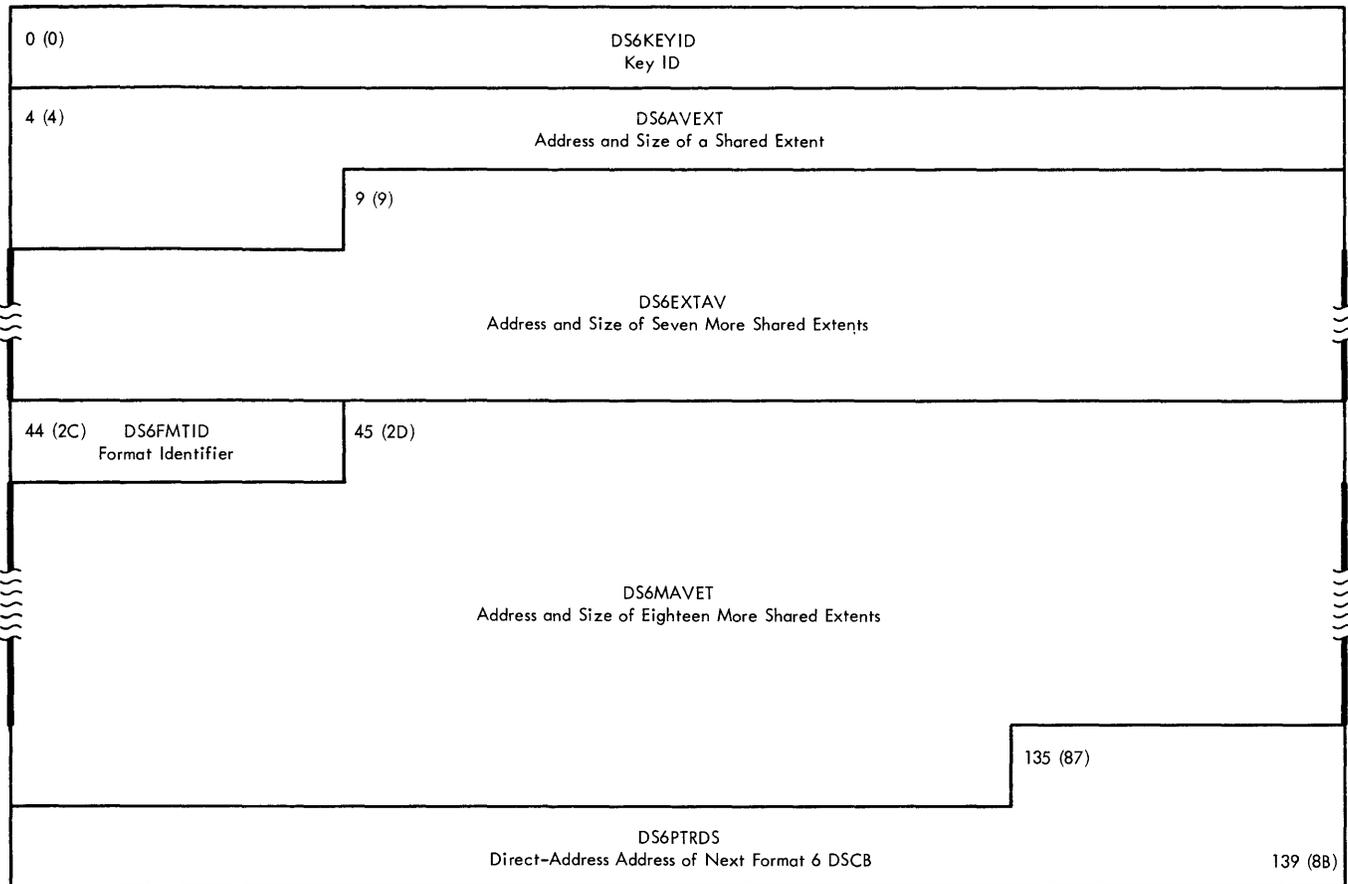


Figure 15F. Format 6 -- Shared Extent Data Set Control Block

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DS6KEYID	06	Key identification - Hex 06 in each byte.
4	(4) 5	DS6AVEXT		Extent of space (one or more contiguous cylinders) that is being shared by one or more data sets.
4	(4)	Bytes 1-2		Relative track address of the first cylinder.
6	(6)	Bytes 3-4		Number of full cylinders being shared.
8	(8)	Byte 5		Number of data sets sharing the extent.
9	(9) . 35	DS6EXTAV		Shared extents. 7 five-byte fields identical in format to DS6AVEXT. The fields are in relative track address sequence.
44	(2C) 1	DS6FMTID	F6	Format identifier - Hex F6.
45	(2D) . 90	DS6MAVET		Shared extents. 18 five-byte fields identical in format to DS6AVEXT.
135	(87) . . . 5	DS6PTRDS		Pointer to next format 6 DSCB. This pointer has the form CCHHR.

Data Set Labels -- Magnetic Tape

The blocks of information that serve as labels for data sets residing on magnetic tape are the data set label 1 and the data set label 2. For IBM standard tapes these blocks are 80 bytes long and are in EBCDIC characters in main storage and on nine-track tape, and in BCD characters on seven-track tape.

A set of a data set label 1 and a data set label 2, together with user labels (if used), is used to make up header labels, end-of-volume trailer labels, and end-of-data-set trailer labels. Separate diagrams and descriptions are presented for these different formats:

- Data Set Label 1 (FL1).
- Data Set Label 2 (FL2).

Tapes recorded in ASCII have different label requirements. These tapes, when created by the IBM System/360 Operating System, follow the conventions of the American National Standards Institute. Significant differences between IBM standard labels and American National Standard labels are as follows:

- Data set label 2 (FL2) is optional under American National Standards.
- Because of word-length requirements of some computer manufacturers, labels longer than 80 characters may be present on ASCII tapes.
- The American National Standards do not support seven-track tape; all of their standard labels are recorded in ASCII on nine-track tape.

DATA SET LABEL 1 -- FL1

Data set label 1 is 80 characters in length and describes the associated data set. This format is used for header labels, end-of-volume trailer labels, and end-of-data set trailer labels. It is followed by data set label 2. All IBM standard header label groups, end-of-volume trailer label groups, and end-of-data set trailer label groups must consist of both of these labels. These labels are written in extended binary coded decimal interchange code (EBCDIC) on nine-track tapes and in binary coded decimal (BCD) on seven-track tapes. The labels are written in the American National Code for Information Interchange (usually called ASCII) on ASCII tapes. All ASCII tapes must be nine-track tapes. Figure 16A shows the format of data set label 1. Descriptions of the fields follow the illustration.

DATA SET LABEL 1 -- FL1

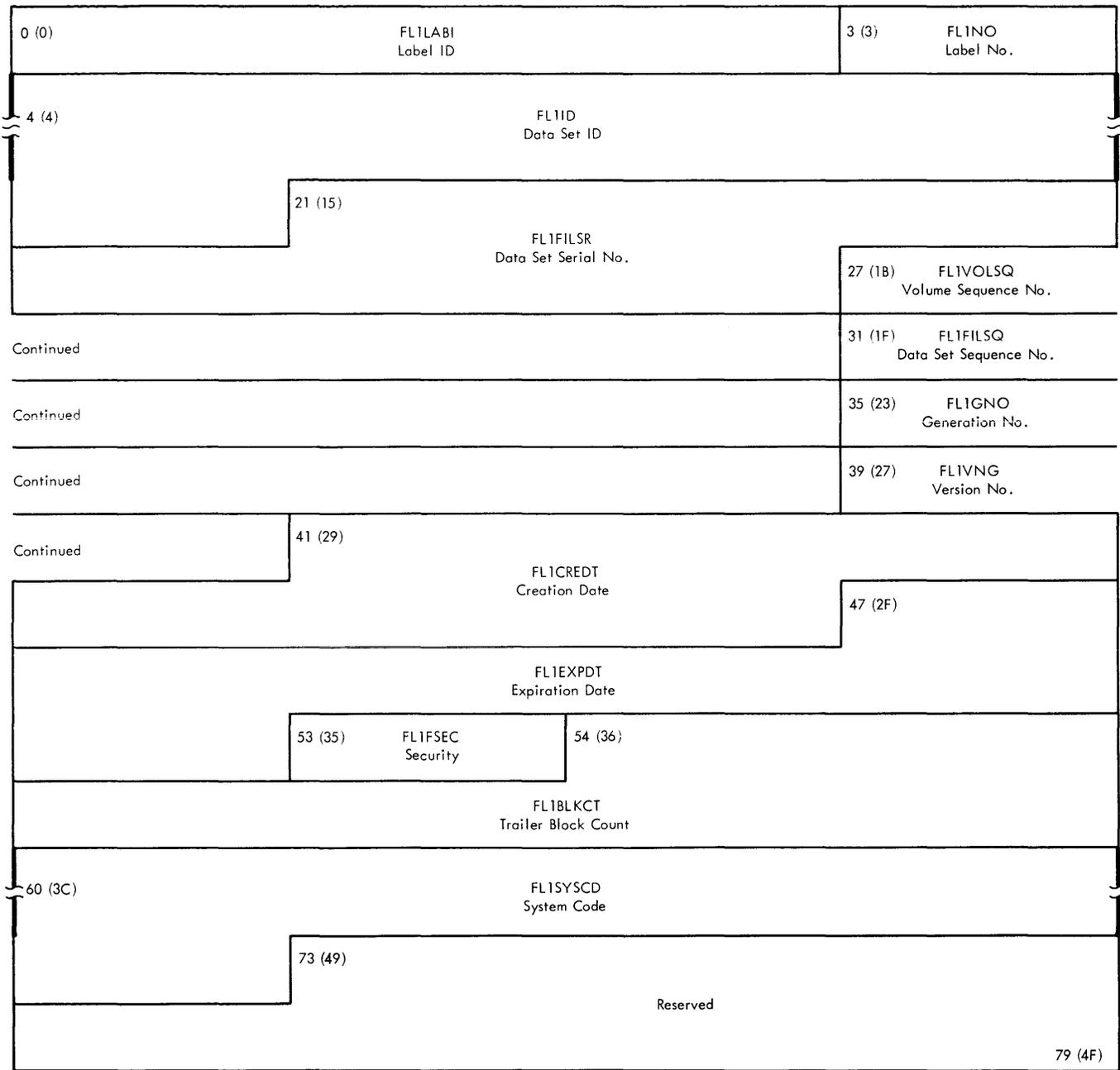


Figure 16A. Data Set Label 1

<u>DATA SET LABEL 1 -- FL1</u>				
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Diq. Field Description, Contents, Meaning</u>
0	(0) 3	FL1LABI		Label identifier. HDR - header label. EOV - end-of-volume trailer label. EOF - end-of-data set trailer label.
3	(3) . . . 1	FL1NO		Data set label number = 1.
4	(4) 17	FL1ID		Data set identifier.
21	(15) . 6	FL1FILSR		Data set serial number. Same as the code that appears in the VOLSERNO field of the initial volume label of the first or only volume of the data set or multi-data set aggregate.
27	(1B) . . . 4	FL1VOLSQ		Volume sequence number. Indicates the volume on which the data set is recorded in relation to the volume on which the data set begins.
31	(1F) . . . 4	FL1FILSQ		Data set sequence number. Indicates the position of the data set relative to the first data set in a multi-data set aggregate.
35	(23) . . . 4	FL1GNO		Generation number of the data set.
39	(27) . . . 2	FL1VNG		Version number of a generation of the data set.
41	(29) . 6	FL1CREDT		Creation date. year and day - in format byydd.
				b = blank yy = year (00-99) ddd = day (001-366)
47	(2F) . . . 6	FL1EXPDT		Expiration date. Expressed in the same format as creation date.
53	(35) . 1	FL1FSEC		Data set security indicator. F0 Data set is not security protected. For an ASCII tape, a space indicates that the data set is not security protected. F1 Data set is security protected. For an ASCII tape, any character except 1, 3, or a space prevents any access to the data set. F3 Read without password.
54	(36) . . 6	FL1BLKCT		Unused in header labels - zero. In trailer labels, the number of blocks in the data set or on the current volume of a multi-volume data set.
60	(3C) 13	FL1SYSCD		System code identifying the programming system. ASCII tapes, created by the IBM System/360 Operating System, will have "OS360" written in the first (high-order) five bytes of this field.
73	(49) . 7			Reserved - must be recorded as spaces.

DATA SET LABEL 2 -- FL2

Data set label 2 immediately follows data set label 1 and is written in the same code as data set label 1. It is 80 characters in length and contains information about the data set, in addition to that in data set label 1. On an ASCII tape, data set label 2 is optional during input and required during output. Figure 16B shows the format of data set label 2. Descriptions of the fields follow the illustration.

DATA SET LABEL 2 -- FL2

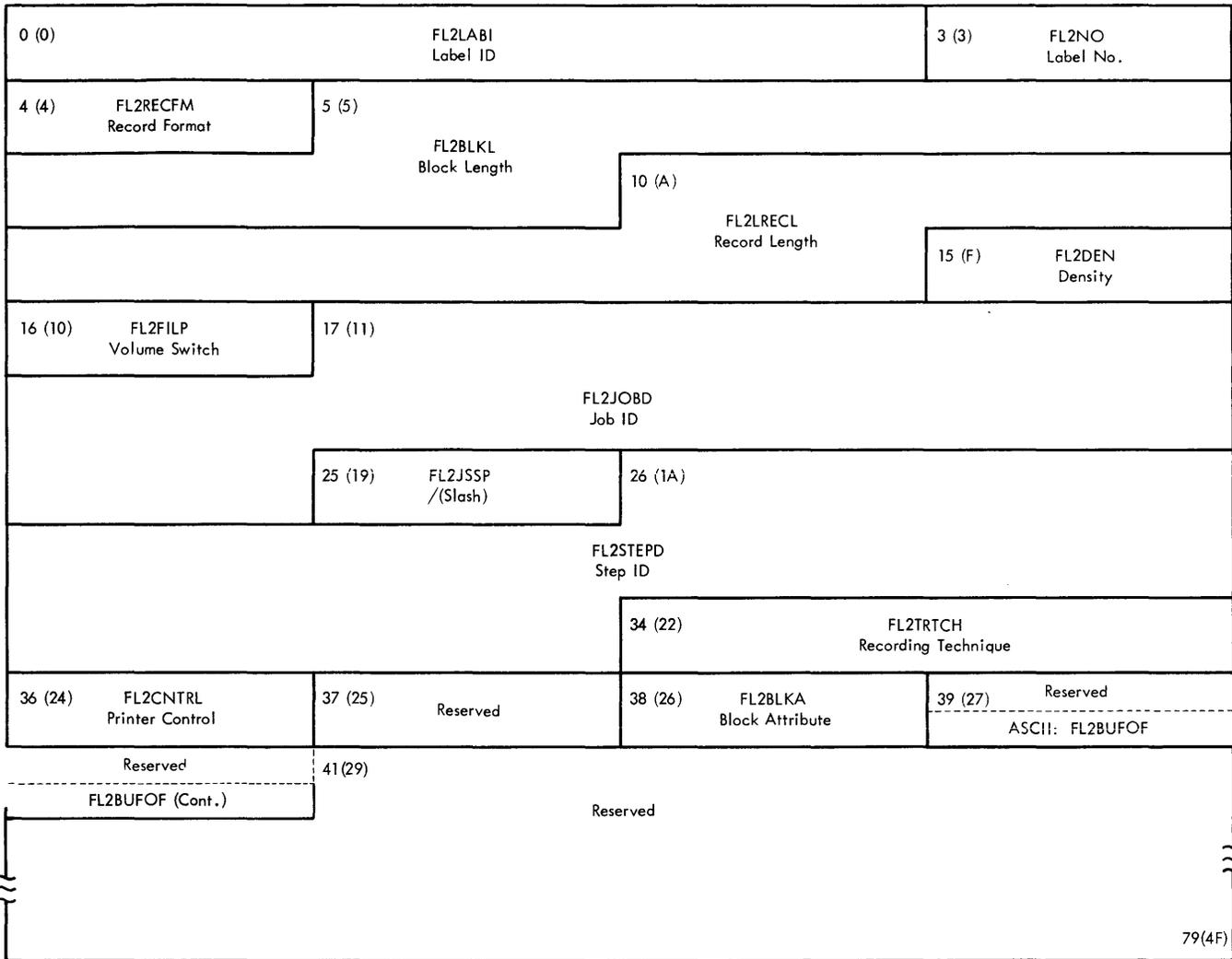


Figure 16B. Data Set Label 2

DATA SET LABEL 2 -- FL2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3	FL2LABI	Label identifier. HDR - Header label. EOV - End-of-volume trailer label. EOF - End-of-data set trailer label.
3	(3) . . . 1	FL2NO	Data set label number = 2.
4	(4) 1	FL2RECFM	Record format. F - Fixed length. V - Variable length. U - Undefined length. D - Variable length (ASCII).
5	(5) . 5	FL2BLKL	Block length. Depends on the record format. Form F - Block length Form V - Maximum block length Form U - Maximum block length Form D - Maximum block length (ASCII).
10	(A) . . 5	FL2LRECL	Format F records: Record length. Format U records: Zero. Format V records - Unspanned record format: Maximum record length. Spanned record format - Records up to 32,756 bytes: Maximum record length. Records exceeding 32,756 bytes: 99999. Format D records - 2048 bytes maximum.
15	(F) . . . 1	FL2DEN	Tape density. 2400 series magnetic tape devices. Field Value <u>in EBCDIC</u> <u>7-track</u> <u>9-track</u> 0 200 bpi - 1 556 bpi - 2 800 bpi 800 3 - 1600
16	(10) 1	FL2FILP	Data set position. Field Value <u>in EBCDIC</u> 1 Volume switch previously occurred. 0 No volume switch has occurred.
17	(11) . 8	FL2JOBID	Job identification.
25	(19) . 1	FL2JSSP	Slash (/).
26	(1A) . . 8	FL2STEPD	Step identification.
34	(22) . . 2	FL2TRTCH	These characters denote the tape recording technique used to create this data set (7-track tape only). Cb - Data conversion feature used. Eb - Even parity used. Tb - BCD to EBCDIC translation required. ET - Even parity and BCD to EBCDIC translation required. bb - Odd parity and no translation required.

DATA SET LABEL 2 -- FL2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
36	(24) 1	FL2CNTRL	Printer control. This character denotes whether a printer carriage control set was used to create the data set and the type of carriage control specified. A - American National Standard control characters. M - Machine control characters. b - Records do not contain control characters.
37	(25) . 1		Reserved.
38	(26) . . 1	FL2BLKA	Block attribute. B - Blocked records. S - Spanned records. R - Records are both blocked and spanned. b - Records are neither blocked nor spanned. (b - blank)
39	(27) . . . 41		IBM standard tape: Reserved. Must be recorded as spaces.
39	(27) . . . 2	FL2BUFOF	ASCII tape: Length of optional block prefix.
41	(29) . 39		ASCII tape: Reserved. Must be recorded as spaces.

Event Control Block

The event control block (ECB) is used for communication between various components of the control program, as well as between processing programs and the control program. An ECB is the subject of WAIT and POST macro instructions. Figure 17 shows the format of the event control block. A description of its fields follows the illustration.

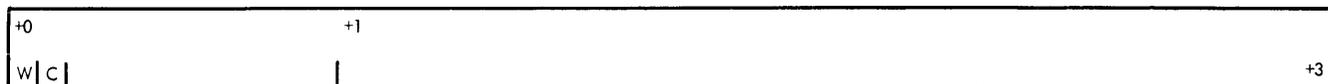


Figure 17. Event Control Block

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
+0	1	1... .. .1.. .. ..xx xxxx		<p>Awaiting completion of an event: W - Waiting for completion of an event. After completion of an event: C - The event has completed. Completion code.</p> <p>One of the following completion codes will appear at the completion of a channel program:</p> <p><u>Access Methods Except BTAM and TCAM</u></p> <p>7F Channel program has terminated without error. (CSW contents useful.)</p> <p>41 Channel program has terminated with permanent error. (CSW status bytes useful. CCW address may be useful or zeros.)</p> <p>42 Channel program has terminated because a direct access extent address has been violated. (CSW contents do not apply.)</p> <p>44 I/O request was rejected because (1) a device error was detected after the last I/O operation on a local 3270 was posted complete or (2) a request-for-test message was received from a local 3270 display station requesting that a test message be sent to another local 3270 device.</p> <p>48 Read Initial operation for the local 3270 display system was cancelled because a RESETPL macro instruction was issued.</p> <p>4B One of the following errors occurred during tape error recovery processing.</p> <ul style="list-style-type: none"> • The CSW command address in the IOB was zeros. • An unexpected load point was encountered. <p>(CSW contents do not apply in either case.)</p>

EVENT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u> <u>Field Description, Contents, Meaning</u>
			<u>Access Methods Except BTAM and TCAM (Continued)</u>
		4F	Error recovery routines have been entered because of direct access error but are unable to read home address or record 0. (CSW contents do not apply.)
		50	Channel program terminated with error. Input block was a DOS embedded checkpoint record. (CSW contents do not apply.)
			<u>BTAM</u>
		7F	Completed normally.
		41	Completed with an I/O error.
		48	Enable command halted, or, I/O operation purged.
			<u>TCAM</u>
		7F	Normal completion (work unit in work area).
		70	The SETEOF macro was issued in the message command program (no work unit in work area).
		50	Message was not found when the READ macro was issued in conjunction with the POINT macro to retrieve a message.
		5C	Congested destination message queue data set (write only).
		58	Sequence error.
		54	Invalid message destination.
		52	Workarea overflow.
		02	End-of-queue condition (not end-of-file).
		01	Read-ahead queue empty, but destination queue not empty.
		40	Data is on read-ahead queue.
+1	. 3		Awaiting completion of an event: Request block address. After completion of the event: Zeroes, or remainder of completion code.

Interruption Control Block

The interruption control block (ICB) is created by the OPEN routines when chained channel-program scheduling is being performed. The ICB is used by the access method routines and is always pointed to by an IOB or another ICB. Figure 18 shows the format of the ICB. Descriptions of the fields follow the illustration.

INTERRUPTION CONTROL BLOCK

0 (0)				ICBICBA Link Address				
4 (4)				ICBECB Address of Next ICB				
8 (8)	Flag 1 I/O flags	9 (9)	Flag 2 I/O flags	10 (A)	Sense 1 First Sense Byte	11 (B)	Sense 2 Second Sense Byte	
12 (C)								ECB Address
16 (10)	Flag 3 IOS error flags	17 (11)						CSW Low-Order Bytes of Last CSW
24 (18)								ICBSTART Channel Program Pointer Address of Channel Program to be Executed
28 (1C)	Increment Amount Block Count Constant	30 (1E)				Indicators	31 (1F)	

Direct - Access Storage Devices

32 (20)	Seek Information No. of DEB Extent and Seek Address (This field is present only for direct-access storage devices)	39 (28)
---------	--	---------

Figure 18. Interruption Control Block

INTERRUPTION CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	ICBICBA	Link Address. Address of the next ICB. The last ICB points to the first ICB.
4	(4) 4	ICBECB	Event control block. Shows status of an I/O operation.
8	(8) 1		Flag byte 1. 00.. No chaining (see note). 01.. Command chaining (see note). 10.. Data chaining (see note). 11.. Both command and data chaining (see note). ..1. Error routine in control. ...1 Device is to be repositioned. 1... Cyclic redundancy check (CRC) needed - tape only. .... .1.. Exceptional condition. If this bit is on after control has been returned from the error routine, the error is considered permanent. 1. IOB unreleased flag (i.e., nonsequential). .... ...0 START. .... ...1 RESTART.
			<u>Note:</u> Chained channel-program scheduling does NOT depend on these bits to perform its chaining.
9	(9) . 1		Flag byte 2. 1... Halt I/O has been issued. .1.. Sense will not be performed until the device is free. ..1. IOB has been purged. ...1 Home address (R0) record is to be read. xxx. Internal I/O supervisor error correction flags. .... ...1 QSAM error recovery routine in control for a 2540 Card Punch with three buffers.
10	(A) . . 1		First sense byte (device dependent).
11	(B) . . . 1		Second sense byte (device dependent).
12	(C) 4		Address of the ECB to be posted upon completion of an I/O event. ECB address. EXCP - Address of the ECB to be posted upon the completion of an I/O event. BSAM/BPAM - Address of the ECB in the DECB to be posted upon the completion of an I/O event. QSAM - Address of the ECB in the QSAM prefix to the IOB to be posted upon the completion of an I/O event.

INTERRUPTION CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Diq. Field Description, Contents, Meaning</u>
16	(10) 7		Flag byte 3. Flags for I/O supervisor error routine (device dependent).
17	(11) . 7		CSW Low order seven bytes of the last CSW. Shows channel status for this request.
24	(18) 4	ICBSTART	Channel program pointer Address of the channel program to be executed.
28	(1C) 2		Increment amount Magnetic tape Constant that is used to increment the block count Always zero for direct access.
30	(1E) . . 2		Indicators.
30	(1E) . . 1	1... .. .xxx xxxx	Special volume full indicator signifying end-of-tape mark or reflective spot sensed along with a read or write error. (Reserved Bits) Always zero.
31	(1F) . . . 1		Reserved.
32	(20) 8		Seek Information. This field is present for direct access devices only
32	(20)	Byte 1	The number of the DEB extent to be used for this request. The first extent is number zero.
33	(21)	Bytes 2-8	The seek address for this I/O request.

Input/Output Block

The input/output block (IOB) is the communication medium between a routine that requests an I/O operation and the I/O supervisor. All the information required by the I/O supervisor to execute an I/O operation is contained in the IOB, or is pointed to by the IOB. Figure 19 shows the format of the IOB. Descriptions of the fields follow the illustration.

The IOB format falls into three segments whose use varies mainly by access method:

Prefix --

- GAM, QISAM.
- BSAM, QSAM, BPAM -- Normal scheduling.
- BSAM, QSAM, BPAM -- Chained scheduling.
- BDAM

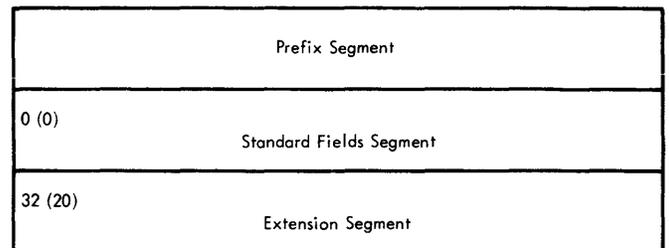
Standard Fields --

- Displacements 0-31 (decimal), 0-1F (hexadecimal).

Extension --

- BTAM.
- GAM.
- Direct-access storage devices.
- BSAM, QSAM, BPAM.
- QISAM, Scan Mode.
- BISAM.
- BDAM.

The following illustrates the relationship of these segments.



INPUT/OUTPUT BLOCK

PREFIX

GAM, QISAM			
-4 (-4)		Event Control Block	
		-1 (-1)	
QSAM, BSAM, BPAM - Normal Scheduling			
-8 (-8)	I/O Flags	-7 (-7)	Address of Next IOB
-4 (-4)		Event Control Block	
		-1 (-1)	
QSAM, BSAM, BPAM - Chained Scheduling			
-16 (-10)	FLAG1 I/O Indicators	-15 (-F)	Reserved
-14 (-E)	INNOD Offset to Last I/O for Input	-13 (-D)	OUTNOD Offset to Last I/O for Output
-12 (-C)		Event Control Block	
-8 (-8)		FIRSTICB Address of First ICB	
-4 (-4)		Last NOP Address	
		-1 (-1)	
BDAM			
-8 (-8)	DEQIND Dequeue Loop Indicator	-7 (-7)	DEQIOB IOB Address
-4		SWAPTR Address of the Segment Work Area	
		-1 (-1)	

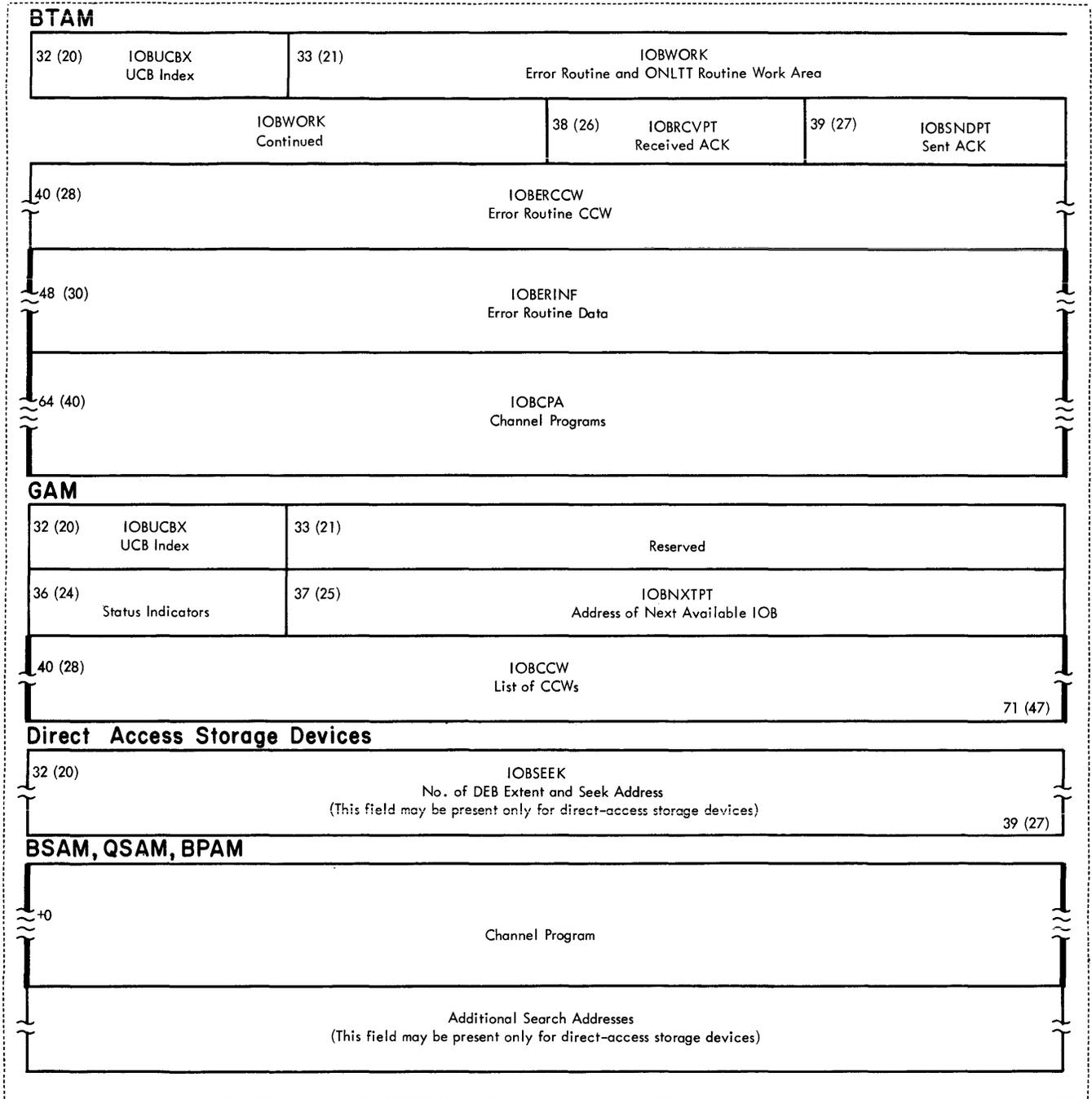
Standard Fields

0 (0)	IOBFLAG1 I/O Flags	1 (1)	IOBFLAG2 I/O Flags	2 (2)	IOBSENS0 First Sense Byte	3 (3)	IOBSENS1 Second Sense Byte	
4 (4)	IOBECBCC Completion Code	5 (5) IOBECBPT Address of ECB						
8 (8)	IOBFLAG3 I/O Error Flags	9 (9) IOBCSW Seven Low-Order Bytes of Last CSW						
16 (10)	IOBSIOCC SIO Condition Code	17 (11) IOBSTART Address of Channel Program						
20 (14)	Reserved	21 (15) IOBDCBPT Address of DCB						
24 (18) IOBRESTR PURGE Chain/CCHH/Command, Channel Program								
28(1C)	IOBINCAM	30 (1E) IOBERRCT No. of Error Retries						
	IOBCRDCC	29(1D)	IOBCRILC					31 (1F)

Figure 19. Input/Output Block (Part 1 of 3)

INPUT/OUTPUT BLOCK

Extension



Continued

Figure 19. Input/Output Block (Part 2 of 3)

INPUT/OUTPUT BLOCK

Extension (Continued)

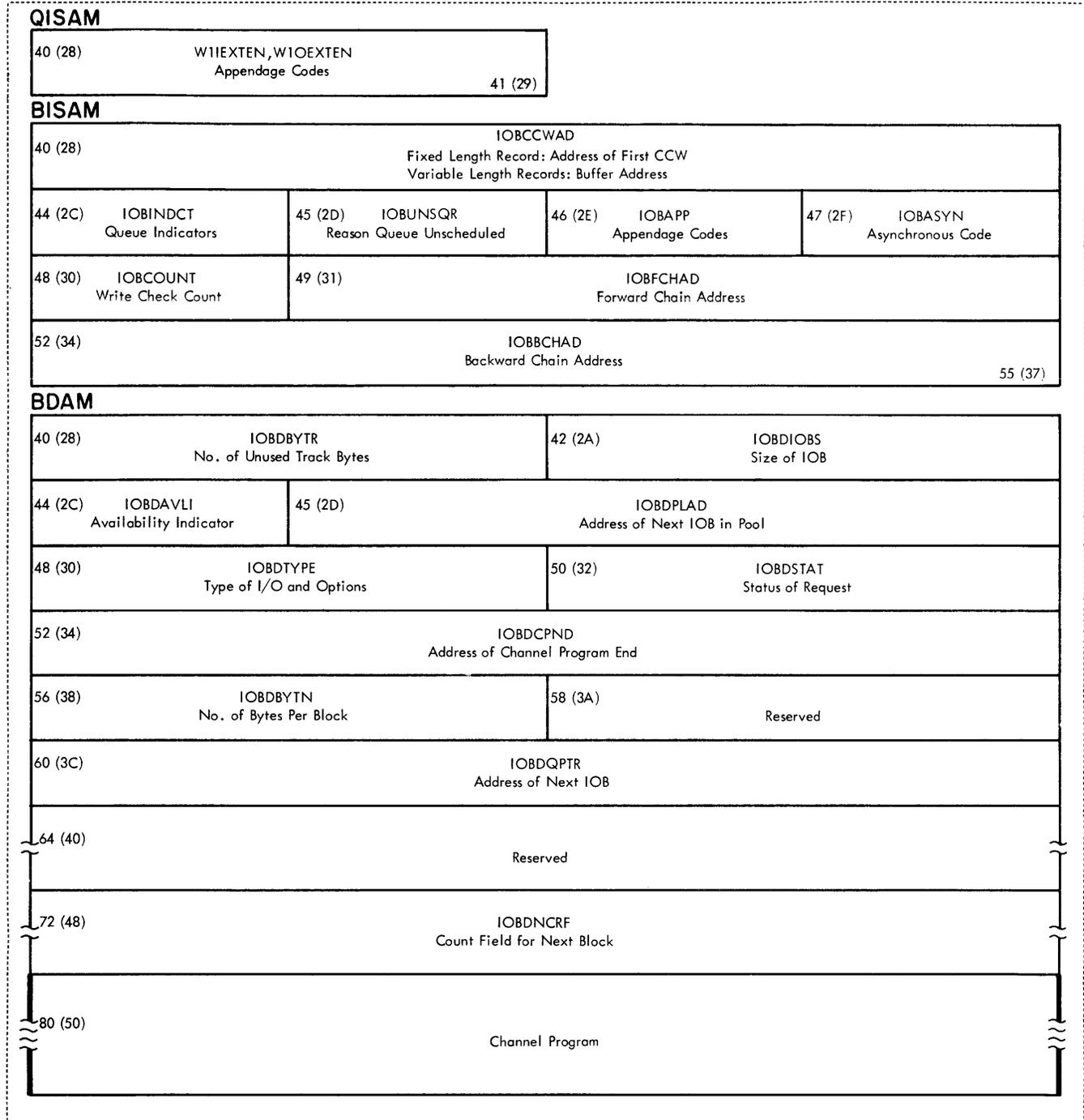


Figure 19. Input/Output Block (Part 3 of 3)

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PREFIXES</u>			
<u>GAM, QISAM PREFIX</u>			
-4	(-4) 4		GAM: Event control block that is within first IOB only. QISAM: Event control block used to indicate status of an I/O event.
<u>BSAM, QSAM, BPAM -- NORMAL SCHEDULING PREFIX</u>			
-8	(-8) 1		Flag byte.
		1...	PRTOV has occurred.
		.1..	A WRITE operation is in process.
		..1.	A READ operation is in process.
		...1	Update flag. Set on together with bit 1 of this byte to show that the block is to be updated. Can only occur if the OPEN parameter is UPDAT.
		.... 1...	IOB being used for backspace, control, or note/point operation.
		.... .1..	QSAM locate mode - logical record interface - UPDAT processing of spanned records: The record currently being processed has more than one segment.
		.... ...1	This is the first IOB.
		.... ..x.	Reserved.
-7	(-7) . 3		Address of the next IOB associated with one particular DCB. The IOBs are chained in sequential order.
-4	(-4) 4		An ECB used by QSAM to indicate the status of the I/O event.
<u>BSAM, QSAM, BPAM -- CHAINED SCHEDULING PREFIX</u>			
-16	(-10) 1	FLAG1	I/O indicators.
		xxxx	(Reserved bits)
		.... 1...	IOBPTST - A NOTE or POINT operation is in process.
		.... .1..	Error has been processed once by abnormal-end appendage routine.
		.... ..1.	Restart channel.
		.... ...1	Set when a program-controlled interruption (PCI) occurs.
-15	(-F) . 1		Reserved.
-14	(-E) . . 1	INNOP	Offset of the last I/O instruction for input operation (NOP CCW) from the origin of the ICB.
-13	(-D) . . . 1	OUTNOP	Offset of the last I/O instruction for an output operation (NOP CCW) from the origin of the ICB.
-12	(-C) 1		An ECB used by BSAM or QSAM. Shows the status of the I/O operation.
-8	(-8) 4	FIRSTICB	Address of the first interrupt control block (ICB) on the ICB queue.
-4	(-4) 4		Address of the NOP instruction at the end of the queue.

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BDAM</u>			
-8	(-8) 1	DEQIND 1... .. ...xxx xxxx	Dequeue loop indicator. This IOB is using a track that was dequeued by another IOB which is now waiting to dequeue another track. The other IOB enqueued on two or more tracks to find space in which to write/add a spanned record. The other IOB remained enqueued until it either wrote the record or determined that there was enough contiguous free space on the tracks to contain the record. After the other IOB dequeued the current track, the dequeuing was interrupted by the need of this IOB for the current track. (Reserved bits)
-7	(-7) . 3	DEQIOB	Address of the other IOB referred to in description of DEQIND, offset -8.0.
-4	(-4) 4	SWAPTR	Address of the segment work area used by this IOB to read or write a record of a Format VS data set.
<u>STANDARD FIELDS</u>			
0	(0) 1	IOBFLAG1 00.. 01.. 10.. 11.. .... ..1. .... ...1 1... 1.. 1. .... ...0.... ...1	Flag byte 1 No chaining. Command chaining. Data chaining. Both command and data chaining. Error routine in control. Device is to be repositioned. Magnetic tape: Cyclic redundancy check (CRC) needed. Direct access device: FETCH command retry exit. Exceptional condition. After the error routine returns and this bit is on, the error is considered permanent. IOB unrelated flag (i.e., nonsequential). START RESTART (This bit is always 0 for BTAM, unless the IOB is for a local 3270 device).
1	(1) . 1	IOBFLAG2 1... .... .1.. .... ..1. .... ...1 xxx. .... ...1	Flag byte 2 Halt I/O has been issued. Sense will not be performed until the device is free. IOB has been purged. Home address (R0) record is to be read. Internal I/O supervisor error correction flags. QSAM -- error recovery in control for a 2540 Punch with three buffers. BTAM -- RESETPL macro instruction was used.
2	(2) . . 1	IOBSENS0	First sense byte (device dependent).
3	(3) . . . 1	IOBSENS1	Second sense byte (local 3270 display system only). If the sense data for IOBSENS0 could not be obtained for a local 3270 device, this byte contains X'FE'.
4	(4) 1	IOBECBCC	Completion code for an I/O event. This code will appear in the first byte of an ECB. (For specific codes see ECB.)

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>STANDARD FIELDS (Continued)</u>			
5	(5) . 3	IOBECBPT	EXCP - Address of the ECB to be posted upon the completion of an I/O event. BSAM/BPAM - Address of the ECB in the DECB to be posted upon the completion of an I/O event. QSAM - Address of the ECB in the QSAM prefix to the IOB to be posted upon the completion of an I/O event.
8	(8) 1	IOBFLAG3	I/O supervisor error routine flag byte (device dependent).
9	(9) . 7	IOBCSW	Low order seven bytes of the last CSW that reflects the status for this request.
16	(10) 1	IOBSIOCC	Condition code returned after execution of SIO instruction for this I/O event.
17	(11) . 3	IOBSTART	Address of channel program to be executed.
20	(14) 1		Reserved.
21	(15) . 3	IOBDCBPT	Address of DCB associated with this IOB.
24	(18)	IOBRESTR	A field of various uses.
24	(18) 4		After SVC 16 (PURGE) - Quiesce: Address of the next IOB in the purge chain. (Last IOB in the chain: Byte 4 - FF.)
24	(18) 4		During I/O supervisor write-to-operator routine control: CCHH part of the address of a defective track.
24	(18) 1		During I/O error correction: (Meaningful only if bit 3 in the IOBFLAG1 field is on.) Magnetic tape: The Control command (BSR, FSR, ERG) required to reposition over a block.
25	(19) . 3		Any device: Address of the channel program used to correct an error condition.
24	(18) 4		After I/O error correction: If a channel program is restarted through a CCW other than the one pointed to by the IOBSTART field, its address is here.
28	(1C) 1	IOBINCAM	QSAM, BSAM, EXCP Access Method -- Normal Scheduling: Value used to increment block count field in DCB for magnetic tape. Chained scheduling: Zeros. QSAM, BSAM -- Operation code of write CCW when an ASA control character and no data is to be written (printer and card punch only).

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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STANDARD FIELDS (Continued)

28	(1C) 1		BTAM: SAD or ENABLE issued by OPEN resulted in a permanent I/O error. If the IOB is for a local 3270 device, this bit indicates that OPEN did not initialize the device because it was being used by OLTEP.
		1...	
		.1..	This IOB is currently in use by an I/O operation.
		..1.	RVI was received. (3270).
		...1	RFT received from control unit capable of general poll (3270). Request-for-test message from a remote 3270.
		.... .1..	Turned on after a remote 3270 error status message has been processed.
		.... ...1	Line is under on-line test operation.
		.... x.x.	(Reserved bits)
29	(1C) . 1		BTAM used for timer value (OPEN and LOPEN).
28	(1C) 1	IOBCRDCC	Optical Reader: Data check error count.
29	(1D) . 1	IOBCRILC	Optical Reader: Incorrect length error count.
30	(1E) . . 2	IOBERRCT	Error counter (local 3270 only).
		Byte 1	The local 3270 ERP uses this byte to keep a count of retry attempts.
		Byte 2	
		1111 1...	The local 3270 ERP uses these bits as flags during retry attempts.
		.... .000	If bit 5 of IOBFLAG1 is off, the local 3270 ERP has recovered from the error. If on, the local 3270 ERP has not processed the error.
		.... .010	The local 3270 ERP could not recover from the error. The problem program must reconstruct the buffer image.
		.... .011	The local 3270 ERP determined that the error is permanent and non-recoverable.
		.... .110	The local 3270 ERP determined that the channel program or data stream builder of the problem program can recover from the error.
		.... .111	The local 3270 ERP determined that the local 3270 channel end/abnormal appendage should perform retry.
		.... .101	The local 3270 channel end/abnormal end appendage is attempting to recover from the error by retrying the channel program.

Note: Every BSC2 IOB has been extended for 8 bytes; the extension will contain the 3275 Dial terminal ID received during connection.

EXTENSION SEGMENTS

BTAM EXTENSION

32	(20) 1	IOBUCBX	UCB index. The line number is used as an index to locate the proper UCB address in the DEB.
33	(21) . 5	IOBWORK	Work area used by error routines and on-line terminal test routines.
38	(26) . . 1	IOBRVPT	Received ACK (ACK-0 or ACK-1).

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BTAM EXTENSION (Continued)</u>			
39	(27) . . . 1	IOBSNDPT	Sent ACK (ACK-0 or ACK-1).
40	(28) 8	IOBERCCW	CCW area used by the BTAM error recovery routines.
48	(30) 16	IOBERINF	Error information field used by the BTAM error recovery routines.
64	(40) n	IOBCPA	Channel programs area. The length depends on the terminal and the options.
	4	IOBCPA+64	Generated for all BSC2 (switched point-to-point) devices. Used by the 3275 with Dial feature to save the terminal identifier.
	. 4	IOBCPA+68	Reserved when IOBCPA+64 is generated for BSC2 devices; gives boundary alignment for the next IOB.
<u>GAM EXTENSION</u>			
32	(20) 1	IOUCBX	Unit control block index.
33	(21) . 3		Reserved.
36	(24) 1		Status indicators. 0... .. IOB available. 1... .. IOB not available. .xxx xxxx (Reserved bits)
37	(25) . 3	IOBNXTPT	Address of next available IOB. Set to zero, if this is last IOB.
40	(28) 32	IOBCCW	List of channel command words to transfer data.
<u>DIRECT-ACCESS STORAGE DEVICES EXTENSION</u>			
Present when a direct access storage device is used. Follows standard fields, when present. Precedes access method extension, when present.			
32	(20) 8	IOBSEEK	An address (in the format MBBCCHHR) used with a channel program.
32	(20)	Byte 1	The number of the DEB extent to be used for this request. The first extent is number zero.
33	(21)	Bytes 2-8	The seek address required for this I/O request.

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BSAM, QSAM, BPAM EXTENSION</u>			
80	(50) n		Channel program.
	m	Additional Search Addresses	These addresses may be present for direct access storage devices only.
<u>QISAM -- SCAN MODE EXTENSION</u>			
40	(28) 2	W1IEXTEN, W1OEXTEN	Appendage codes for both normal and abnormal channel end conditions.
<u>Code</u>			
0 Operation completed was a READ.			
4 Operation completed was a SETL (K or I).			
8 Operation completed was a WRITE.			
12 Operation completed was a CHECK.			
16 Operation completed was a REWRITE.			
20 Operation completed was a RECHECK.			
<u>BISAM EXTENSION</u>			
40	(28) 4	IOBCCWAD	Fixed-length records: Address of first CCW of channel program. Variable-length records: Address of buffer, if dynamic buffering specified, after completion of a read for update (READ KU).
44	(2C) 1	IOBINDCT	Indicators.
		1...	Remove channel program from queue.
		.1..	Unscheduled queue.
		..0.	DECBAREA + 6 points to overflow record data.
		..1.	DCBMSWA points to overflow record key followed by data.
		...0	DECBKEY points to overflow record key.
		.... xxx.	DCBMSWA + 8 points to overflow record key.
		.... ...0	(Reserved bits)
		.... ...1	Normal channel end has occurred.
			Abnormal channel end has occurred.
45	(2D) . 1	IOBUNSQR	Reason for unscheduled queue.
		1...	Channel program CP1 or CP2 busy.
		.1..	No CP4, CP5, or CP6 available.
		..1.	No CP7 available.
		...1	WRITE KN is in effect (unscheduled IOB is for WRITE KN).
		.... 1...	WRITE KN is in effect (unscheduled IOB is for READ or WRITE KN).
		.... .xxx	(Reserved bits)

INPUT/OUTPUT BLOCK

Offset Bytes and Field
 Alignment Name

Field Description, Contents, Meaning

BISAM EXTENSION (Continued)

46 (2E) . . 1 IOBAPP

Appendage code.

READ or WRITE K:

The following codes apply for both normal and abnormal channel end conditions for a READ or WRITE K operation.

Code

- 0 Completion of CP4-5-5W for READ.
- 1 Completion of CP4-5-5W for WRITE.
- 2 Completion of CP 7 or 7W.
- 3 Completion of CP1 or CP2.
- 5 Completion of CP6 or 6W.
- 6 Completion of CP5W for write checking after WRITE.

WRITE KN:

The following codes apply for both normal and abnormal channel end conditions for a WRITE KN operation.

Code

- 7 Completion of CP1 or CP2.
- 8 Completion of CP8.
- 9 Completion of CP10A for true insert.
- 10 Completion of CP10B for true insert.
- 11 Completion of CP10B for addition to end of data set.
- 12 Completion of CP14 for set-ups 1, 2, and 5 (asynchronous routine codes 9, 10 and 13).
- 13 Completion of CP14, for set-ups 3, 4, and 6 (asynchronous routine codes 11, 12, and 14).
- 14 Completion of CP15.
- 15 Completion of CP16 for set-up 2 (search overflow chain for last overflow record in the chain: addition to end of data set).
- 16 Completion of CP16 for set-up 3 (search overflow chain for record which logically precedes or is equal to new record to be added: true insertion).
- 17 Completion of CP17 when to be used for track index only.
- 18 Completion of CP17 when used for track index and when its use is to be continued for higher level indices.
- 19 Completion of CP17 when its use is to be started or continued for higher level indices.
- 20 Completion of CP9A, or CP11A, or CP12A, or CP13A.
- 21 Completion of CP9B, or CP11B, or CP12B, or CP13B.
- 22 Completion of CP9C or CP123W.
- 23 Completion of CP10A for addition to end of data set.
- 24 Completion of CP12C or CP13C.

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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BISAM EXTENSION (Continued)

47	(2F)	. . . 1	IOBASYN
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Asynchronous routine code.

READ or WRITE K:

The following codes direct control to the proper asynchronous routine for a READ or WRITE K operation.

Code

- 0 Successful completion of CP4-5-6.
- 1 Do an EXCP.
- 2 Successful completion of CP7.
- 3 Successful completion of CP1 or CP2.
- 4 Unsuccessful completion of CP4-5-6.
- 6 Unsuccessful completion of CP7.
- 7 Unsuccessful completion of CP1 or CP2.

WRITE KN:

The following codes direct control to the proper asynchronous routine for a WRITE KN operation.

Code

- 1 Scheduled to do an EXCP which could not be done in an appendage routine because a different device (UCB) was involved.
- 8 Scheduled upon the successful or unsuccessful completion of a WRITE KN macro.
- 9 Scheduled to set up and execute CP14 when a record is bumped from a prime data track as a result of a new record being placed on that track (set-up 1).
- 10 Scheduled to set up and execute CP14 when a new record is to be added to the end of the data set, the last track is full, and no overflow chain currently exists for the last track (set-up 2).
- 11 Scheduled to set up and execute CP14 when a new record is to be added to the end of the data set, the last track is full, but an overflow chain does already exist for the last track (set-up 3).
- 12 Scheduled to set up and execute CP14 when a new record is a true insert and it is to go in the middle of an overflow chain (set-up 4).
- 13 Scheduled to set up and execute CP14 when a new record is a true insert and it is to become the first record in an already existing overflow chain (set-up 5).
- 14 Scheduled to set up and execute CP14 when a new record is a true insert and it has a key equal to that of the key of a record in the overflow chain, which record is marked for deletion. The new record simply replaces the deleted record (set-up 6).

48	(30)	1 . . .	IOBCOUNT
----	------	---------	----------

Write check counter.

49	(31)	. 3	IOBFCHAD
----	------	-----	----------

Forward chain address.

52	(34)	4	IOBBCHAD
----	------	---	----------

Backward chain address.

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BDAM EXTENSION</u>			
40	(28) 2	IOBDBYTR	Number of unused bytes remaining on the track.
42	(2A) . . 2	IOBDIOBS	Overall size of the IOB.
44	(2C) 1	IOBDAVLI	All bits set to zero indicate the availability of this IOB.
45	(2D) . 3	IOBDPLAD	Address of the next IOB in the pool of IOBs.
48	(30) 2	IOBDTYPE	The type of request and specified options.
48	(30)	Byte 1	
		1...	Verify.
		.1..	Overflow.
		..1.	Extended search.
		...1	Feedback.
		.... 1..	Actual addressing.
		.... .1..	Dynamic buffering.
		.... ..1.	Read exclusive.
.... ...1	Relative block addressing.		
49	(31)	Byte 2	
		1...	Key address coded as 'S'.
		.1..	Block length coded as 'S'.
		..11	RU is suffixed to the type, indicating that the feedback address in DECNXADR can be the address of either the next data record or the next capacity record, whichever occurs first.
		..01	R is suffixed to the type, indicating that the feedback address in DECNXADR is the address of the next data record.
		.... 1..	READ request.
		.... 0..	WRITE request.
		.... .1..	Key type.
		.... .0..	ID type.
		.... ..1.	Add type.
.... ...1	RELEX macro issued.		
50	(32) . . 2	IOBDSTAT	Status of the request:
50	(32)	Byte 1	
		1...	Abnormal completion.
		.1..	On extended search, the next extent is on a new volume. The ASI routine must issue the EXCP macro; the end-of-extent appendage cannot.
		...1	On extended search, indicates to the relative block conversion routine that the second pass of a two-pass conversion routine has completed.
		.... 1..	For exclusive control request, indicates that a record has been enqueued.
		.... .1..	A buffer has been assigned to this input/output block.
		.... ..1.	IOB being used to add a variable (V) or undefined (U) type record to the data set.
		.... ...1	Indicates to the dynamic buffering routine that it was entered from, and is to return control to, the start I/O appendage module.
..x.	Reserved.		

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BDAM EXTENSION (Continued)</u>			
51	(33)	Byte 2	Error code for abnormal completion used as post code in ECB.
52	(34) 4	IOBDCPND	Address of location where channel end program should end.
56	(38) 2	IOBDBYTN	Number of bytes needed on a track to write a new block.
58	(3A) . . 2		Reserved.
60	(3C) 4	IOBDQPTR	Address of IOB for next I/O operation to be executed.
64	(40) 8		Reserved.
72	(48) 8	IOBDNCRF	Count field for new block.
80	(50) n		Channel program used to transfer data as requested by the READ or WRITE macro instruction.

Job File Control Block

A job file control block (JFCB) is constructed and written on auxiliary storage by the job management routines, for each ddname specified in a job step. A JFCB is brought into main storage when a DCB with the corresponding ddname is opened. Information in a JFCB may be modified during OPEN. Figure 20 shows the format of the JFCB. Descriptions of the fields follow the illustration.

JOB FILE CONTROL BLOCK

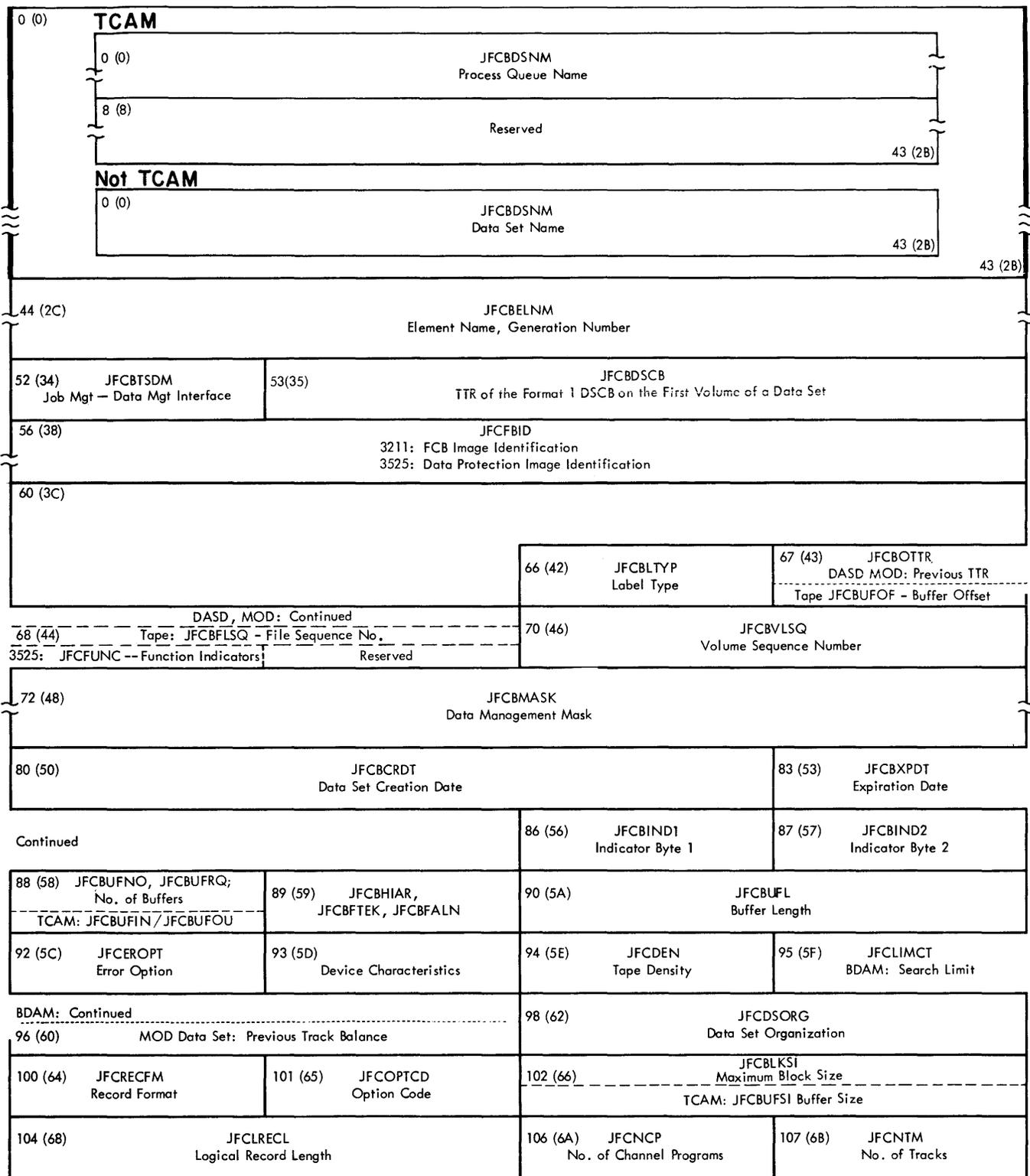


Figure 20. Job File Control Block (Part 1 of 2)

JOB FILE CONTROL BLOCK

Segments

		TCAM Segment	
	106 (6A) JFCBUFMX Max. No. of Buffers for Data Transfer	107 (6B) JFCPCI PCI Handling	
108 (6C)	JFCBRSRV		
112 (70) JFCINVTL No. of Sec. of Inv. Delay	113 (71) Line Group: JFCCPRI Relative Priority of Sending + Receiving Operations Message Queue: JFCTHRSH		
Normal 108 Segment			
108 (6C) JFCRKP Relative Key Position	110 (6E) JFCCYLOF No. of Tracks	111 (6F) JFCDBUFN Reserved	
112 (70) JFCINTVL Seconds of Delay			
108 Printer Segment			
108 (6C)	JFCUCSID UCS Image Name		
112 (70) JFCUCSOP UCS Image Operation			

QTAM

113 (71) JFCCPRI Send/Receive Priority	114 (72) JFCSOWA Size of Work Area	115 (73)
---	---------------------------------------	----------

SMF - SYSOUT Limit

113 (71)	JFCOUTLI SYSOUT Limit Value	115 (73)
----------	--------------------------------	----------

116 (74) Reserved	117 (75) JFCBNVOL No. of Serial Numbers	118 (76)
JFCBVOLS Volume Serial Numbers		
148 (94) JFCBEXTL Reserved	149 (95) JFCBEXAD Relative Track Address for First JFCB Extension	
152 (98) JFCBPQTY Primary Quantity of Direct-Access Storage	155 (9B) JFCBCTRI Space Parameters	
156 (9C) JFCBSQTY Secondary Quantity of Direct-Access Storage	159 (9F) JFCFLGS1	
160 (A0) JFCBDQTY Direct-Access Storage Required for Index	163 (A3) JFCBSPNM Split Cyl: Address of JFCB	
Continued	166 (A6) JFCBABST Relative Address of First Track	
168 (A8) JFCBSBNM Main Storage Address of JFCB - Suballocate	171 (AB) JFCBDRLH Data Block Length	
Continued	174 (AE) JFCBVLCT Volume Count	175 (AF) JFCBSPTN Split Cyl: No. of Tracks

Figure 20. Job File Control Block (Part 2 of 2)

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 8	JFCBDSNM	TCAM only: Process queue name specified by the QNAME keyword.
8	(8) 36		TCAM: Reserved.
0	(0) 44	JFCBDSNM	Data set name.
44	(2C) 8	JFCBELNM	Element name or relative generation number. Type of area (index, prime, or overflow) for an IS data set only.
52	(34) 1	JFCBTSDM	Job management/data management interface.
		1... ..	Data set is a cataloged data set.
		.1.. ..	Volume serial list has been changed.
		..1.	Data set is a SYSIN or SYSOUT data set.
		...1	A job step is to be restarted. (This job had ABEND processing for a data set opened for MOD.)
		.... 1...	Do not write back the JFCB during open processing.
		.... .1..	Do not merge DSCB or label fields into this JFCB.
		.... ..1.	Do not merge DCB fields into this JFCB.
		.... ...1	The patterning DSCB is complete.
53	(35) . 3	JFCBDSCB	The TTR of the format 1 DSCB on the first volume of a data set.
56	(38) 4	JFCFCBID	Contains the forms control buffer image identification for the 3211 Printer. Contains the data protection image identification for the 3525 Card Punch.
60	(3C) 6		Reserved.
66	(42) . . 1	JFCBLTYP	Label type.
			<u>Code</u>
		.1..	AL American National Standard tape labels.
		x...	(Reserved bit)
		...1	BLP Bypass label processing.
		.... 1.1.	SUL User label.
		.1.. 1...	AUL American National Standard user labels.
		.... .1..	NSL Nonstandard label.
		.... ..1.	SL Standard label.
		.... ...1	NL No label.
		..1. ...1	LTM Unlabeled tape created under DOS with possible leading tape mark.
67	(43) . . . 3	JFCBOTTR	DASD, MOD data set: If automatic step restart was requested - TTR of the end-of-data indicator existing when the data set was first opened during the original execution of the current step.
67	(43) . . . 1	JFCBUFOF	Tape data set: This field contains the buffer offset (DCB subparameter value). If the high-order bit is on, the offset equals four and the buffer offset field of each block (D-format records) contains the block length. If the high-order bit is off the offset is as specified in the remaining seven bits; the buffer offset field of each block does not contain the block length.
68	(44) 2	JFCBFLSQ	Magnetic tape devices: File sequence number.

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
68 (44)	1	JFCFUNC	Function indicators for the 3505 Card Reader/3525 Card Punch specified by the FUNC parameter.
		1...	I - Interpret (punch and print two lines)
		.1..	R - Read.
		..1.	P - Punch.
		...1	W - Print.
		.... 1...	D - Data protection.
		.... .1..	X - Data set is to be printed. This may be coded with PW or RPW to distinguish the data set to be printed from the data set to be punched.
		.... ..1.	T - Two line print support request. The second print line is located on card line three.
		.... ...x	(Reserved bit)
70 (46)	. . 2	JFCBVLISQ	Volume sequence number.
72 (48)	8	JFCBMASK	Data management mask.
72 (48)		Bytes 1-5	OPEN routine internal switches.
77 (4D)		Byte 6	
		1...	Volume label processing required.
		.1..	Creation of a standard label is necessary.
		..1.	Destruction of a standard label is necessary.
		...1	Dual-density check detected.
		.... xxxx	OPEN routine internal switches.
78 (4E)		Byte 7	
		1...	Treat the INOUT option of OPEN as INPUT.
		.1..	Treat the OUTIN option of OPEN as OUTPUT.
		..1.	Checkpoint/restart: Set only in a JFCB recorded in a data set descriptor record (DSDR) by the checkpoint routine. Indicates that the data set related to the JFCB is being processed sequentially, at the checkpoint, on a volume other than the volume on which processing began in the current step. When restart occurs, the bit causes deferred volume mounting. (NOTE: Checkpoint/restart does not rewrite the JFCB to SYS1.JOBQ, therefore this bit usage is internal to the component.)
		.... 1...	OPEN: Set to indicate that this data set resides on a non-RPS device. The bit is interfaced by OPEN executors when building channel programs and selecting processing routines. (NOTE: This bit is turned off by OPEN before the JFCB is rewritten to SYS1.JOBQ, therefore this bit usage is internal to OPEN.)
		...1	Disposition of this data set has been changed from MOD to NEW. Disposition (in JFCBIND2) will be restored to MOD after OPEN.
		.... 1...	Search direct for rotational position sensing (RPS) devices.
		.... .1..	JFCTRACE - GTF trace is to occur during OPEN/CLOSE/EOV.
		.... ..1.	Before OPEN: JFCBUFOF (offset 67) contains a buffer offset or invalid information resulting from a JFCB-to-JFCB merge.
		.... ...1	After OPEN: OPEN may have stored a TTR in JFCBOTTR (offset 67), in which case OPEN will have set this bit to zero.
		.... ...1	OPEN has updated the TTR. Scheduler will update the TTR in the catalog if this data set is cataloged.

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
79	(4F)	Byte 8	OPEN routine internal switches.
80	(50) 3	JFCBCRDT	Data set creation date: ydd (y=year, dd=day).
83	(53) . . . 3	JFCBXPDT	Data set expiration date: ydd (y=year, dd=day).
86	(56) . . 1	JFCBIND1	Indicator byte 1.
		11..	Release external storage.
		..11	Data set has been located.
		.... 11..	New volume has been added to the data set.
		.... ..1.	Data set is a member of a generation data group.
		.... ...1	Data set is a member of a partitioned data set.
87	(57) . . . 1	JFCBIND2	Indicator byte 2.
		01..	OLD data set.
		10..	MOD data set.
		11..	NEW data set.
		..xx	Data set security.
		..01	Password is required to read or to write.
		..11	Password is required to write, but, not to read.
		.... 1...	Shared.
		.... .1..	Delete this JFCB before allocation for a restarted generation data group.
		.... ..1.	Storage volume requested.
		.... ...1	Temporary data set.
88	(58) 1		A field of various uses.
		JFCBUFNO	Access methods other than QTAM and TCAM: Number of buffers required for this data set.
		JFCBUFRQ	QTAM: Number of buffers required for each line.
		JFCBUFIN	TCAM: The number of buffers assigned initially for receiving operations for each line in a line group.
		xxxx	
		JFCBUFOU	The number of buffers assigned initially for ending operations for each line in a line group.
		.... xxxx	
89	(59)		(One of these)
89	(59) . 1	JFCBFTEK	<u>GAM</u> Number of IOBs constructed by the open routine. Maximum value: 99. This parameter is supplied by the GNCP parameter (of the DCB macro instruction) and is placed in this field (rather than the JFCNCP field).

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
89 (59)	. 1	JFCBHIAR, JFCBFTEK, JFCBFALN	
			<u>Code</u>
	x... .x..		Access methods other than QTAM: Buffer pool location, coded in the DD statement.
	0... .0..	0	Hierarchy 0 main storage.
	0... .i..	1	Hierarchy 1 main storage.
	.xxx x...		Buffering technique:
	.1..	S	Simple buffering.
	.11.	A	QSAM locate mode processing of spanned records: Automatic record area construction during logical record interface processing. OPEN is to construct a record area if it automatically constructs buffers.
	..1.	R	BSAM create BDAM processing, or BDAM processing, of unblocked, spanned records: Software track overflow. OPEN forms a segment work area pool and stores the address of the segment work area control block in the DCBEOBW field of the data control block. WRITE uses a segment work area to write a record as one or more segments.
			BSAM input processing of unblocked spanned records with keys: Record offset processing. READ reads one record segment into the record area. The first segment of a record is preceded in the record area by the key. Subsequent segments are at an offset equal to the key length.
	...1	E	Exchange buffering.
	.... ..xx		Buffer alignment:
	.... ..10	D	Doubleword boundary.
	.... ..01	F	Fullword not a doubleword boundary.
90 (5A)	. . 2	JFCBUFL	Buffer length.
92 (5C)	1	JFCEROPT	Error option. Disposition of permanent errors if user returns from a synchronous error exit. (QSAM)
	1...		Accept.
	.1..		Skip.
	..1.		Abnormal end of task.
	...x xxxx		(Reserved bits)

Device Characteristics Field

93 (5D) The content of this one-byte field depends upon the device in use.

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>MAGNETIC TAPE</u>			
93	(5D) . 1	JFCTRTCH	Tape recording technique for seven track tape. <u>Code</u>
		0010 0011	E Even parity.
		0011 1011	T EOD/EBCDIC translation.
		0001 0011	C Data conversion.
		0010 1011	ET Even parity and translation.
<u>DIRECT-ACCESS STORAGE</u>			
93	(5D) . 1	JFCKEYLE	Direct access key length.
<u>CARD READER, CARD PUNCH</u>			
93	(5D) . 1	JFCMODE	Mode of operation. <u>Code</u>
		1000	C Column binary mode.
		0100	E EBCDIC mode.
		0010	O Optical mark read (3505 only).
		0001	R Read column eliminate (3505 and 3525).
		JFCSTACK	Stacker selection. <u>Code</u>
		.... 0001	1 Stacker 1
		.... 0010	2 Stacker 2
<u>PRINTER</u>			
93	(5D) . 1	JFCPRTSP	Normal printer spacing. <u>Code</u>
		0000 0001	0 No spacing.
		0000 1001	1 Space one line.
		0001 0001	2 Space two lines.
		0001 1001	3 Space three lines.
<u>PAPER TAPE</u>			
93	(5D) . 1	JFCCODE	Conversion code. <u>Code</u>
		1000 0000	N No conversion.
		0100 0000	I IBM BCD.
		0010 0000	F Friden.
		0001 0000	B Burroughs.
		0000 1000	C National Cash Register.
		0000 0100	A ASCII (8-track).
		0000 0010	T Teletype.
End of Device Characteristics Field.			
94	(5E) . . 1	JFCDEN	Tape density. 2400/3400 series magnetic tape units.
			<u>Code</u> <u>7-track</u> <u>9-track</u>
		0000 0011	0 200 bpi -
		0100 0011	1 556 bpi -
		1000 0011	2 800 bpi 800 bpi
		1100 0011	3 - 1600 bpi
95	(5F) . . . 3	JFCLIMCT	BDAM: Search limit.
96	(60) 2		Data set opened for MOD: If automatic step restart was requested - Track balance existing when the data set was first opened during the original execution of the current step.

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
98 (62)	. . 2	JFCDSORG	Data set organization being used.
		Byte 1	<u>Code</u>
		1... ..	IS Indexed sequential organization.
		.1.. ..	PS Physical sequential organization.
		..1.	DA Direct organization.
		...x xx..	(Reserved bits)
		.... ..1.	PO Partitioned organization.
		.... ..1	U Unmovable - the data contains location dependent information.
		Byte 2	
		1... ..	GS Graphics organization.
		.xxx xxxx	(Reserved bits)
100 (64)	1	JFCRECFM	Record format.
			<u>Code</u>
		10..	F Fixed.
		01..	V Variable.
		11..	U Undefined.
		001.	D Variable (ASCII).
		..1.	T Track overflow.
		...1	B Blocked: May not occur with undefined (U).
		.... 1...	S Fixed length record format: Standard blocks. No truncated blocks or unfilled tracks are embedded in the set. Variable length record format: Spanned records.
		.... .10.	A American National Standard control character.
		.... .01.	M Machine code control character.
		.... .00.	No control character.
		.... ...0	Always zero.
101 (65)	. 1	JFCOPTCD	Option codes.
			<u>QSAM, BSAM, BPAM</u>
			<u>Code</u>
101 (65)	. 1	1... ..	W Write validity check.
		.1..	B Magnetic tape device: EOF label is not to cause end-of-data indication if extension of the data set to another volume is indicated by the specification of another volume serial number. (This OPTCD function is unique in that it is caused by JFCOPTCD, not DCBOPTCD.)
		.1..	U 1403 printer with UCS feature: Allow a data check caused by an invalid character.
		..1.	C Chained scheduling using the Program Controlled Interruption.
		...1	H 1287/1288 Optical Reader using BSAM: Hopper empty exit. DOS/OS tape compatibility: Requests the testing for and bypassing of any embedded DOS checkpoint records encountered.
		...1	O 1285/1287 Optical Reader using QSAM: On-line correction.
		.... 1...	Q Magnetic tape device: Translate ASCII to or from EBCDIC.
		.... .1..	Z Magnetic tape devices: Used reduced error recovery procedure. (EXCP also) Direct access devices: Use search direct (SD), instead of search previous, on rotational position sensing device (RPS).
		.... ..1.	T BSAM, QSAM only: User totaling.
		.... ...x	(Reserved bit)

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BISAM, QISAM</u>			
<u>Code</u>			
101	(65) . 1	1... .. .x.. .x.. ..1. .... ...1 1... .... ..1. .... ...1	W Write validity check. (Reserved bits) M Master Indexes. I Independent overflow area. Y Cylinder overflow area. L Delete option. R Reorganization criteria.
<u>BDAM</u>			
101	(65) . 1	1... .. .1.. .... ..1. .... ...1 1... .... .xx. .... ...1	W Write validity check. Track overflow. E Extended search. F Feedback. A Actual addressing. (Reserved bits) R Relative block addressing.
<u>TCAM</u>			
<u>Code</u>			
101	(65) . 1	..1. .... .... ..1. .... ...1 xx.x xx..	C Checkpoint data set. L Non-reusable message queue data set. R Reusable message queue data set. (Reserved bits)
102	(66) . . 2	JFCBLKSI	Maximum block size.
102	(66) . . 2	JFCBUFSI	TCAM: The size of all buffers used for this line group.
104	(68) 2	JFCLRECL	Logical record length.
106	(6A) . . 1	JFCNCP	Number of channel programs; number of READ or WRITE requests which may be issued prior to a CHECK; number of IOBs generated. Maximum value: 99. NOTE: This field is not used by GAM. GAM uses the field JFCBFTEK for this information.
107	(6B) . . . 1	JFCNTM	The number of tracks that determine the development of a master index. Maximum value: 99.
<u>TCAM Segment</u>			
106	(6A) . . 1	JFCBUFMX	The maximum number of buffers to be used for data transfer for each line in this line group.
107	(6B) . . . 1	JFCPCI	Program-controlled interruption handling.
<u>Code PCI=</u>			
		1... ..	(X,)
		.1..	(,X)
		..1.	(A,)
		...1	(,A)
		.... 1...	(N,)
		.... .1..	(,N)
		.... ..1.	(R,)
		.... ...1	(,R)

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
108	(6C) 4	JFCBRSRV	
		Byte 1	The number of bytes reserved in the buffer receiving the first incoming segment of a message.
		Byte 2	The number of bytes reserved in all buffers except the one containing the first segment of a message.
112	(70) 1	JFCINVTL	The number of seconds of invitation delay.
113	(71) . 1	JFCCPRI	Line group: The relative priority to be given to sending and receiving operations.
		<u>Code</u>	
		.... .1..	R Receiving has priority.
		.... ..1.	E Receiving and sending have equal priority.
		.... ...1	S Sending has priority.
		xxxx x...	(Reserved bits)
113	(71) . 1	JFCTHRSH	Message queue: The percentage of non-reusable disk message queue records to be used before a flush closedown of the system is initiated.
			<u>NORMAL 108 SEGMENT</u> (Present unless the 108 Printer segment is present.)
108	(6C) 2	JFCRKP	The relative position of the first byte of the key within each logical record. Maximum value: logical record length minus key length.
110	(6E) . . 1	JFCCYLOF	The number of tracks to be reserved on each cylinder to hold records that overflow from other tracks on that cylinder.
111	(6F) . . . 1	JFCDBUFN	Reserved.
112	(70) 1	JFCINTVL	QTAM: Intentional delay, in seconds, between passes through a polling list.
			END OF NORMAL 108 SEGMENT
			<u>108 PRINTER SEGMENT</u> This segment replaces the normal 108 segment if the DD statement uses the UCS parameter.
108	(6C) 4	JFCUCSID	Name of the UCS image to be loaded.
112	(70) 1	JFCUCSOP	Operation of the UCS image to be loaded.
		.1..	UCS image is to be loaded in the FOLD mode.
		...1	UCS image is to be verified.
		.... 1...	Forms are to be aligned.
		.... .1..	Forms control buffer (FCB) image is to be verified.
		x.x. ..xx	(Reserved bits).
			END OF 108 PRINTER SEGMENT

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
113 (71)	. 1	JFCCPRI	<p>QTAM: Priority between send and receive operations.</p> <p><u>Code</u></p> <p>1... S Send priority. .1.. E Equal priority. ..1. R Receive priority. ...x xxxx (Reserved bits)</p>
114 (72)	. . 2	JFCSOWA	<p>QTAM: Length, in bytes, of the user provided work area.</p>
113 (71)	. 3	JFCOUTLI	<p>SMF - SYSOUT Limit: Binary representation of the OUTLIM= parameter on the SYSOUT DD statement. The maximum number of logical records specified for this output data set.</p>
116 (74)	1		Reserved.
117 (75)	. 1	JFCBNVOL	Number of volume serial numbers.
118 (76)	. . 30	JFCBVOIS	Volume serial numbers (the first five).
148 (94)	1	JFCBEXTL	Reserved.
149 (95)	. 3	JFCBEXAD	Relative track address (TTR) of first JFCB extension block (block of extra volume serial numbers).
152 (98)	3	JFCBPQTY	Primary quantity of direct access storage required.
155 (9B)	. . . 1	JFCBCTRI	<p>Space parameters.</p> <p>00.. ABSTR request. 01.. Average block length request. 10.. TRK request. 11.. CYL request. ..xx (Reserved bits) 1... CONTIG request. .... .1.. MXIG request. .... ..1. ALX request. .... ...1 ROUND request.</p>
156 (9C)	3	JFCBSQTY	Secondary quantity of direct access storage required.
159 (9F)	. . . 1	JFCFLGS1	<p>Flag byte.</p> <p>1... Reserved for model dependent support. .xxx xxx. (Reserved bits) .... ...1 Unit affinity specified for this data set.</p>
160 (A0)	3	JFCBDQTY	Quantity of direct access storage required for a directory or an embedded index area.
163 (A3)	. . . 3	JFCBSPNM	Main storage address of the JFCB with which cylinders are split.
166 (A6)	. . 2	JFCBABST	Relative address of first track to be allocated.
168 (A8)	3	JFCBSBNM	Main storage address of the JFCB from which space is to be suballocated.
171 (AB)	. . . 3	JFCBDRLH	Average data block length.
174 (AE)	. . 1	JFCBVLCT	Volume count.
175 (AF)	. . . 1	JFCBSPTN	Number of tracks per cylinder to be used by this data set when split cylinder is indicated.

JOB FILE CONTROL BLOCK EXTENSION BLOCK

Job file control block (JFCB) extension blocks are used to record volume serial numbers in excess of the five recorded in the JFCBVOLS field of a JFCB. Each extension block is 176 bytes in size. Figure 20A shows its format; a description of its fields follows the illustration.

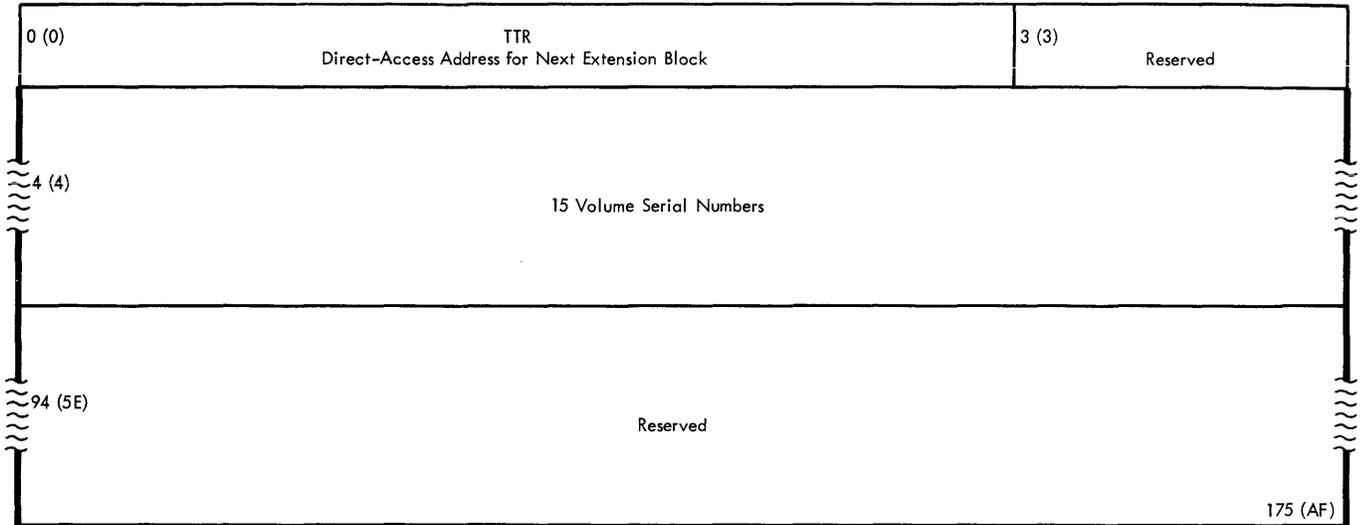


Figure 20A. JFCB Extension Block

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3	TTR	TTR of the next extension block.
3	(3) . . . 1		Reserved.
4	(4) 90		Up to fifteen 6 byte volume serial numbers specified in the same format as JFCBVOLS.
94	(5E) . . 82		Reserved.

Job Step Control Block

The job step control block (JSCB) contains step-related information that remains unchanged throughout the performance of all tasks required to complete a job step. Therefore, the JSCB is step dependent rather than task dependent. Since all tasks in a job step can use this common pool of information, the JSCB makes it unnecessary to store this information within each task control block created during the execution of the job step.

The address of the JSCB is in the TCBJSCB field of each task control block created during the completion of the job step.

Figure 21 shows the format of the job step control block. Descriptions of the fields follow the illustration.

JOB STEP CONTROL BLOCK

240 (F0)	JSCBTTR TTR of TIOT Extension	243 (F3)	JSCVSWT1 Flag Byte
244 (F4)	JSCBQMPI Address of Job's Input QMPA		
248 (F8)	JSCBQMPO Address of Job's Output QMPA		
252 (FC)	JSCBWTFG Address of Write-to-Programmer Work Area		
256 (100)	JSCBCSCB Address of Command Scheduling Control Block		
260 (104)		261 (105)	JSCBJCTA

MVT Extension

264 (108)	JSCBPSCB Address of the PSCB		
268 (10C)	JSCBTJID User TJID	270 (10E)	Reserved
272	JSCBIECB		

Figure 21. Job Step Control Block

JOB STEP CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
Note: The first valid field in the JSCB is at offset 240 (FO) from the beginning of the JSCB.			
240	(F0) 3	JSCBTTR	The relative track address (TTR) of the TIOT extension.
243	(F3) . . .1	JSCVSWT1 1... .. ..1. .... ..x.x xxxx	Flag byte. JSCBPASS-Bypass password protection. MFT: The partition cannot be redefined because the job occupying it is defined as long-running. MVT: Reserved. Reserved.
244	(F4) 4	JSCBQMPI	Address of the job's input QMPA.
248	(F8) 4	JSCBQMPO	Address of the job's output QMPA.
252	(FC) 4	JSCBWTFG	
		Byte 1	Text breaking indicator.
		Bytes 2-4	The address of the write-to-programmer work area used to write messages to this job step's system output data set.
256	(100) 4	JSCBCSCB	
		Byte 1	Reserved.
		Bytes 2-4	The address of the command scheduling control block used to process commands received for this job step.
260	(104) 4	JSCBJCT	A fullword name used to refer to JSCBJCTA.
261	(105) . 3	JSCBJCTA	The relative track address (TTR) of the job's JCT.
<u>MVT Extension</u>			
264	(108) 4	JSCBPSCB	TSO: The address of the protected step control block (PSCB).
268	(10C) 2	JSCBTJID	TSO: The terminal job identification (TJID) of the user for which this task is being performed.
270	(10E) . . 2		Reserved.
272	(110) 4	JSCBIECB	TSO: ECB for communication between dynamic allocation and the initiator.

Line Control Block

A line control block (LCB) contains the information needed by BTAM routines, QTAM message control routines, and the I/O supervisor to conduct input and output operations. Within the LCB are two other blocks:

- Input/output block (IOB), used by the I/O supervisor.
- Line error block (LERB), used by appendages and error recovery routines in BTAM and in QTAM message control.

Figure 22 shows the format of the LCB. Descriptions of the fields follow the illustration.

LINE CONTROL BLOCK

Line Control Block

0 (0)	LCBSTATE State of Block	1 (1)	LCBENDOP Incoming-Contents of Reg-14, Outgoing-Address of LCB of Line
4 (4)	LCBCECB Op Code	5 (5)	LCBRCADD Track Address of Last Correctly Transmitted Segment
Receive Scheduler STCB			
8 (8)	LCBSCHAD Address of First Waiting QTAM Subtask for This LCB		
12 (C)	LCBCPRI Priority	13 (D)	LCBSCHLK Link Field
16 (10)	LCBCHDR Disk Address of the Current Message Header		19 (13) LCBCSEG Message Segment
Continued		22 (16)	LCBNASEG Track Address of Last Message Received
Continued		25 (19)	LCBSORCE Address of Head of Chain of LCBs
28 (1C)	LCBMSGPR Priority	29 (1D)	LCBDESTQ Address of Destination QCB
32 (20)	LCBMPLRT Scan Address	33 (21)	LCBCLPCI Address of Last PCI
36 (24)	LCBCLCCW Address of Last BRB		
40 (28)	LCBERRST Line Errors	42 (2A)	LCBRRKCT Last Status, Time of Interruption
44 (2C)	LCBTTIND Address of Terminal Table Entry	46 (2E)	LCBDLPTR Address of Next Entry in Distriblist

Figure 22. Line Control Block (Part 1 of 2)

Continued

LINE CONTROL BLOCK

Line Control Block - Continued

Input/Output Block

48 (30)	LCBFLAG1, IOBFLAG1 Status Bits	49 (31)	LCBFLAG2, IOBFLAG2 Delay Bits	50 (32)	IOBSENS0 SENSE Status	LCBSENSE	51 (33)	IOBSENS1 SENSE Status
52 (34)	LCBECBPT, IOBECBPT Not Used by QTAM							
56 (38)	LCBCSW, IOBCSW Channel Status							
64 (40)	LCBSIOCC, IOBSIOCC SIO Condition	65 (41)	LCBSTART, IOBSTART Address of First CCW					
68 (44)	Reserved	69 (45)	LCBDCBPT, IOBDCBPT Address of DCB					
72 (48)	LCBRESTR, IOBRESTR Address of CCW for Message Transfer							
76 (4C)	LCBINCAM, IOBINCAM				78 (4E)	LCBERRCT, IOBERRCT Breakoff Counter		
								79 (4F)

80 (50)	LCBUCBX Index	81 (51)	LCBPTEMP Message Priority	82 (52)	LCBTRST Offset to EOB Character			
84 (54)	LCBPOLCT Count	85 (55)	LCBPOLPT Address of Active Entry					
88 (58)	LCBERCCW CCW Built by ERP Routine							
96 (60)	LCBCPA Channel Program Area							

Line Error Block

0	LERACTR Transmissions Counter								
4	LERACDR Data Checks Counter				6	LERACIR Interventions Counter			
8	LERACTO Timeouts Counter				10	LERTHTR Transmissions Counter		11	LERTHDC Data Check Counter
12	LERTHIR Intervention Counter		13	LERTHTO Timeout Counter		14	Reserved		
									15

Figure 22. Line Control Block (Part 2 of 2)

LINE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	LCBSTATE		State of line control block.
			00	Inactive.
			01	Free.
			02	Partial message in queue.
			04	Send.
			08	Receive.
			10	Initiate.
			20	Converse.
			40	Recall.
			80	Cleanup.
1	(1) . 3	LCBENDOP		If incoming message, this field contains the contents of return register 14 from the ROUTE macro instruction. If outgoing message, it contains the address of the LCB for the originating line.
4	(4) 1	LCBCECB		BTAM operation code for current segment of current message.
5	(5) . 3	LCBRCADD		Disk address of the last correctly transmitted segment in current message.
<u>RECEIVE SCHEDULER STCB (Sub Task Control Block)</u>				
8	(8) 4	LCBSCHAD		Address of the first waiting QTAM subtask for the LCB.
12	(C) 1	LCBCPRI		Priority of the receive scheduler.
13	(D) . 3	LCBSCHLK		Link field of the receive scheduler.
<u>END OF RECEIVE SCHEDULER STCB</u>				
16	(10) 3	LCBCHDR		Disk address of the current message header.
19	(13) . . . 3	LCBCSEG		Disk address of the current message segment.
22	(16) . . 3	LCBNASEG		Pointer to the first segment of the last message received.
25	(19) . 3	LCBSORCE		Address of the chain of LCB for source lines currently sending to the same destination.
28	(1C) 1	LCBMSGPR		Priority of the current incoming message.
29	(1D) . 3	LCBDESTQ		Address of the QCB for destination terminal.
32	(20) 1	LCBMPLRT		Scan pointer for next destination.
33	(21) . 3	LCBCLPCI		Address of last CCW for which PCI was received.
36	(24) 4	LCBCLCCW		Address of the last BRB for which a buffer was assigned.

LINE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
40	(28) 2	LCBERRST		Communications line error.
40	(28)	Byte 1		
		1... ..		Invalid destination code.
		.1..		Terminal inoperative.
		..1.		Sequence number high.
		...1		Sequence number low.
		.... x..x		(Reserved bits)
		.... .1..		Incomplete header.
		.... ..1.		Invalid source code.
41	(29)	Byte 2		
		1... ..		Transmission error.
		.1..		Time-out exceeded.
		..1.		Breakoff error.
		...1		Insufficient buffers.
		.... 1...		Message not sent.
		.... .xxx		(Reserved bits)
42	(2A) . . 2	LCBERRCT		If receiving, the last status of SEQIN (terminal table). If not receiving, the time of the requested interruption.
44	(2C) 2	LCBTTIND		Address of terminal table entry for current message.
46	(2E) . . 2	LCBLPTR		Address of next entry in distribution list.
<u>INPUT/OUTPUT BLOCK FORMAT</u>				
48	(30) 1	LCBFLAG1, IOBFLAG1		Status bits used by the I/O supervisor.
49	(31) . 1	LCBFLAG2, IOBFLAG2		Flag bits.
		xxxx xxx.		Status bits used by the I/O supervisor.
		.... ...x		Flag bit used by QTAM.
		.... ...1		Line is to be polled using the autopoll feature.
50	(32) . . 2	LCBSENSE,		Sense information stored by the I/O supervisor.
50	(32) . . 1	IOBSENS0		First byte of sense information.
51	(33) . . . 1	IOBSENS1		Second byte of sense information.
52	(34) 4	LCBECBPT, IOBECBPT		Not used by QTAM.
56	(38) 8	LCBCSW, IOBCSW		Channel status word.
64	(40) 1	LCBSIOCC, IOBSIOCC		Start I/O condition code.
65	(41) . 3	LCBSTART, IOBSTART		Address of the first CCW executed in the channel program.
68	(44) 1			Reserved.
69	(45) . 3	LCBDCBPT, IOBDCBPT		Address of the DCB.

LINE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
72	(48) 4	LCBRESTR, IOBRESTR		Address of the CCW for SIO command for first message data transfer.
76	(4C) 2	LCBINCAM, IOBINCAM		
		Byte 1	01	Line trying to send.
			02	Dial line not available.
			04	Polling or addressing error. WTTA:
			08	Halt I/O instruction has been used.
			10	EOT character received.
			40	WRU character received.
		Byte 2	00	Always zero.
78	(4E) . . 2	LCBERRCT, IOBERRCT		Counter for BREAKOFF routine.

END OF INPUT/OUTPUT BLOCK FORMAT

80	(50) 1	LCBUCBX		Index to the address of the UCB in the DEB.
81	(51) . 1	LCBTEMP		Temporary storage for message priority.
82	(52) . . 2	LCBTRST		Address of end-of-block (EOB) character relative to the address of the last correctly transmitted segment of current message.
84	(54) 1	LCBPOLCT		Count of messages received from terminal.
85	(55) . 3	LCBPOLPT		Pointer to currently active entry in polling list.
88	(58) 8	LCBERCCW		Work area to hold CCW built by error recovery procedures.
96	(60) n	LCBCPA		Channel program area.

LINE ERROR BLOCK (LERB)

A field in the LERB is found by adding the value in the DCBEIOBX field in the DCB to the address of the LCB and subtracting the field reversal value.

Cumulative counters for number of:

4	LERACTR	Transmissions.
2	LERACDC	Data checks.
. . 2	LERACIR	Interventions required.
2	LERACTO	Timeouts.
. . 1	LERTHTR	Threshold counters for Number of: transmissions.
. . . 1	LERTHDC	Data checks.
1	LERTHIR	Interventions required.
. 1	LERTHTO	Timeouts.
. . 2		Reserved.

END OF LINE CONTROL BLOCK

Line Control Block -- TCAM

The line control block for TCAM is a variable length table containing information that must be maintained on a line or line group basis. There is one line control block for each line in a line group. All LCBs for a line group are contiguous in storage. The LCB maintains the following information:

- The address of the QCB to which recalled buffers are to be posted.
- Pointers to the channel program and the corresponding DCB.
- The last PCI serviced.
- The chain of waiting QCBs.

The line control block contains the buffer chain, the subtask chain, and the I/O status.

When the LCB is functioning as a QCB, the ICB contains the address of the first subtask control block (STCB). At ICB+76(4C) is the element control block. The IOB is at ICB+32(20).

The address of the LCB can be found by subtracting 32(20) from the address of the IOB found in the DCBIOBAD field of the DCB and using the relative line number as an index. The length of the LCB is located in the DCBEIOBX field of the DCB.

Storage is allocated and the LCB is initialized at open for the DCB for the line group.

Figure 22A shows the TCAM LCB. Descriptions of the fields follow the figure.

LINE CONTROL BLOCK -- TCAM

TCAM Line Control Block

0 (0)	LCBKEY Element key of Buffer	1 (1)	LCBQCBA Address of QCB	
4 (4)	LCBPRI Priority of Buffer	5 (5)	LCBLINK Address of Buffer Link Field	
8 (8)	LCBRSKEY Receive Scheduler key	9 (9)	LCBSTCBA Address of First STCB When LCB is a QCB	
12 (C)	LCBRSPRI Receive Scheduler Priority	13 (D)	LCBRLNK Address of Next Item in STCB Chain	
16 (10)	LCBEOLTD End-of-List Time Delay	18 (12)	LCBTDL	19 (13) LCBTSOB TSO Status Bits
20 (14)	LCBCHAIN Disp. Status Bits	21 (15)	LCBINSRC	
24 (18)	LCBNTXT Offset to Current SCB	25 (19)	LCBSCBDA Address of SCB Directory	
28 (1C)	LCBISZE	29 (1D)	LCBFSBFR/LCBLBFR Address of the First/Last Buffer	
32 (20)	LCBFLAG1 IOS Flags	33 (21)	LCBFLAG2 IOS Flags	34 (22) LCBSENS0 Sense Byte 0
				35 (23) LCBSENS1 Sense Byte 1
36 (24)	LCBECBCC ECB Completion Code	37 (25)	LCBECBPT Address of ECB	
40 (28)	LCBFLAG3 IOS Flags	41 (29)	LCBCSW Last CSW	
48 (30)	LCBSIOCC SIO Cond. Code	49 (31)	LCBSTART Address of Channel Program	
52 (34)	LCBDCBPT Address of DCB			
56 (38)	LCBRESTR Error Msg. Data	57 (39)	LCBRCQCB Address of QCB for Posting Recalled Buffer	
60 (3C)	LCBINCAM		62 (3E)	LCBTTBIN: Terminal Index LCBERRCT: IOS Error Counters
64 (40)	LCBUCBX UCB Index	65 (41)	LCBRCBFR: Pointer to Recalled Buffer LCBLSPCZ: Address of Last Serviced PCI	
68 (44)	LCBTRST		70 (46)	LCBSTATE Status Bits

Figure 22A. TCAM Line Control Block (Part 1 of 2)

LINE CONTROL BLOCK -- TCAM

Line Control Block - Continued

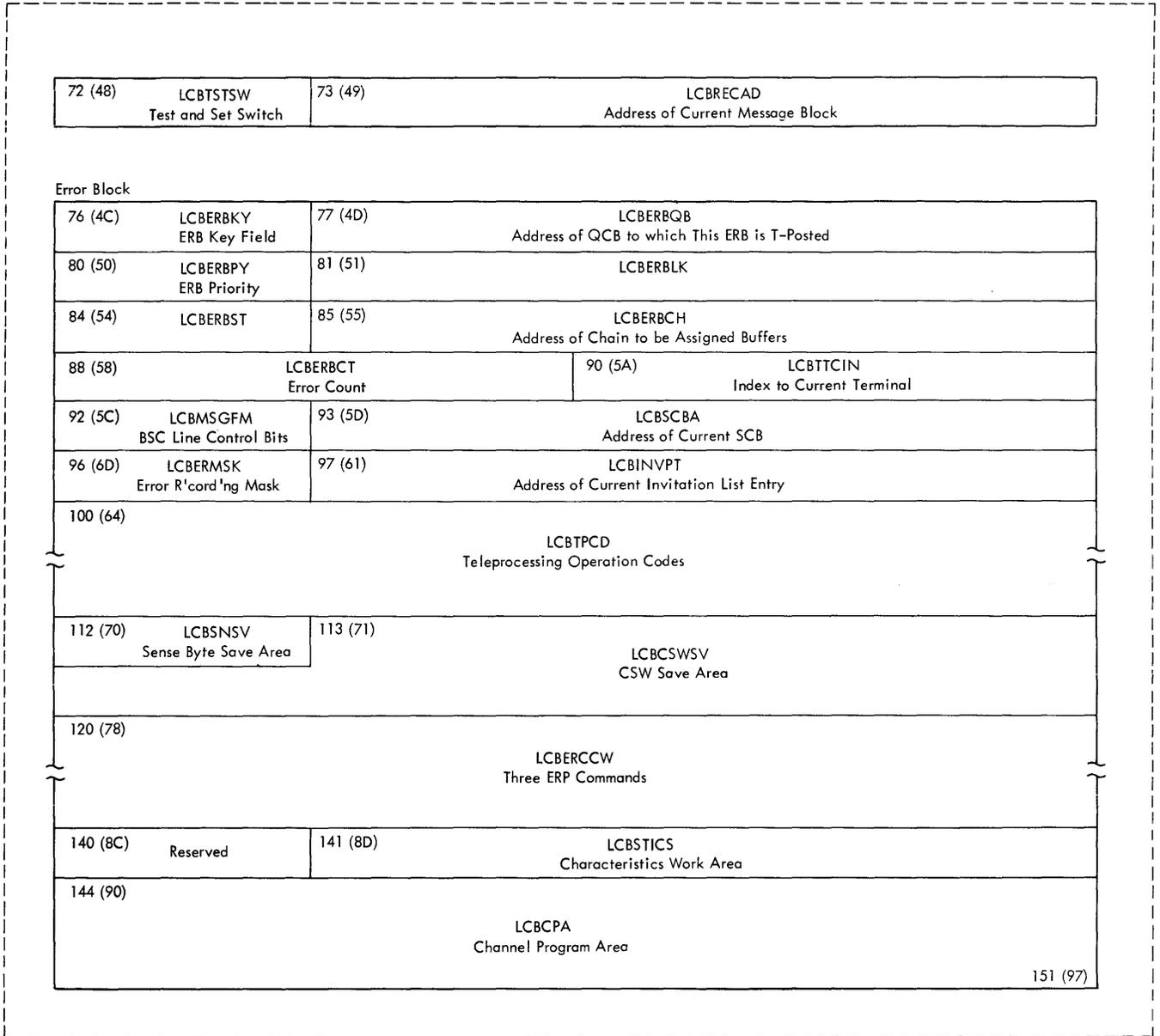


Figure 22A. TCAM Line Control Block (Part 2 of 2)

LINE CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	LCBKEY	Element key of buffer.
1	(1) . 3	LCBQCBA	Address of the QCB.
4	(4) 1	LCBPRI	Priority of buffer.
5	(5) . 3	LCBLINK	Link field of buffer.
8	(8) 1	LCBRSKEY	Receive scheduler key.
9	(9) . 3	LCBSTCBA	Address of first STCB when LCB is functioning as a QCB.
12	(C) 1	LCBRSPRI	Receive scheduler priority.
13	(D) . 3	LCBRSLNK	Address of next item in STCB chain.
16	(10) 2	LCBEOLTD	End of invitation-list time delay.
18	(12) . . 1	LCBTDL	Time delay queue offset to QCB address for LCB=X'14'
19	(13) . . . 1	LCBTSOB	TSO Status bits. The bit settings are as follows: 1... LCBPREP-Prepare on-line. .1.. LCBTSEBUF-Buffer has time sharing prefix. ..1. LCBSATRD-Simulated ATTN real request. ...1 LSBSOPL-Start of polling list. 1... LCBREAD-Reading partial line. .... .1.. LCBCIRCD-Circle D sent to 741. .... ..1. LCBINHBN-Use "inhibit" for this terminal. .... ...1 LCB2741N-2741 on 2741/1050 line.
20	(14) 1	LCBCHAIN	Disposition status bits. Bit settings are as follows: 1... LCBSCRNN-Screen change requested. .111 1111 LCBSCRNF-No screen change requested. .1.. LCBEXCP-Delay EXCP until association. ..1. LCBERMSG-ERP message waiting. ...1 LCBNORTY-Text retry not possible. 1... LCBUREQN-Unit request in progress. 1111 .111 LCBUREQF-Unit request not in progress. .... .1.. LCBBFRSZ-Queue management flag. .... ..1. LCBTETEN-User requested TETE-A-TETE. 1111 11.1 LCBTETEF-TETE-A-TETE not requested. .... ...1 LCBABRTN-Abort sequence must be sent. 1111 111. LCBABRTF-Abort sequence not required.
21	(15) . 3	LCBINSRC	In-source chain.
24	(18) 1	LCBNTXT	Temporary save area for PFRNTXT.
25	(19) . 3	LCBSCBDA	Address of SCB directory.
28	(1C) 1	LCBISZE	Count of "idles" reserved.
29	(1D) . 3	LCBFSBFR	Address of first buffer assigned to this LCB.
29	(1D) . 3	LCBLSBFR	Address of last buffer assigned to this LCB.
32	(20) 1	LCBFLAG1	IOS Flag 1.
33	(21) . 1	LCBFLAG2	IOS Flag 2.

LINE CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
34 (22)	. . 1	LCBSENS0	Sense byte 0.
35 (23)	. . . 1	LCBSENS1	Sense byte 1.
36 (24)	1	LCBECBCC	Completion code.
37 (25)	. 3	LCBECBPT	Address of ECB.
40 (28)	1	LCBFLAG3	IOS Flag 3.
		.... ..1.	LCBOBRRO - TPER record processing.
		.... 1...	LCBSOHC - SOH% C flag bit.
		..1.	LCBSOHR - SOH% R flag bit.
		xx.x .x.x	If SOH% C and SOH% R flag bits are off, SOH% E is assumed. (Reserved bits)
41 (29)	. 7	LCBCSW	Last CSW.
48 (30)	1	LCBSIOCC	SIO condition code.
49 (31)	. 3	LCBSTART	Address of channel program.
52 (34)	4	LCBDCBPT	Address of the corresponding DCB.
56 (38)		LCBRESTR	Start of error message data.
56 (38)	4	LCBRQCB	QCB to which tpost recalled buffer.
60 (3C)	2	LCBINCAM	
		Byte 1	
		.... .1..	Polling or addressing error.
		.... ..1.	Dial line not available.
		.... ...1	Line trying to send.
		Byte 2	Always zero.
62 (3E)	. . 2	LCBTTBIN	Index of terminal to be connected.
62 (3E)	. . 2	ICBERRCT	IOS error counters.
64 (40)	1	LCBUCBX	UCB index.
65 (41)	3	LCBRCBFR	Pointer to recalled buffer.
65 (41)	3	LCBLSPIC	Address of last serviced PCI.
68 (44)	2	LCBTRST	Address of the buffer translation routine.
70 (46)	. . 2	LCBSTATE	Status bits.
70 (46)	. . 1	LCBSTAT1	First status byte - bit settings are as follows:
		1...	LCBRCLIN- Recall being performed.
		.111 1111	LCBRCLLF- No recall is being performed.
		.1..	LCBCTLMD- Line in control mode.
		..1.	LCBOCNI- Non-immediate operator control operation in progress.
		...1	LCBINITN- Receiving initiate-mode message.
		111. 1111	LCBINITF- There is no initiate-mode message.
		.... 1...	LCBCONT- Either continue or reset operation.
		.... .1..	LCBFREEN- Line is free.
		1111 1.11	LCBREEF- Line is not free.
		.... ..1.	LCBRCVNV- Line is receiving.
.... ...1	LCBSENDN- Line is sending.		
.... .000	Line is stopped.		

LINE CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
71 (47)	. . . 1	LCBSTAT2	Second status byte.
		1... ..	LCBTRACE-I/O trace active for this line.
		.111 1111	LCBTRCOF-I/O trace is not active.
		.1.. ..	LCBMSGNN- MSGEN or "startup" message.
		1.11 1111	LCBMSGNF- Not a MSGEN or "startup" message.
		..1.	LCBBEOTN-End-of-transmission from buffered terminal. (No end-of-message).
		11.1 1111	LCBBEOTF- Regular end-of-message if end-of transmission is from a buffered terminal.
		...1	LCBSNDPR- SEND priority switch set by SEND scheduler.
		.... 1...	LCBNEGRP- Negative response to polling.
		.... .1..	LCBSYNC-Line is binary synchronous.
		.... ..1.	LCBDIAL- This is a dial LCB.
		.... ...1	LCBRESP- A terminal response is due.
72 (48)	1	LCBTSTSW	Test-and-set switch.
		1... ..	LCBCONCT-A connection has been established.
		.xxx xxxx	(Reserved bits)
73 (49)	. 3	LCBRECAD	Address of the current message block.
76 (4C)	4	LCBERB	Start of the ERB for this LCB.
76 (4C)	1	LCBERBKY	Element request block key field.
77 (4D)	. 3	LCBERBQB	Address of the QCB to which this ERB is currently tposted.
80 (50)	1	LCBERBPY	ERB priority.
81 (51)	. 3	LCBERBLK	Address of the next item in the chain in which this ERB currently resides.
84 (54)	1	LCBERBST	Status of ERB.
		1... ..	LCBMSG-End of initiate mode to IEDQHM.
		.1.. ..	LCBEOMSG-End-of-message read from disk.
		..1.	LCBRDERR-Logical read error.
		11.1 1111	LCBRDERF- No read error.
		...1	LCBINQ-ERB is waiting-buffers from IEDQHM.
		.... .1..	LCBERROR-Error on the SEND.
		.... ..1.	LCBPRCPG-After the intial request is satisfied, the ERB will be posted for the QCB indicated in LCBRCQCB.
		.... ..1.	LCBCOMPL-Disk request is complete.
		.... ...1	LCBDLNKN-ERB is not tposted but is eligible to be tposted.
		1111 111.	LCBDLNKF-The ERB is tposted; PCI cannot tpost it again.
85 (55)	. 3	LCBERBCH	Address of the chain to be assigned buffers.
88 (58)	2	LCBERBCT	Count fields.
90 (5A)	. . 2	LCBTTCIN	Index to the terminal that is currently connected.
92 (5C)	1	LCBMSGFM	Bits to control the binary synchronous command (BSC) line.
93 (5D)	. 3	LCBSCBA	Address of the current SCB.

LINE CONTROL BLOCK -- TCAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
96	(60) 1	LCBERMSK	Error recording mask.
97	(61) . 3	LCBINVPT	Address of the current entry in the invitation list.
100	(64) 12	LCBTPCD	Teleprocessing operation codes.
112	(70) 1	LCBSNSV	Save area for sense byte.
113	(71) . 7	LCBCSWSV	Save area for CSW.
120	(78) 24	LCBERCCW	Three ERP commands.
141	(8D) . 3	LCBSTICS	Characteristics work area.
144	(90) 8	LCBCPA	Variable length channel program area.

Note: The following extension resides immediately after the variable length channel program area.

0	(0) 1	LCBXFLAG	Device dependent flags.
		.... 1...	LCBGPCTV
		1111 .111	LCBGPSTP
		.... .1..	LCBSRCPRF
		1111 1.11	LCBSRSTP
		.... ..1.	LCBERPND
		1111 11.1	LCBERSTP
1	(1) 3	LCBXDCT	DCT storage area.
4	(4) 1	LCBPCIRC	3270 local PCI retry counter.
5	(5) 3	LCBXRADR	Error poll characters address.

Partitioned Data Set Directory Entries

A partitioned data set (PDS) directory entry describes a member of a partitioned data set. An entry is a maximum of 74 bytes and contains the name or alias name of a member, a pointer to the first block of the named member, and a user data field.

The pointer to the named member, as well as pointers that may appear within the user data field are all relative addresses. These are of the form TTR, specifying the address of a block relative to the address of the first block of the data set.

Separate diagrams and descriptions are presented of the various formats of a PDS directory entry:

- The general format depicts the essential fields of a directory entry (illustrative of the format used with the STOW macro instruction).
- Format 1 depicts a PDS directory entry as produced by linkage editor. This is the format used by linkage editor for placing (stowing) information in the directory of a PDS whose members are load modules.
- Format 2 depicts the format in which a PDS directory entry for a load module is brought into main storage by the BLDL macro instruction.

PARTITIONED DATA SET DIRECTORY ENTRY --
GENERAL FORMAT

This format describes the essential fields of a partitioned data set (PDS) directory entry. Figure 23 shows the general format of an entry in a PDS directory. Following the illustration is a general description of the fields of an entry.

PDS DIRECTORY ENTRY

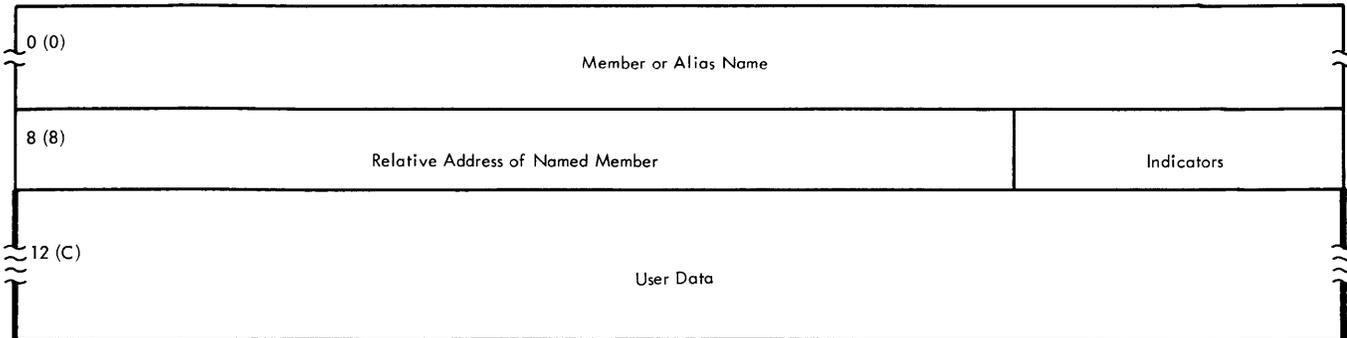


Figure 23. PDS Directory Entry -- General Format

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
		<u>Name</u>
0	(0) 8	Member name of alias name.
		<u>TTR</u>
8	(8) 3	TTR of the first block of the named member.
		<u>C</u>
11	(B) . . . 1	Indicators.
	1... ..	Name is an alias.
	.xx.	Number of TTR's in the user data field. A maximum of three is allowed.
	...x xxxx	Length of the user data field in half words.
		<u>User Data</u>
12	(C) n	Variable user data as provided as input to the STOW macro instruction. Up to three pointers to locations within the member may be provided. The pointers must be four bytes long and must appear at the beginning of the user data field. Their format is as follows:
	TT - 2 bytes	- Relative track from the beginning of the data set.
	R - 1 byte	- Block number on that track.
	N - 1 byte	- If the TTR points to a note list, this byte indicates the number of entries in the note list. If the TTR does not point to a note list, this byte contains zeros.

The system status index (SSI) is a collection of control information, stored within each user's operating system, that defines the content and maintenance level of that system. For each IBM-supplied member in the user's system libraries, SSI information is stored in the member's PDS directory entry (user data).

System status information is present if the computed length of your user data is four bytes less than the number of half words indicated in bits 3-7 of byte 11. There is no indicator, other than this difference in length, to show the presence of system status information.

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
---------------	----------------------------	---

User Data (Continued)

In macro and symbolic libraries, system status index (SSI) information is stored in the first four bytes of the user data field (bytes 12-15). In load-module libraries, SSI information is stored in the last four bytes of the user data field. (The actual offset depends upon the length of the user data field.)

The format of the SSI information is as follows:

+0	(0) 1	Change level. When a member is originally release by IBM, the change level is zero. Thereafter each change to the member increases the change level by one.
+2	(+2) 1	Flags. x... (Reserved bit). .1.. Indicates that a FORCE control card was used when executing the IHGUAP program. ..1. Set by the installation to indicate a change it has made to the member, as opposed to an IBM-distributed change. ...1 Set when an emergency IBM-authorized program "fix" is made, as opposed to changes that are included in an IBM-distributed maintenance package. 1... A change made to the member is dependent upon a change made to some other member in the system. .... .xx. Flags that indicate whether or not a change to the member will necessitate a partial or complete regeneration of the system. .... .00. Not critical. .... .01. May require complete regeneration. .... .10. May require partial regeneration. .... .11. This configuration is reserved for future use. .... ...1 The member is supplied by IBM.
+2	(+2) 2	The member serial number.

PARTITIONED DATA SET DIRECTORY ENTRY --
FORMAT 1

This format appears in the partitioned data set (PDS) directory and is the format produced by linkage editor for a load module. Figure 23A shows the format of an entry in a PDS directory for a load module.

The difference between format 1 and format 2 of linkage editor PDS directory entries lies in two fields inserted into format 1 at offsets +11 and +12 (decimal) by the BIDL routine when it places the entry into a BLDL list.

PDS DIRECTORY ENTRY

All Load Modules

0 (0) Member or Alias Name		
8 (8)	Relative Address of First Block (TTR-P)	11 (B) Indicators
12 (C)	Relative Address of First Block of Text (TTR-T)	15 (F) Zeros
16 (10)	Relative Address of Note List or Scat/Trans Table	19 (13) No. of List Entries
20 (14)	Module Attributes	22 (16) Main Storage Needed for Module
Continued	25 (19) Length of First Text Block	27 (1B) Entry Point Address
Continued	30 (1E) First Text Block Origin	
Continued	32 (20)	

Load Modules With Alias Names and RENT or REUS Attributes

33 (21) Entry Point for Member Name		
36 (24)	Member Name of a Load Module	
43 (2B)		
Load Modules - Scatter		
33 (21) Scatter List Size		
35 (23) Translation Table Size		
Continued	37 (25) ID of ESD for First Text Block Control Section	39 (27) ID of ESD
Continued	40 (28)	
Load Modules - Scatter, With Alias Names and RENT or REUS Attributes		
41 (29) Entry Point for Member Name		
44 (2C)	Member Name of a Load Module	
51 (33)		

Figure 23A. PDS Directory Entry -- Format 1

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>												
		<u>Standard Field</u>												
		<u>Name</u>												
0	(0) 8	Load module member name or alias name.												
		<u>TTR-P</u>												
8	(8) 3	TTR of the first block of the named member (load module).												
		<u>Indicators</u>												
11	(B) . . . 1	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;"><u>Bit</u></th> <th style="text-align: left;"><u>State</u></th> <th style="text-align: left;"><u>Meaning</u></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>Name is an alias in the first field.</td> </tr> <tr> <td>1-2</td> <td>(variable)</td> <td>Number of TTRs in the user data field.</td> </tr> <tr> <td>3-7</td> <td>(variable)</td> <td>Length of user data field in half words.</td> </tr> </tbody> </table>	<u>Bit</u>	<u>State</u>	<u>Meaning</u>	0	1	Name is an alias in the first field.	1-2	(variable)	Number of TTRs in the user data field.	3-7	(variable)	Length of user data field in half words.
<u>Bit</u>	<u>State</u>	<u>Meaning</u>												
0	1	Name is an alias in the first field.												
1-2	(variable)	Number of TTRs in the user data field.												
3-7	(variable)	Length of user data field in half words.												
		<u>User Data Field</u>												
		For a description of system status information see the general format of a PDS entry.												
		<u>TTR-T</u>												
12	(C) 3	TTR of the first block of text.												
15	(F) . . . 1	Zeros.												
		<u>TTR-N/S</u>												
16	(10) 3	TTR of the note list or scatter/translation table. Used for modules in scatter load format or overlay structure only.												
		<u>NL</u>												
19	(13) . . . 1	The number of entries in the note list for modules in overlay structure; otherwise zero.												
20	(14) 2	<u>Attributes</u>												
		Byte 1												
		1... Reenterable.												
		.1... Reusable.												
		..1. In overlay structure.												
		...1 Module to be tested - TESTRAN.												
	 1... Only loadable.												
	1.. Scatter format.												
	1. Executable.												
	1 Module contains no RLD items and only one block of text.												
	0 Module contains multiple records with at least one block of text.												
		Byte 2												
		1... Module can be processed only by F level of linkage editor.												
		0... Module can be processed by all levels of linkage editor.												
		.1... Linkage editor assigned origin of first block of text is zero.												
		.0... Linkage editor assigned origin of first block of text is not zero.												
		..1. Entry point assigned by linkage editor is zero.												
		...1 Module contains no RLD items.												
	 1... Module cannot be reprocessed by linkage editor.												
	1.. Module contains TESTRAN symbol cards.												
	1. Module created by linkage editor F.												
	1 Refreshable module.												

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
<u>User Data Field (Continued)</u>		
<u>Main Storage</u>		
22	(16) . . 3	Total contiguous main storage requirement of module.
<u>First Text Block Length</u>		
25	(19) . 2	Length of the first block of text.
<u>EP Address</u>		
27	(1B) . . . 3	Entry point address associated with member name or with alias name if the alias indicator is on.
<u>First Text Block Origin</u>		
30	(1E) . . 3	Linkage editor assigned origin of the first block of text.
<u>LOAD MODULE -- ALIAS NAME AND RENT OR REUS ATTRIBUTE</u>		
<u>EP-Member Name</u>		
33	(21) . 3	The entry point associated with the member name when the first field is an alias name and the load module has reenterable or reusable attributes.
<u>Member Name</u>		
36	(24) 8	The member name of the load module when the first field is an alias name and the load module has reenterable or reusable attributes.
<u>LOAD MODULE -- SCATTER</u>		
<u>Scatter List Size</u>		
33	(21) . 2	Number of bytes in the scatter list.
<u>Translation-Table Size</u>		
35	(23) . . . 2	Number of bytes in the translation table.
<u>ESDID-T</u>		
37	(25) . 2	Identification of the ESD item (ESDID) of the control section to which the first block of text belongs.
<u>ESDID-CSECT</u>		
39	(27) . . . 2	Identification of the ESD item (ESDID) of the control section containing the entry point.
<u>LOAD MODULE -- SCATTER, WITH ALIAS NAME AND RENT OR REUS ATTRIBUTE</u>		
<u>EP-Member Name</u>		
41	(29) . 3	The entry point associated with the member name when the first field is an alias name and the load module has reenterable or reusable attributes.
<u>Member Name</u>		
44	(2C) 8	The member name of the load module when the first field is an alias name and the load module has reenterable or reusable attributes.

PARTITIONED DATA SET DIRECTORY ENTRY --
FORMAT 2

This format is received upon issuance of a BLDL macro instruction where the specified members are load modules produced by linkage editor. The user data field for a load module is described here. Figure 23B shows the format of PDS directory entries for linkage editor load modules in a BLDL list. Descriptions of the fields follow the illustration.

The difference between format 2 and format 1 of linkage editor PDS directory entries lies in the concatenation number and library flag fields inserted in format 2 by the BLDL routine at offsets +11 and +12 (decimal).

PDS DIRECTORY ENTRY

All Load Modules

0 (0) Module Member Name or Alias		
8 (8) Relative Address of First Block	11 (B) Concatenation No.	
12 (C) Type of Library	13 (D) Indicators	14 (E) Relative Address of First Text Block
Continued	17 (11) Zeros	18 (12) Relative Address of Note List or Scat/Trans Table
Continued	21 (15) No. of Note List Entries	22 (16) Module Attributes
24 (18) Main Storage Needed for Module	27 (1B) Length of First Text Block	
Continued	29 (1D) Entry-Point Address	
32 (20) First Text Block Origin	34 (22)	

Load Modules With Alias Names and RENT or REUS Attributes		35 (23) Entry-Point for Member Name
Continued	38(26)	
Load Module Member Name		
45 (2D)		
Load Module Scatter		35 (23) Scatter List Size
Continued	37 (25) Translation Table Size	39 (27) ID of ESD for First Text Control Section
Continued	41 (29) ID of ESD for Entry-Point Control Section	
Load Modules -Scatter, With Alias Names and RENT or REUS Attributes		43 (2B) Entry-Point for Member Name
Continued	46(2E)	
Load Module Member Name		
53(35)		

Figure 23B. PDS Directory Entry -- Format 2

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>																																												
		<u>Standard Field</u>																																												
0	(0) 8	<u>Name</u> Load module member name or alias name.																																												
8	(8) 3	<u>TTR-P</u> TTR of the first block of the named member (load module).																																												
11	(B) . . . 1	Concatenation number of the data set.																																												
12	(C) 1	<u>Library</u> This byte is normally zeros. If the DCB operand in the BLDL macro instruction was specified as zero, this byte will contain a 1 if the name was found in the link library, and a 2 if the name was found in the job library.																																												
13	(D) . 1	<u>Indicators</u> <table border="0" style="margin-left: 2em;"> <tr> <td><u>Bit</u></td> <td><u>Setting</u></td> <td><u>Meaning</u></td> </tr> <tr> <td>0</td> <td>1</td> <td>Name is an alias in the first field.</td> </tr> <tr> <td>1-2</td> <td>(variable)</td> <td>Number of TTRs in the user data field.</td> </tr> <tr> <td>3-7</td> <td>(variable)</td> <td>Length of user data field in half words.</td> </tr> </table>	<u>Bit</u>	<u>Setting</u>	<u>Meaning</u>	0	1	Name is an alias in the first field.	1-2	(variable)	Number of TTRs in the user data field.	3-7	(variable)	Length of user data field in half words.																																
<u>Bit</u>	<u>Setting</u>	<u>Meaning</u>																																												
0	1	Name is an alias in the first field.																																												
1-2	(variable)	Number of TTRs in the user data field.																																												
3-7	(variable)	Length of user data field in half words.																																												
		<u>User Data Field</u>																																												
		For a description of system status information see the general format of a PDS entry.																																												
14	(E) . . 3	<u>TTR-T</u> TTR of the first block of text.																																												
17	(11) . 1	Zeros.																																												
18	(12) . . 3	<u>TTR-N/S</u> TTR of the note list or scatter/translation table. Used for modules in scatter load format or overlay structure only.																																												
21	(15) . 1	<u>NL</u> The number of entries in the note list for modules in overlay structure.																																												
22	(16) . . 2	<u>Attributes</u> <table border="0" style="margin-left: 2em;"> <tr> <td colspan="3">Byte 1</td> </tr> <tr> <td>1... ..</td> <td>Reenterable.</td> </tr> <tr> <td>.1... ..</td> <td>Reusable.</td> </tr> <tr> <td>..1.</td> <td>In overlay structure.</td> </tr> <tr> <td>...1</td> <td>Module to be tested - TESTRAN.</td> </tr> <tr> <td>.... 1...</td> <td>Only loadable.</td> </tr> <tr> <td>.... .1..</td> <td>Scatter format.</td> </tr> <tr> <td>.... ..1.</td> <td>Executable.</td> </tr> <tr> <td>.... ...1</td> <td>Module contains no RLD items and only one block of text.</td> </tr> <tr> <td>.... ...0</td> <td>Module contains multiple records with at least one block of text.</td> </tr> <tr> <td colspan="3">Byte 2</td> </tr> <tr> <td>1...</td> <td>Module can be processed only by F level of linkage editor.</td> </tr> <tr> <td>0...</td> <td>Module can be processed by all levels of linkage editor.</td> </tr> <tr> <td>.1..</td> <td>Linkage editor assigned origin of first block of text is zero.</td> </tr> <tr> <td>.0..</td> <td>Linkage editor assigned origin of first block of text is not zero.</td> </tr> <tr> <td>..1.</td> <td>Entry point assigned by linkage editor is zero.</td> </tr> <tr> <td>...1</td> <td>Module contains no RLD items.</td> </tr> <tr> <td>.... 1...</td> <td>Module cannot be reprocessed by linkage editor.</td> </tr> <tr> <td>.... .1..</td> <td>Module contains TESTRAN symbol cards.</td> </tr> <tr> <td>.... ..1.</td> <td>Module created by linkage editor F.</td> </tr> <tr> <td>.... ...1</td> <td>Refreshable module.</td> </tr> </table>	Byte 1			1... ..	Reenterable.	.1... ..	Reusable.	..1.	In overlay structure.	...1	Module to be tested - TESTRAN. 1...	Only loadable.1..	Scatter format.1.	Executable.1	Module contains no RLD items and only one block of text.0	Module contains multiple records with at least one block of text.	Byte 2			1...	Module can be processed only by F level of linkage editor.	0...	Module can be processed by all levels of linkage editor.	.1..	Linkage editor assigned origin of first block of text is zero.	.0..	Linkage editor assigned origin of first block of text is not zero.	..1.	Entry point assigned by linkage editor is zero.	...1	Module contains no RLD items. 1...	Module cannot be reprocessed by linkage editor.1..	Module contains TESTRAN symbol cards.1.	Module created by linkage editor F.1	Refreshable module.
Byte 1																																														
1... ..	Reenterable.																																													
.1... ..	Reusable.																																													
..1.	In overlay structure.																																													
...1	Module to be tested - TESTRAN.																																													
.... 1...	Only loadable.																																													
.... .1..	Scatter format.																																													
.... ..1.	Executable.																																													
.... ...1	Module contains no RLD items and only one block of text.																																													
.... ...0	Module contains multiple records with at least one block of text.																																													
Byte 2																																														
1...	Module can be processed only by F level of linkage editor.																																													
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.1..	Linkage editor assigned origin of first block of text is zero.																																													
.0..	Linkage editor assigned origin of first block of text is not zero.																																													
..1.	Entry point assigned by linkage editor is zero.																																													
...1	Module contains no RLD items.																																													
.... 1...	Module cannot be reprocessed by linkage editor.																																													
.... .1..	Module contains TESTRAN symbol cards.																																													
.... ..1.	Module created by linkage editor F.																																													
.... ...1	Refreshable module.																																													

PDS DIRECTORY ENTRY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
		<u>User Data Field (Continued)</u>
		<u>Main Storage</u>
| 24	(18) . . 3	Total contiguous main storage requirement of module.
		<u>First Text Block Length</u>
27	(1B) . . . 2	Length of the first block of text.
		<u>EP Address</u>
29	(1D) . 3	Entry point address associated with member name or with alias name if the alias indicator is on.
		<u>First Text Block Origin</u>
32	(20) 3	Linkage editor assigned origin of the first block of text.
		<u>LOAD MODULE -- ALIAS NAME AND RENT OR REUS ATTRIBUTE</u>
		<u>EP-Member Name</u>
35	(23) . . . 3	The entry point associated with the member name when the first field is an alias name and the load module has reenterable or reusable attributes.
38	(26) . . 8	<u>Member Name</u> The member name of the load module when the first field is an alias name and the load module has reenterable or reusable attributes.
		<u>LOAD MODULE -- SCATTER</u>
		<u>Scatter List Size</u>
35	(23) . . . 2	Number of bytes in the scatter list.
		<u>Transl-Table Size</u>
37	(25) . 2	Number of bytes in the translation table.
		<u>ESDID-T</u>
39	(27) . . . 2	Identification of the ESD item (ESDID) of the control section to which the first block of text belongs.
		<u>ESDID-CSECT</u>
41	(29) . 2	Identification of the ESD item (ESDID) of the control section containing the entry point.
		<u>LOAD MODULE -- SCATTER, WITH ALIAS NAME AND RENT OF REUS ATTRIBUTE</u>
		<u>EP-Member Name</u>
43	(2B) . . . 3	The entry point associated with the member name when the first field is an alias name and the load module has reenterable or reusable attributes.
		<u>Member Name</u>
46	(2E) . . 8	The member name of the load module when the first field is an alias name and the load module has reenterable or reusable attributes.

Request Blocks

Request blocks are used by the supervisor for maintaining information concerning programs and routines (logically distinct sections of code). Other components of the control program may create request blocks and/or refer to information in them.

The various request blocks are shown and described separately as follows:

- MFT Configuration --

- LPRB,LRB,PRB,FRB,IRB,SIRB,SVRB:
Figure 24A and following text

- MVT Configuration --

- IRB: Figure 24B and following text

- PRB: Figure 24C and following text

- SIRB: Figure 24D and following text

- SVRB --

- Resident SVC Routines:

- Figure 24E and following text

- Transient SVC Routines:

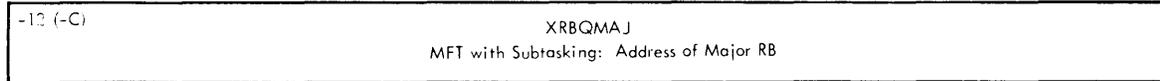
- Figure 24F and following text

REQUEST BLOCK -- MFT CONFIGURATIONS

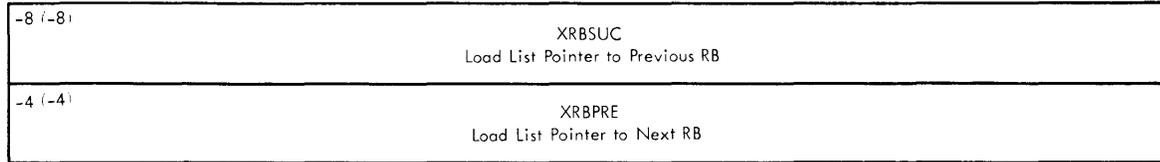
Request blocks used by the MFT configuration of System/360 Operating System are described and illustrated here. Figure 24A shows the different formats; field descriptions follow the illustration.

REQUEST BLOCK -- MFT

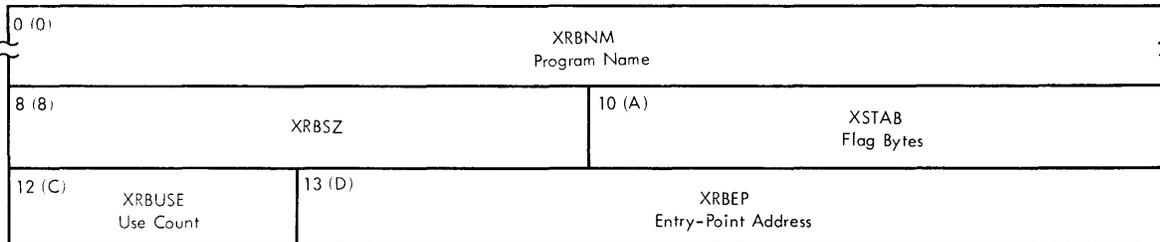
LPRB



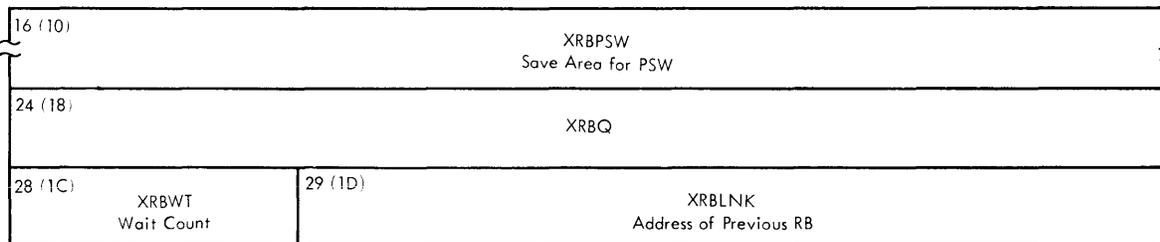
LRB



PRB

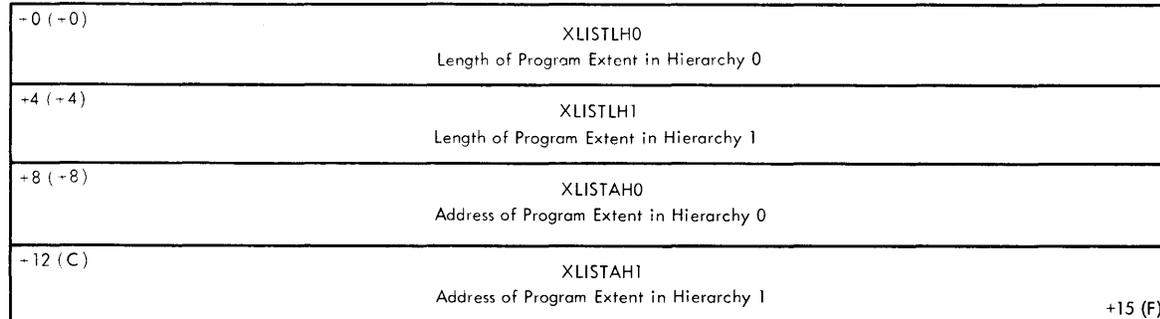


End of LRB – unless Extent List is present



End of PRB }
 End of LPRB } unless Extent List is present

Program Extent List (LRB, LPRB, PRB)

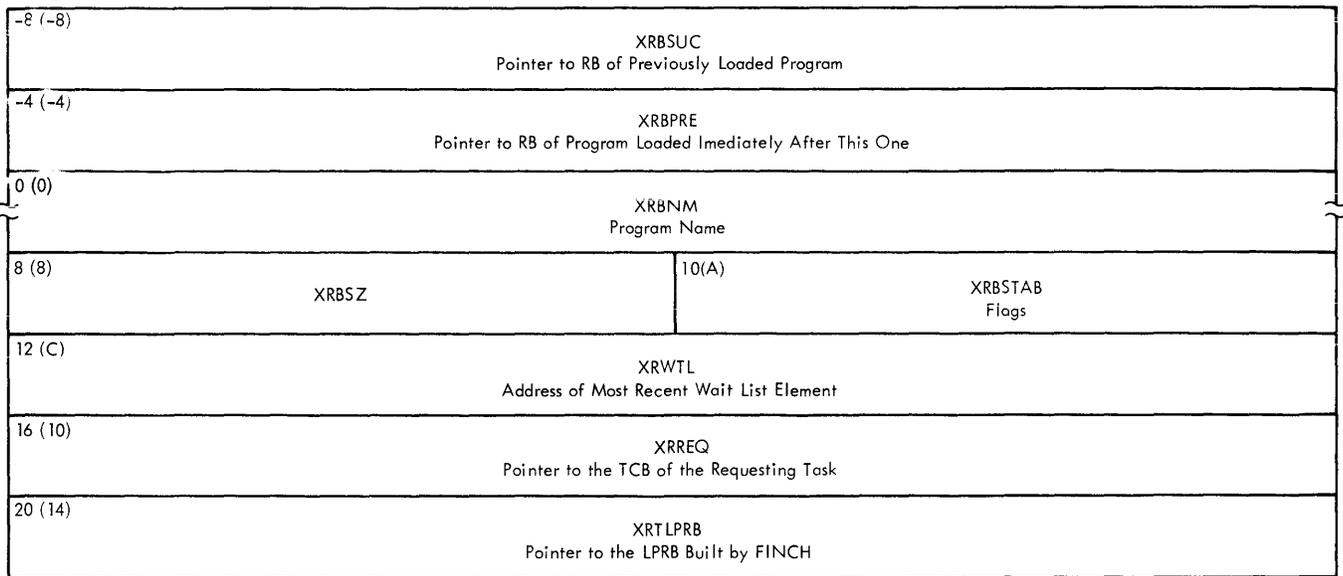


Note: Present only if the program was hierarchy block loaded. Program extent list is a continuation of the RB; the field offsets are determined by the type of RB. See text.

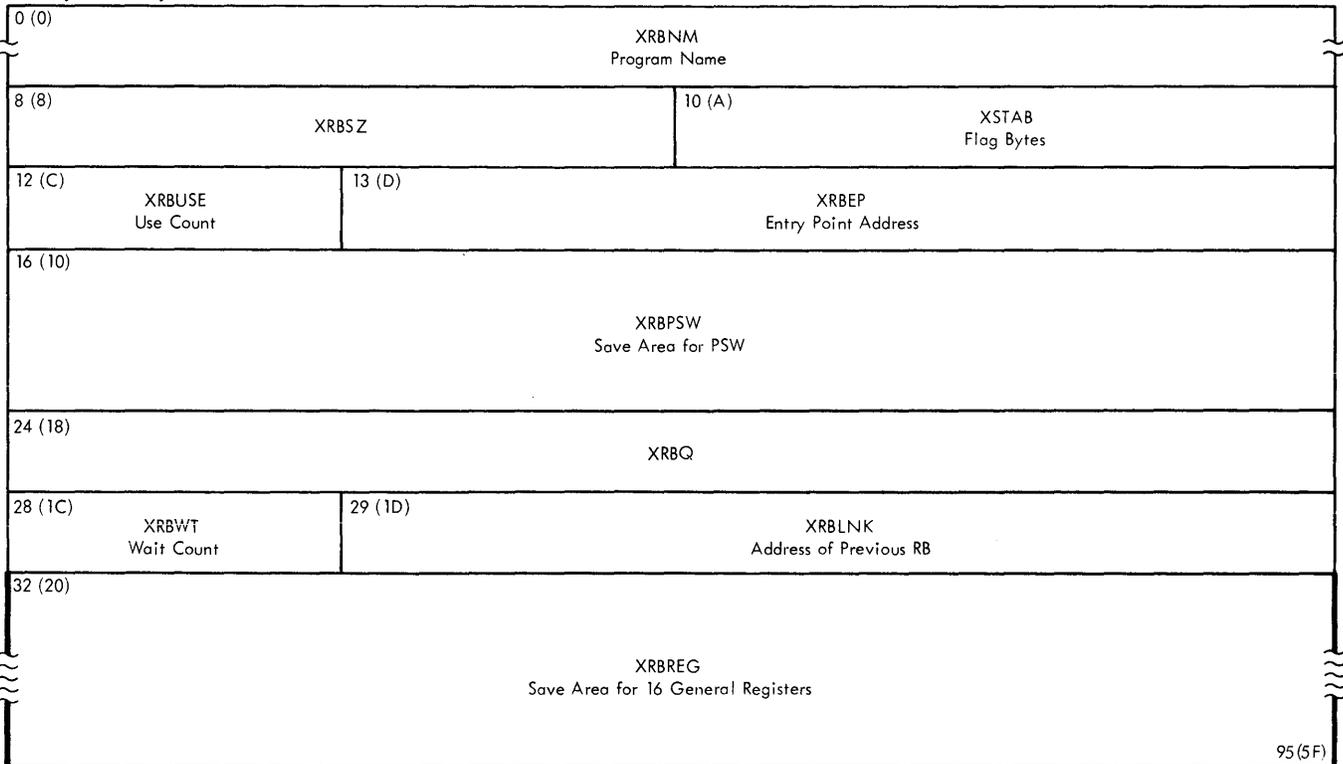
Figure 24A. Request Blocks -- MFT (Part 1 of 2)

REQUEST BLOCK -- MFT

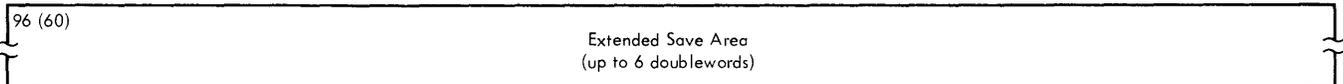
FRB



IRB, SIRB, SVRB



End of IRB, SIRB



End of SVRB

Figure 24A. Request Blocks -- MFT (Part 2 of 2)

REQUEST BLOCK -- MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
-12 (-C)	4	XRBOQMAJ	LPRB: With subtasking only: The address of the major RB for the program that contains the imbedded entry point established by the IDENTIFY macro instruction that created this LPRB.
-8 (-8)	4	XRBSUC	Address of the XRBSUC field in the RB for the program loaded just prior to the program represented by this RB. If this is the RB for the first program loaded, this field is zero. In an LRB or LPRB, THE RB pointed to is queued on the load list or on the job pack area queue; if this is an FRB, the RB pointed to is queued on the job pack area queue.
-4 (-4)	4	XRBPPE	Address of the XRBSUC field in the RB for the program loaded immediately after the program represented by this RB. If this RB is for the most recently loaded program, this field contains the address of the TCBLLS field in the task control block, or the address of the PIBJPQ field in the partition information block if this RB is queued on the job pack area queue. In an LRB or LPRB, the RB pointed to is queued on the load list or on the job pack area queue; if this is an FRB, the RB pointed to is queued on the job pack area queue.
0 (0)	8	XRBNM	Contents of this field depend on the use of this block. The use of this request block is shown by bits 0-3 of byte 1 of the XSTAB field at offset 10 (dec.), A (hex). <u>LPRB, LRB, PRB, FRB</u> Program name. <u>IRB</u> For timer, 1st byte contains flags; for all other uses, contains no meaningful information. <u>SIRB</u> 8 character name of the error routine currently occupying the 400 byte I/O supervisor transient area. <u>SVRB</u> Type 2 SVC: No meaningful information. Type 3 or 4 SVC: Bytes 0-3: TTRN address, on the SVC library, of the load module. N, the concatenation number, is 0. Bytes 4-7: Four digit number of the form ysss. y - Number of the current phase of the routine. (First or only phase: y = 0) sss - SVC number in unpacked decimal (signed) form.
8 (8)	2	XRBSZ	The number of contiguous double words occupied by the RB, the program (if applicable), and associated supervisor work areas. Does not include program size if a program extent list is present. FRB: After the LPRB has been created, the number of doublewords occupied by the LPRB and the program. Before creation of the LPRB, contains zeros.

REQUEST BLOCK -- MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
10	(A) . . 2	XSTAB	Flag bytes.
		Byte 1	
		xxxx	These bits are used to distinguish between the LPRB, LRB, PRB, FRB, IRB, SIRB, and the SVRB. These bits have the following definitions:
		0000	PRB: The program was not loaded via a LOAD macro instruction, and does not have minor entries identified via an IDENTIFY macro instruction.
		0001	PRB: The program was not loaded via a LOAD macro instruction, and does have minor entries identified via an IDENTIFY macro instruction.
		0010	LPRB: The program was loaded via a LOAD macro instruction, and does not have minor entries identified via an IDENTIFY macro instruction.
		0011	LPRB: The program was loaded via a LOAD macro instruction, and does have minor entries identified via an IDENTIFY macro instruction.
		0100	IRB
		0101	FRB
		1000	SIRB
		1100	SVRB: The program is a type 2 SVC routine or a type 3 or 4 SVC routine that has not yet been loaded.
		1101	SVRB: The program is a type 3 or type 4 SVC routine that has been loaded.
		1110	LPRB: This block describes a minor entry identified via an IDENTIFY macro instruction.
		1111	LRB
		.... 1...	The type 3 or 4 SVC routine is resident.
		.... .1..	A checkpoint may be taken in a user exit from this SVC routine.
		.... ..1.	LRB, LPRB, PRB: The program was hierarchy block loaded. A program extent list exists.
		.... ...1	IRB: The IRB is for an ETXR exit routine. Refreshable module.
		Byte 2	FRB only:
		0...	Module being loaded is reenterable.
		1...	Module being loaded is not reenterable.
		.0..	The FINCH routine has not executed a GETMAIN macro instruction.
		.1..	The FINCH routine has executed a GETMAIN macro instruction.
		..xx xxxx	(Reserved bits)
		Byte 2	All RBs except FRBs:
		1...	XRBLNK field points to the TCB.
		.1..	Active program.
		..1.	Registers 2-14 to be restored from XRBREG.
		...1	Reenterable or reusable program.
		.... 00..	IRB has no interrupt queue elements.
		.... 01..	IRB has interrupt queue elements which are request elements.
		.... 10..	This is a dummy LPRB, in a partition, for a program in the reenterable load module area. The LPRB for the program is in the reenterable load module area.
		.... 11..	IRB has interrupt queue elements which are not request elements.
		.... ..1.	Request block storage is to be freed when program returns.
		.... ...1	Wait on less than the number of specified events.
		.... ...0	Wait on a single event or all of the specified events.

REQUEST BLOCK -- MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
12	(C) 4	XRWTl	FRB only: Address of the most recent wait list element.
12	(C) 1	XRBUSE	All RBs except FRB: Use count (the number of loads via the LOAD macro instruction less the number of deletes via the DELETE macro instruction).
13	(D) . 3	XRBEp	Entry point address. <u>End of LRB</u> (unless the program was hierarchy block loaded - XSTAB byte 1 bit 6 on.)
16	(10) 8	XRBPsw	User's old PSW.
16	(10) 4	XRREQ	FRB only: Address of the TCB for the task which requested that the module be loaded.
20	(14) 4	XRTLPRB	FRB only: Address of the LPRB built by FINCH for the program which has been brought in by a LOAD macro instruction. <u>End of the FRB</u>
24	(18) 4	XRbQ	<u>IRB:</u> Address of a 12 byte or 16 byte request element. <u>LPRB:</u> Address of an LPRB describing an entry identified via the IDENTIFY macro instruction. <u>PRB:</u> Address of an LPRB describing an entry identified via the IDENTIFY macro instruction. <u>SIRB:</u> Address of a 12 byte or 16 byte request element. <u>SVRB:</u> For type 3 and type 4 SVCs this field will contain the size of the program in bytes.
28	(1C) 1	XRbWT	Wait count.
29	(1D) . 3	XRBLNK	Primary (active) queuing field. Address of the previous RB for the task. Address of the TCB if this is the first or only RB on the queue. <u>End of LPRB and PRB</u> (unless the program was hierarchy block loaded - XSTAB byte 1 bit 6 on.)

REQUEST BLOCK -- MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>Program Extent List</u>
			(If the program was hierarchy block loaded, the following fields exist.)
+0	(0) 4	XLISTLH0	The length in bytes of the program extent contained in hierarchy 0. This does not include the RB length.
+4	(+4) 4	XLISTLH1	The length in bytes of the program extent contained in hierarchy 1.
+8	(+8) 4	XLISTAH0	The address of the program extent contained in hierarchy 0. It is not the address of the RB.
+12	(+C) 4	XLISTAH1	The address of the program extent contained in hierarchy 1.
			<u>End of LRB, LPRB, PRB Program Extent List.</u>
32	(20) 64	XRREG	IRB, SIRB, SVRB: Save area for 16 general registers (0-15)
96	(60) nx8		SVRB: An extended save area, up to 6 doublewords, requested for SVC routine.

REQUEST BLOCKS -- MVT CONFIGURATION

Request blocks used by the control program for MVT are described and illustrated here.

Separate diagrams and descriptions are presented for the following uses of RBs in the MVT configuration:

- Interruption Request Block
- Program Request Block
- System Interruption Request Block
- Supervisor Request Blocks

Interruption Request Block -- MVT

The interruption request block (IRB) is used by the supervisor for maintaining information concerning an asynchronously executed routine. Figure 24B shows the format of an IRB used in MVT. Descriptions of the fields follow the illustration.

INTERRUPTION REQUEST BLOCK -- MVT

0 (0)	RBTFMLD Indicators	1 (1)	RBPPSAV Address of Problem Program Save Area
4 (4)	RBABOPSW Zeros or Right-Half of Users Old PSW		
8 (8)	RBWCSA Wait-Count Save-Area	9 (9)	RBSIZE Size of This RB
		10 (A)	RBSTAB Status and Attribute Bits
12 (C)	RBEP Entry-Point Address of Asynchronously Executed Routine		
16 (10)	RBOPSW Old PSW		
			19 (13)

Link Field Segment Alternates

3-Byte Link-Field Segment

24 (18)	RBUSE ATTACH Use Count	25 (19)	RBIQE List Origin for IQE
			27 (1B)

2-Byte Link-Field Segment

24 (18)	Reserved	26 (1A)	RBRQE List Origin for RQE
			27 (1B)

28 (1C)	RBWCF Wait Count	29 (1D)	RBLINK Address of Previous RB or TCB
32 (20)	RBGRSAVE General Register Save Area		
96 (60)	(1)RBNEXAV Address of Next Available IQE		
100 (64)	(1)IQE Work Space (maximum: 1984 bytes)		

(1) These 2 fields are present only if requested

Figure 24B. Interruption Request Block -- MVT

INTERRUPTION REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	RBTMFLD	Indicators for the timer routines. When there are no timer routines, this field is zero.
		1... ..	Timer element not on queue.
		.1.. ..	Local time-of-day option is used.
		..00 ..	Time interval requested in timer units.
		..01 ..	Time interval requested in binary form.
		..11 ..	Time interval requested in decimal form.
		.... 1...	Interval has expired.
		.... .000	Task request.
		.... .100	Task request with exit specified.
		.... .001	Wait request.
		.... .011	Real request.
		.... .111	Real request with exit specified.
1	(1) . 3	RBPPSAV	Address of the problem program register save area.
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains right-half of user's old PSW; else contains zeros.
8	(8) 1	RBWCSA	Save area containing number of requests waiting at time of termination (wait count save area).
9	(9) . 1	RBSIZE	Size of this request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00.. ..	Program request block (PRB).
		01.. ..	Interrupt request block (IRB).
		10.. ..	System interrupt request block (SIRB).
		11.. ..	Supervisor request block (SVRB).
		..x. xxxx	(Reserved bits)
		...1 ..	SVRB for transient SVC.
		Byte 2	
		1... ..	RBLINK field points to TCB.
		.1.. ..	Program is active; applies to IRB or SIRB.
		..1.	RBATTN - Attention routine exit.
		...1	The IRB is for an ETXR exit routine.
		.... 00..	Request queue element is not to be returned.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 10..	IQE is not to be returned at EXIT.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 4	RBEP	Entry-point address of asynchronously executed routine.
16	(10) 8	RBOPSW	User's old PSW.

INTERRUPTION REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>LINK-FIELD SEGMENT ALTERNATES</u>			
<u>THREE-BYTE LINK-FIELD SEGMENT</u>			
24	(18) 1	RBUSE	Use count used by ATTACH.
25	(19) . 3	RBIQE	List origin for interruption queue elements (IQE).
<u>TWO-BYTE LINK-FIELD SEGMENT</u>			
24	(18) 2		Reserved.
26	(1A) . . 2	RBRQE	List origin for request queue elements.
END OF LINK-FIELD SEGMENT ALTERNATES			
28	(1C) 1	RBWCF	Number of requests waiting (wait count).
29	(1D) . 3	RBLINK	The address of the previous request block on the RB queue; or the address of the TCB if this is the first request block on the queue.
32	(20) 64	RBGRSAVE	General register save area used by the supervisor; in the sequence 0 to 15.
<u>THE FOLLOWING FIELDS ARE PRESENT IF THE SPACE WAS REQUESTED</u>			
96	(60) 4	RBNEXAV	Address of next available interruption queue element (IQE).
100	(64) n		Interruption queue element (IQE) work space (maximum size is 1948 bytes).

Program Request Block -- MVT

The program request block (PRB) is used by the supervisor for maintaining information concerning a program needed to perform a task. Figure 24C shows the format of a PRB used in MVT. Descriptions of the fields follow the illustration.

PROGRAM REQUEST BLOCK -- MVT

0 (0) Reserved		
4 (4) RBABOPSW Zero or Right-Half of User's Old PSW		
8 (8) RBWCSA Wait-Count Save-Area	9 (9) RBSIZE Size of This RB	10 (A) RBSTAB Status and Attribute Bits
12 (C) RBCDFLGS Contents Control Flags	13 (D) RBCDE Address of Contents Directory Entry for This Module	
16 (10) RBOPSW Old PSW		
24 (18) Always Zero	25 (19) RBPGMQ Address of RB for Same Serially Reusable Programs	
28 (1C) RBWCF Wait Count	29 (1D) RBLINK Address of Previous RB or TCB	
		31 (1F)

Figure 24C. Program Request Block -- MVT

PROGRAM REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4		Reserved
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains the right half of the user's old PSW: else contains zeros.
8	(8) 1	RBWCSA	Save area containing number of requests waiting at time of termination (wait-count save-area).
9	(9) . 1	RBSIZE	Size of this request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00..	Program request block (PRB).
		01..	Interrupt request block (IRB).
		10..	System interruption request block (SIRB).
		11..	Supervisor request block (SVRB).
		..x. xxxx	(Reserved bits)
		...1	SVRB for transient type 3 or 4 SVC routines.
		Byte 2	
		1...	RBLINK field points to TCB.
		.1..	Program is active (applies to IRB or SIRB).
		..1.	PRBATT- TSO: Indicates that the attention exit is not to interrupt the program issuing the STAX macro instruction. The STAX macro instruction sets this bit.
		...x	(Reserved bit)
		.... 00..	Request queue element is not to be returned to freelist when exit is taken.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 1	RBCDFLGS	Control Flags.
		xxxx	(Reserved bits)
		.... 1...	A work area has been established for BLDL and FETCH.
		.... .1..	SYNC macro instruction requested.
		.... ..1.	XCTL macro instruction requested.
		.... ...1	LOAD macro instruction requested.
13	(D) . 3	RBCDE	Address of contents directory entry for the module that this request block is associated with.
16	(10) 8	RBOPSW	User's old PSW.
24	(18) 1		Always zero.
25	(19) . 3	RBPGMQ	Address of a request block indicating a request to use the same serially reusable program.
28	(1C) 1	RBWCF	Number of requests waiting (wait count).
29	(1D) . 3	RBLINK	The address of the previous request block on the RB queue; or the address of the TCB if this is the first request block on the queue.

System Interruption Request Block

The system interruption request block (SIRB) is used by the supervisor for maintaining information concerning input/output error-handling routines. Figure 24D shows the format of an SIRB used in MVT. Descriptions of the fields follow the illustration.

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

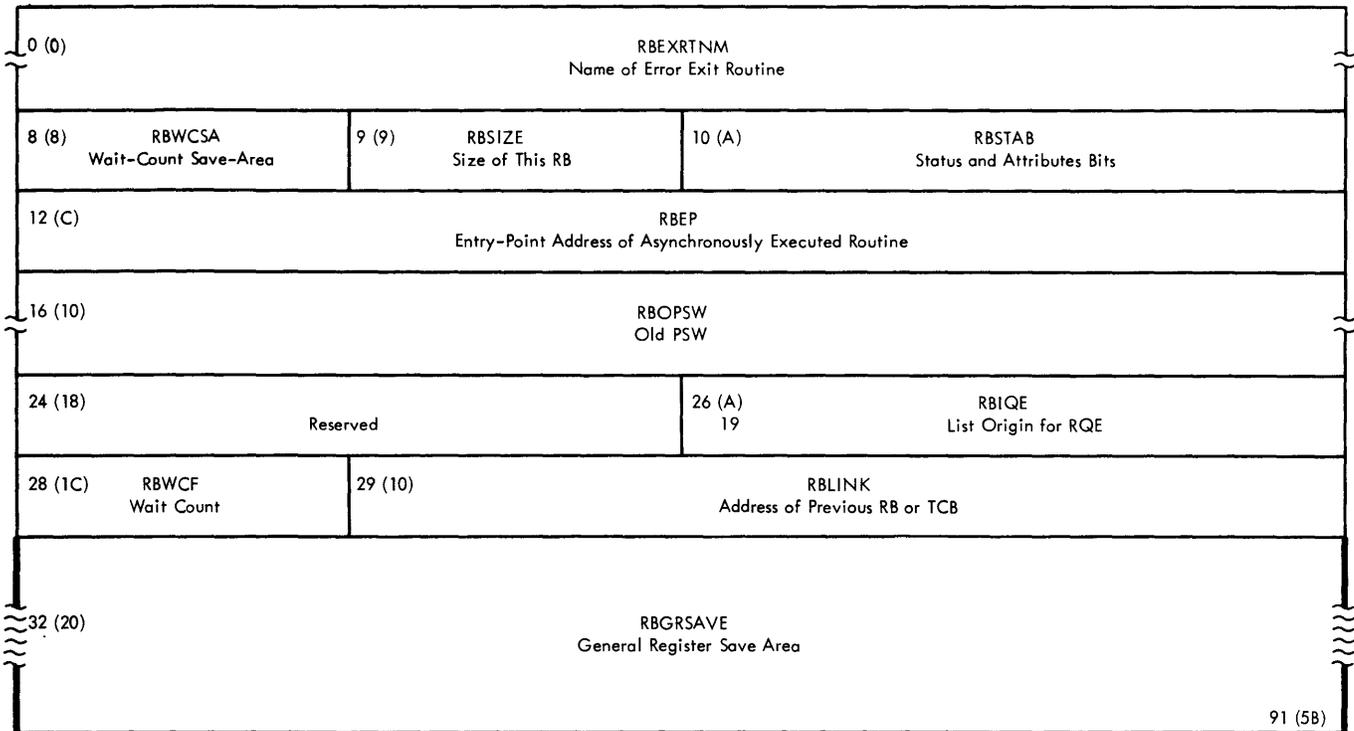


Figure 24D. System Interruption Request Block -- MVT

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 8	RBEXRTNM	One to eight characters of the name of the error exit routine. First four characters are IGEO and the last four are given as unpacked decimal characters.
8	(8) 1	RBWCSA	Save area containing number of requests waiting at time of termination (wait-count save-area).
9	(9) . 1	RBSIZE	Size of this request block (RB) in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00..	Program request block (PRB).
		01..	Interruption request block (IRB).
		10..	System interruption request block (SIRB).
		11..	Supervisor request block (SVRB).
		..x. xxxx	(Reserved bits)
		...1	SVRB for transient SVC routines.
		Byte 2	
		1...	RBLINK field points to TCB.
		.1..	Program is active (applies to IRB or SIRB).
		..xx	(Reserved bits)
		.... 00..	Request queue element is not to be returned.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 10..	IQE is not to be returned at EXIT.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 4	RBEP	Entry-point address of an asynchronously executed routine.
16	(10) 8	RBOPSW	User's old PSW.
24	(18) 2		Reserved.
26	(1A) . . 2	RBIQE	List origin for request queue elements (RQE).
28	(1C) 1	RBWCF	Number of requests waiting (wait count).
29	(1D) . 3	RBLINK	The address of the previous request block on the RB queue; or address of the TCB if this is the first request block on the queue.
32	(20) 64	RBGRSAVE	General register save area used by the supervisor; register sequence 0 to 15.

Supervisor Request Blocks -- MVT

The supervisor uses two types of supervisor request blocks (SVRB) to maintain information concerning type 2, 3, or 4 SVC routines. Data about type 2 SVC routines is in an SVRB for resident routines; for types 3 and 4 SVC routines, an SVRB for transient routines is used.

Separate diagrams and descriptions are presented for the following uses of SVRBs in MVT:

- Resident SVC Routines
- Transient SVC Routines

Supervisor Request Block -- MVT -- Resident
SVC Routines

This supervisor request block (SVRB) is used by the supervisor to maintain information for type 2 (resident) SVC routines. Figure 24E shows its format used in MVT; field descriptions follow the illustration.

SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES

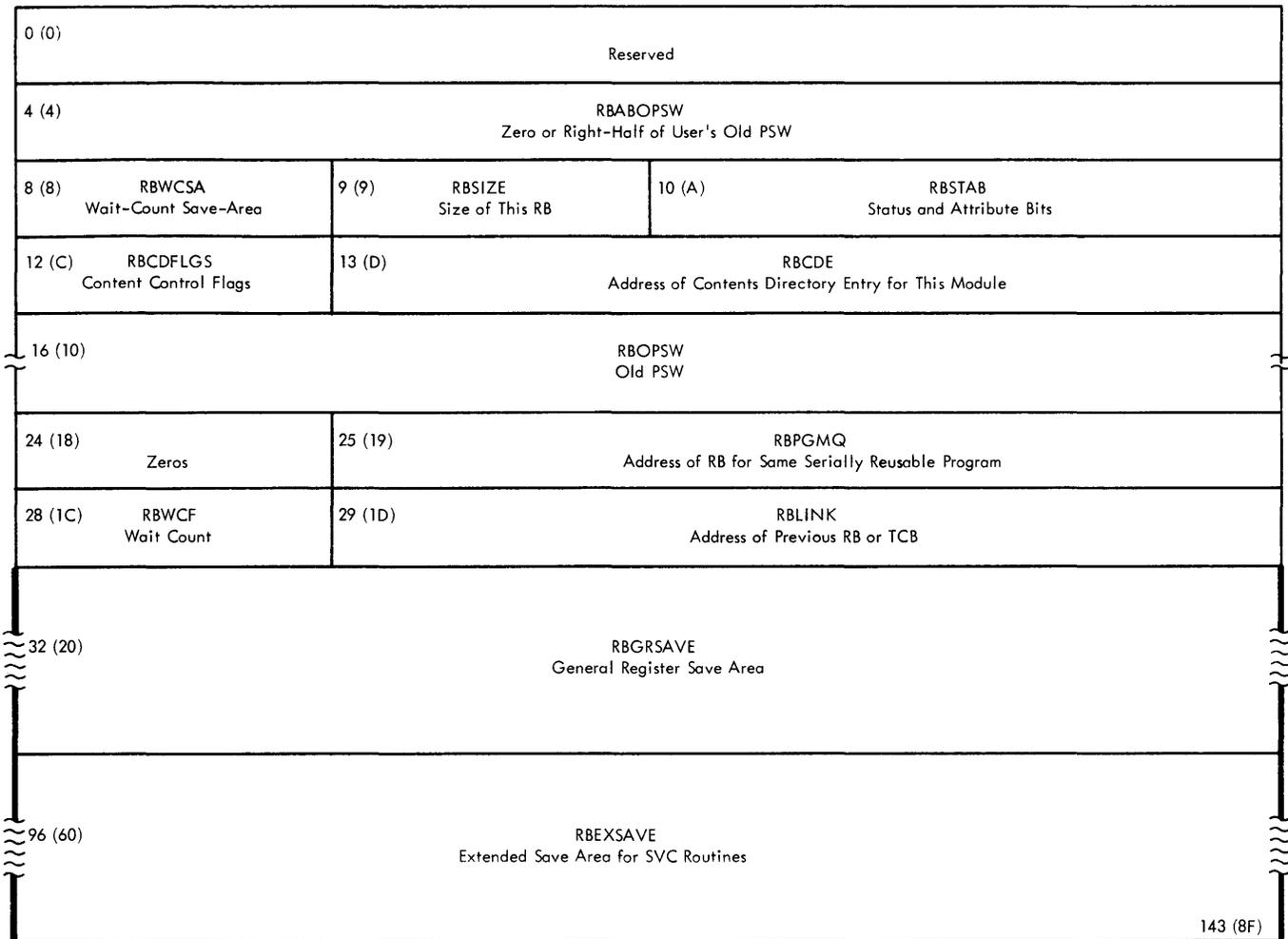


Figure 24E. Supervisor Request Block -- Resident SVC Routines

SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4		Reserved.
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains right-half of user's old PSW; otherwise, contains zeros.
8	(8) 1	RBWCSA	Number of requests waiting at time of termination (wait-count save-area).
9	(9) . 1	RBSIZE	Size of the request block (RB) in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00..	Program request block (PRB)
		01..	Interruption request block (IRB).
		10..	System interruption request block (SIRB).
		11..	Supervisor request block (SVRB).
		...1 ...	SVRB for transient SVC routines.
		.... .1..	A checkpoint may be taken in a user exit from this SVC routine.
		..x. x.xx	(Reserved bits)
		Byte 2	
		1...	RBLINK field points to TCB.
		.1..	Program is active (applies to IRB or SIRB).
		..xx	(Reserved bits)
		.... 00..	Request queue element is not to be returned.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 10..	IQE is not to be returned at EXIT.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 1	RBCDFLGS	Control flags.
		.... 1...	A work area has been established for BLDL and FETCH.
		.... .1..	SYNC macro instruction requested.
		.... ..1.	XCTL macro instruction requested.
		.... ...1	LOAD macro instruction requested.
		xxxx	(Reserved bits)
13	(D) . 3	RBCDE	Address to contents directory entry for the modules that this request block is associated with.
16	(10) 8	RBOPSW	User's old PSW.
24	(18) 1		Zeros.
25	(19) . 3	RBPGMQ	Address of a request block indicating a request to use the same serially reusable program.
28	(1C) 1	RBWCF	Number of requests waiting (wait count).
29	(1D) . 3	RBLINK	The address of the previous request block on the RB queue; or the address of the TCB if this is the first request block on the queue.
32	(20) 64	RBGRSAVE	General register save area used by the supervisor; register sequence 0 to 15.
96	(60) 48	RBEXSAVE	Extended save area for SVC routine.

Supervisor Request Block -- MVT --
Transient SVC Routines

This supervisor request block (SVRB) is used by the supervisor to hold information for type 3 or 4 (transient) SVC routines. Figure 24F shows its format used in MVT; field descriptions follow the illustration.

SUPERVISOR REQUEST BLOCK -- MVT -- TRANSIENT SVC ROUTINES

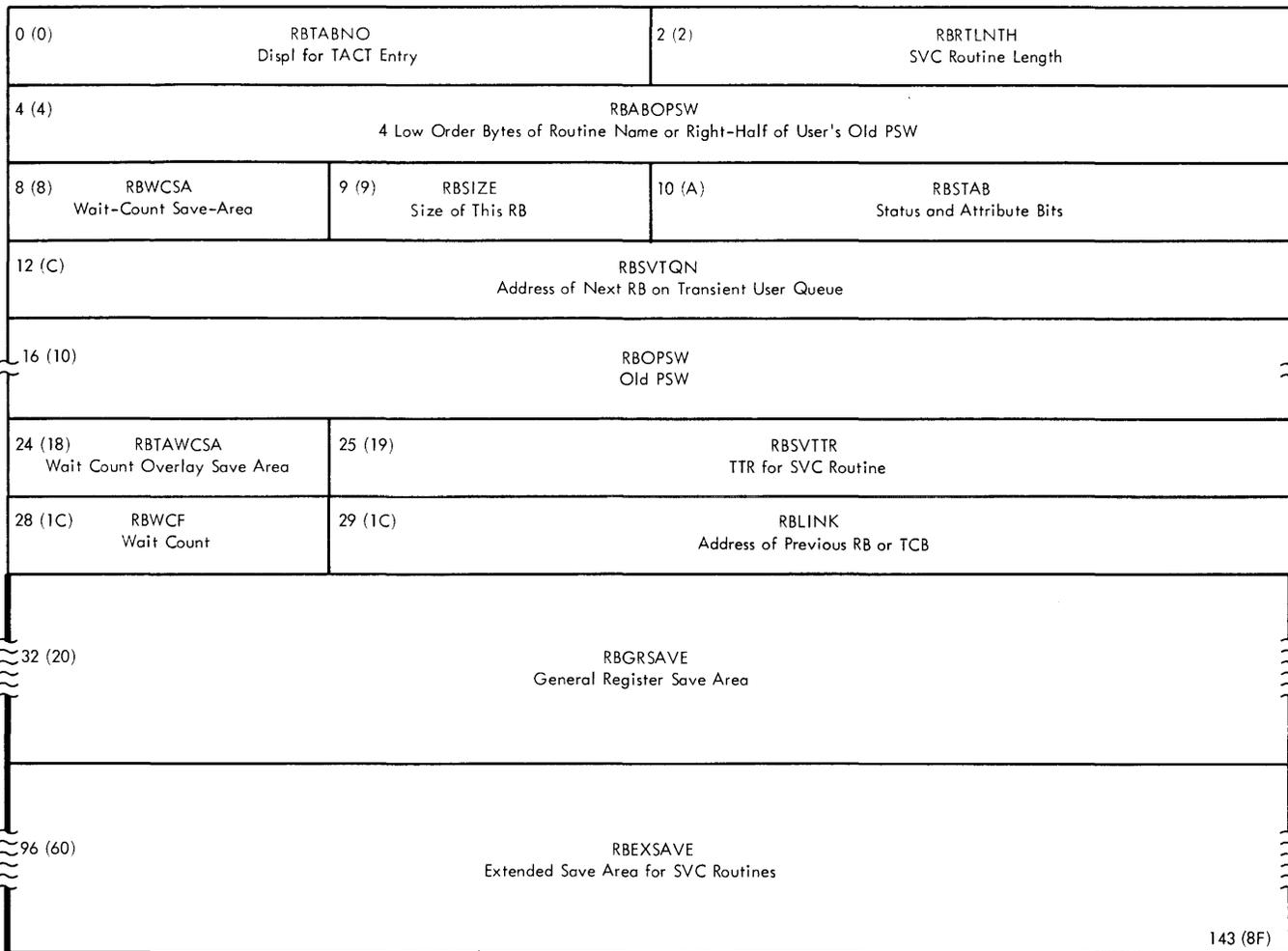


Figure 24F. Supervisor Request Block -- MVT -- Transient SVC Routines

SUPERVISOR REQUEST BLOCK -- MVT -- TRANSIENT SVC ROUTINES

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 2	RBTABNO	Displacement from beginning of transient area control table (TACT) to entry for module represented by this SVRB.
2	(2) . . 2	RBRTLNTH	Length of SVC routine in bytes.
4	(4) 4	RBABOPSW	After execution of transient area handler routine: Four low-order bytes of name of requested routine. After execution of ABTERM routine: Right-half of old PSW.
8	(8) 1	RBWCSA	Number of requests waiting at time of termination (wait-count save-area).
9	(0) . 1	RBSIZE	Size of request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00..	Program request block (PRB).
		01..	Interruption request block (IRB).
		10..	System interruption request block (SIRB).
		11..	Supervisor request block (SVRB).
		..x. x.xx	(Reserved bits)
		...1	SVRB for transient SVC routines.
		.... .1..	A checkpoint may be taken in a user exit from this SVC routine.
		Byte 2	
		1...	RBLINK field points to TCB.
		.1..	Program is active (applies to IRB or SIRB).
		..xx	(Reserved bits)
		.... 00..	Request queue element is not to be returned.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 4	RBSVTQN	Address of next request block on queue of transient routines.
16	(10) 8	RBOPSW	User's old PSW.
24	(18) 1	RBTAWCSA	Save area for number of requests field used if transient routine is overlaid.
25	(19) . 3	RBSVTTR	Relative direct access device address in the format of TTR for the SVC routine.
28	(1C) 1	RBWCF	Number of requests waiting (wait count).
29	(1D) . 3	RBLINK	Address of the previous request block, or address of the TCB, when this is the first request block on the queue.
32	(20) 64	RBGRSAVE	General register save area used by the supervisor; register sequence 0 to 15.
96	(60)	RBEXSAVE	Extended save area for SVC routines.

System Management Control Area

The system management control area (SMCA) contains information utilized by the system management facilities (SMF) option. System management facilities is an optional feature that can be selected at system generation for an MFT or MVT configuration of the IBM System/360 Operating System.

The SMCA contains the SMFDEFILT options, SYS1.MANX and SYS1.MANY data set descriptions, SMF ECBS, and other information utilized by the SMF modules.

The CVTSMCA field, offset 196 decimal, in the communication vector table, points to the system management control area.

Figure 25 illustrates the format of the SMCA. Descriptions of the fields follow the illustration.

SYSTEM MANAGEMENT CONTROL AREA

0 (0)	SMCAOPT SMF Options	1 (1)	SMCAMISC Miscellaneous Indicators	2 (2)	SMCATOFF SMF TIOT Offset
4 (4)	SMCATIOT Address of the Master Scheduler TIOT				
8 (8)	SMCAJWT Job Wait Time Limit				
12 (C)	SMCABUF One Half SMF Buffer Size				
16 (10)	SMCASID System Identification	18 (12)	SMCAMDL CPU Model Number		
20 (14)	SMCABUFP Address of the SMF Buffer				
24 (18)	SMCAPDEV Volume Serial Number of Currently Used SMF Data Set				
		30 (1E)	SMCAPSTA Currently Used Device Status	31 (1F)	SMCAPDAR Currently Used Device Address
Continued		34 (22)	SMCAPLBL Currently Used Label Status	35 (23)	SMCAXORY Contains an X or Y
36 (24)	SMCAPDCB Address of Currently Used DCB				
40 (28)	SMCADEV Volume Serial Number of Non-current SMF Data Set				
		46 (2E)	SMCASTA Non-current Device Status	Non-current Device Address	
Continued		50 (32)	Non-current Label Status	51 (33)	Contains an X or Y
62 (34)	SMCAADCB Address of Non-current DCB				
56 (38)	SMCAWECB SMF Writer ECB				
60 (3C)	SMCABECB SMF Buffer ECB				
64 (40)	SMCASGWR Number of Record Segments Required for Logical Record				
68 (44)	SMCASGFT Number of Record Segments Which will Fit into Data Set				
72 (48)	SMCAWAIT Accumulated Wait Time				
80 (50)	SMCAENDI Data Set Was/Was Not Found	81 (51)	SMCAENOP SMF Open Data Set Switch	82 (52)	SMCAFOPT Foreground Options
				83 (53)	Reserved

Continued

Figure 25. System Management Control Area (Part 1 of 2)

SYSTEM MANAGEMENT CONTROL AREA

84 (54)		SMCAWRTP Optimum Buffer Write Point	
88 (58)		SMCAXCTL Address of XCTL Name	
92 (5C)		DCB Pointer (Zeros)	
96 (60)		SMCAXNAM XCTL Name	
104 (68)	SMCASWA Switches	105 (69)	SMCASWB Reserved
106 (6A)	SMCASWC Reserved	107 (6B)	SMCASWD Reserved
108 (6C)		SMCADSTM Time and Date Data Sets Became Full. Data Not Recorded After this Time.	
116 (74)		SMCADSCT Count of Lost Records	
120(78)		122(7A)	
Reserved		SMCATJID Task TJID	
		123(7B)	

Figure 25. System Management Control Area (Part 2 of 2)

SYSTEM MANAGEMENT CONTROL AREA

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	SMCAOPT	Contains the SMFDEFLT options selected at initialization time. The options apply to background processing. SMCAFOPT (offset 82) contains the foreground (TSO) options. 1... .. Job accounting (OPT=1). .1.. Step accounting (OPT=2). ..1. User exits will be taken (EXT=YES). ...1 Data set accounting (DSV=2 or 3). 1... Volume accounting (DSV=1 or 3). .... .1.. Tape error statistics by volume (ESV) accounting to be included in SMF record types 14 and 15 for tape data sets (REC=1 or 3). .... ..1. Type 17 records maintained for temporary data sets (REC=2 or 3). .... ...0 SMCAFGND - Always set to zero indicating that these are background options.
1	(1) . 1	SMCAMISC	Miscellaneous indicators. x... Type of SMF recording requested. .x.. SYS1.MAN data set is/is not present. 00.. No SMF recording requested (MAN=NONE). 01.. Only user records to be recorded (MAN=USER). 10.. Invalid combination. 11.. SMF and user recording requested (MAN=ALL). ..0. Operator may change SMF foreground options when he issues a TSO START command or TSO MODIFY command (OPI=YES). ..1. Operator may not change SMF foreground options (OPI=NO). ...1 SMF data set to be opened. .... ..0. Left half of buffer in use. .... ..1. Right half of buffer in use. xx.x (Reserved bits)
2	(2) . . 2	SMCATOFF	Offset of the first SMF TIOT entry from the beginning of the master scheduler TIOT.
4	(4) 4	SMCATIOT	Address of the master scheduler TIOT.
8	(8) 4	SMCAJWT	Job wait time limit in timer units. Derived from JWT in SMFDEFLT.
12	(C) 4	SMCABUF	One half SMF buffer size (from BUF).
16	(10) 2	SMCASID	System identification (SID).
18	(12) . . 2	SMCAMDL	CPU model number (MDL).
20	(14) 4	SMCABUFP	Address of the SMF buffer.

Description of Currently Used SMF Data Set

When the SMF recording device is a direct access device, the following fields may describe either the primary or alternate data set, whichever is currently being written.

24	(18) 6	SMCAPDEV	Volume serial number of the currently used SMF data set.
30	(1E) . . 1	SMCAPSTA	Currently used SMF data set device status.

SYSTEM MANAGEMENT CONTROL AREA

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>Description of Currently Used SMF Data Set (Continued)</u>			
		1... ..	Data set is not available for recording.
		..1.	The SMF recording device is a direct access device.
		..0.	The SMF recording device is a magnetic tape device.
		...1	The data set is ready to use.
		.... ..1.	A device address was specified for the SMF data set at system initialization.
		.... ...1	A volume serial number was specified for the SMF data set at initialization.
		.x.. xx..	(Reserved bits)
31	(1F) . . . 3	SMCAPDAR	Currently used SMF data set device address.
34	(22) . . 1	SMCAPLBL	Label status of the currently used SMF data set.
		xxxx x...	(Reserved bits)
		.... .1..	Nonstandard label (NSL).
		.... ..1.	Standard label (SL).
		.... ...1	No label (NL).
35	(23) . . . 1	SMCAXORY	An EBCDIC X or Y corresponding to the data set that is to receive this entry.
36	(24) 4	SMCAPDCB	Address of the currently used SMF data set DCB.
<u>Description of SMF Data Set Currently Not in Use</u>			
When the SMF recording device is a direct access device, the following fields may describe either the primary or alternate data set, whichever is currently not in use.			
40	(28) 6	SMCAADEV	Volume serial number of the non-current SMF data set.
46	(2E) . . 1	SMCASTA	Non-current SMF data set device status.
		1... ..	Data set is not available for recording.
		..1.	This is a direct access device.
		.... ..1.	A device address was specified for the SMF data set at system initialization.
		.... ...1	A volume serial number was specified for the SMF data set at system initialization.
		.x.x xx..	(Reserved bits)
47	(2F) . . . 1		Non-current SMF data set device address.
50	(32) . . 1		Label status of the non-current SMF data set.
		xxxx x...	(Reserved bits)
		.... .1..	Nonstandard label (NSL).
		.... ..1.	Standard label (SL).
		.... ...1	No label (NL).
51	(33) . . . 1		An EBCDIC X or Y corresponding to the data set that is to receive this entry.
52	(34) 4	SMCAADCB	Address of the non-current SMF data set DCB.

SYSTEM MANAGEMENT CONTROL AREA

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>End of SMF Data Set Descriptions</u>			
56	(38) 4	SMCAWECB	ECB for the SMF writer.
60	(3C) 4	SMCABECB	ECB for the SMF buffer.
64	(40) 4	SMCASGWR	If the logical record exceeds 1/2 the buffer size, this field indicates the number of buffer loads required to accommodate the record.
68	(44) 4	SMCASGFT	The number of record segments (buffer loads) that will fit in the data set.
72	(48) 8	SMCAWAIT	The accumulated wait time, expressed in timer units.
		SMCAENDI	A communication field. 00 Data set (X or Y) was found. 01 Data set (X or Y) was not found.
81	(51) . 1	SMCAENOP	An entry code that indicates which load of the SVC 83 has passed control to the current load.
82	(52) . . 1	SMCAFOPT	Contains SMF foreground options. 1... Job accounting (OPT=1). .1.. Step accounting (OPT=2). ..1. User exits will be taken (EXT=YES). ...1 Data set accounting (DSV=2 or 3). 1... Volume accounting (DSV=1 or 3). .... .1.. Tape error statistics by volume (ESV) accounting to be included in SMF record types 14 and 15 for tape data sets (REC=1 or 3). .... ..1. Type 17 records maintained for temporary data sets (REC=2 or 3). .... ...1 SMCAFGND - Always set to 1 indicating that these are foreground options.
83	(53) . . . 1		Reserved.
84	(54) 4	SMCAWRTP	An optimum buffer load displacement figure. When the buffer is loaded to or beyond this point, it will be written to the SMF data set.
88	(58) 4	SMCAXCTL	Address of the name of the routine to which XCTL is to pass control.
92	(5C) 4		DCB pointer. Always zero according to the XCTL macro instruction format.
96	(60) 8	SMCAXNAM	Name of the routine to which XCTL is to pass control.
104	(68) 1	SMCASWA	Indicator bits. .1.. Both data sets are full; SMF is not recording. ..1. OPEN failure on SMF data set. SMF is not recording. ...1 Next allocation must be for a direct access device. 1... Allocation search is by volume serial number. .... .1.. SMF halt-end-of-day is processing. .... ..1. Entry to the writer is for a space check of the data set. .... ...1 Entry to the writer is for data set switching only. x... Reserved.

SYSTEM MANAGEMENT CONTROL AREA

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>End of SMF Data Set Descriptions (Continued)</u>				
105	(69) . 1	SMCASWB		Reserved.
106	(6A) . . 1	SMCASWC		Reserved.
107	(6B) . . . 1	SMCASWD		Reserved.
108	(6C) 8	SMCADSTM		Start time and date at which no data set was available to record on. Appears in packed decimal in the form 00YYDDDF where: 00 = zeros YY = last 2 digits of the year DDDF = day of the year, F is a sign.
116	(74) 4	SMCADSCT		The number of SMF records that have been omitted from the SMF data set due to the unavailability of a data set to record on.
120	(78) 2			Reserved.
122	(7A) . 2	SMCATJID		Time-sharing job ID (TJID) of the task that is waiting for its SMF buffer to be written.

Task Control Block

The task control block (TCB) serves as a repository for information and pointers associated with the task in progress. Various components of the control program place information in the TCB, and obtain information (or its location) by reference to it. The TCB differs slightly in each option of the IBM System/360 Operating System (MFT and MVT). To avoid confusion the TCB is described separately for each Operating System option.

The following section contains a separate diagram and description for:

Task Control Block -- MFT

Task Control Block -- MVT

Task Control Block -- MFT

Figure 26A shows the format of the MFT task control block. Descriptions of the fields follow the illustration.

TASK CONTROL BLOCK -- MFT

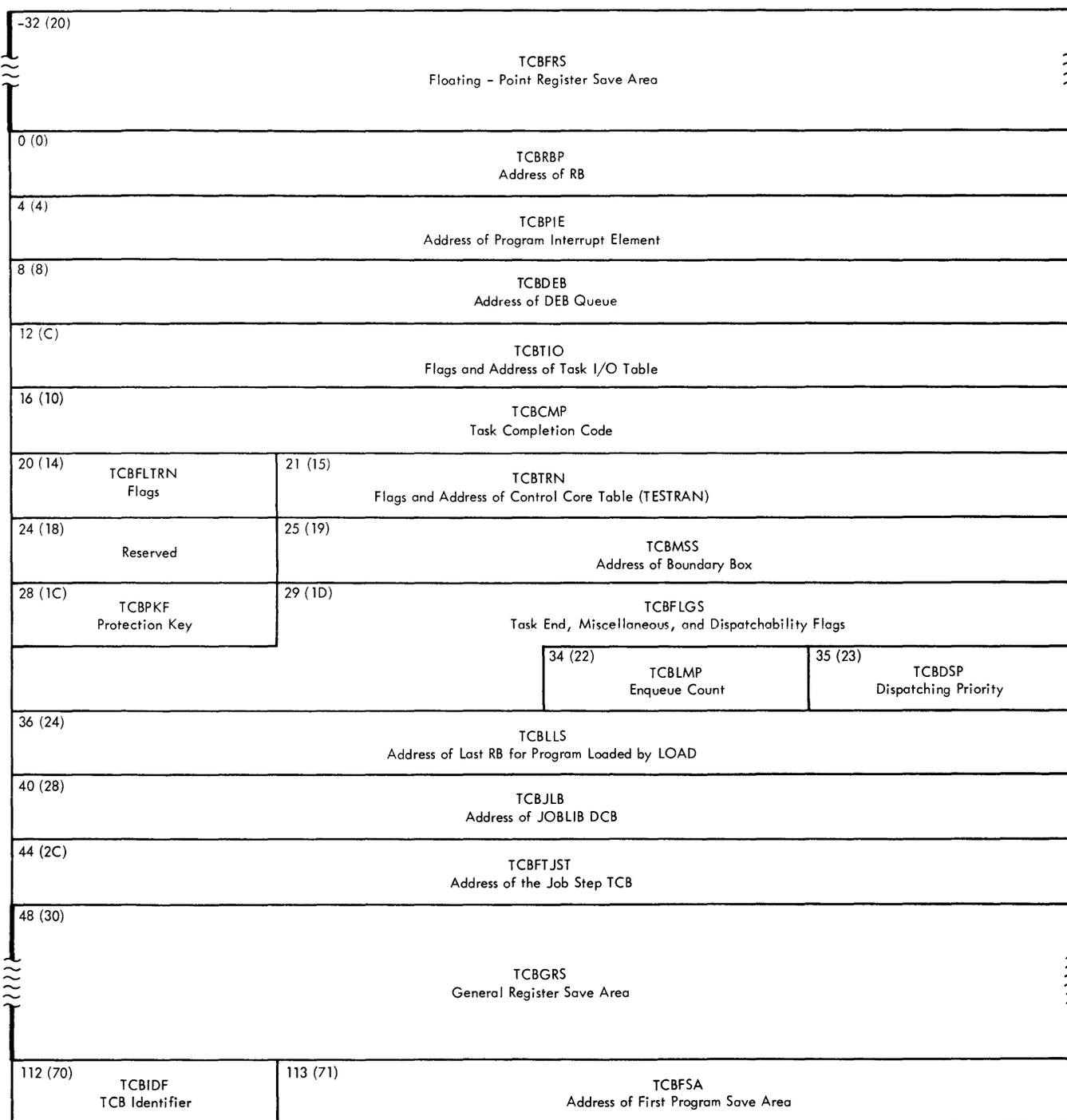


Figure 26A. Task Control Block -- MFT (Part 1 of 2)

TASK CONTROL BLOCK -- MFT

116 (74)		TCBTCB Address of Next Lower Priority TCB
120 (78)		TCBTME Address of Timer Element
124 (7C)		TCBPIB Partition Type and Address of the PIB
128 (80)		TCBNTC Address of Previous TCB on Subtask Queue
132 (84)		TCBOTC Address of Originating TCB
136 (88)		TCBLTC Address of the Last TCB on the Subtask Queue
140 (8C)		TCBIQE Address of the IQE for the ETXR Routine
144 (90)		TCBECB Address of the ECB to be Posted on Task Completion
148 (94)		Reserved
152 (98)	TCBFTLMP Limit Priority	153 (99)
		TCBFTFLG Flag Bytes
156 (9C)		Reserved
160 (A0)		TCBNSTAE STAE Flags and Address of Current STAE Control Block
164 (A4)		TCBTCT Address of the TCT
168 (A8)		TCBUSER
172 (AC)	TCBDAR DAR Flags	173 (AD)
		TCBNDSP Secondary Non-dispatchability Bits
176 (B8)		Reserved
180 (C4)	TCBRECDE ABEND Recursion	181 (B5)
		TCBJSCB Address of the JSCB
		183(B7)

Figure 26A. Task Control Block -- MFT (Part 2 of 2)

TASK CONTROL BLOCK - - MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
-32 (-20)	32	TCBFRS	Floating point register save area.
0 (0)	4	TCBRBP	Address of the RB for executing program.
4 (4)	4	TCBPIE	Address of the program interrupt element (PIE).
8 (8)	4	TCBDEB	Address of the queue DEBs.
12 (C)	4	TCBTIO	Address of the task I/O table (TIOT).
16 (10)	4	TCBCMP	Task completion code.
16 (10)	1	Byte 1	A flag byte field containing indicators used or set by the ABEND SVC.
		1... ..	A dump has been requested.
		.1... ..	With subtasking: A step ABEND has been requested. Without subtasking: Reserved but set to indicate step ABEND for MVT compatability.
		..1.	Some problem program storage was overlaid by the second load of ABEND. A first load overlay is indicated in TCBFIGS field.
		...x	Reserved.
		.... 1...	A double ABEND has occurred.
		.... .1..	A dump message (WTO) is to be issued to the operator.
		.... ..1.	Scheduler is to print an indicative dump.
		.... ...1	An ABEND message is provided to be printed by ABDUMP.
17 (11)	. 3	Bytes 2-4	System completion code in first 12 bits; user completion code in last 12 bits. These codes are explained in the manual, <u>IBM System/360 Operating System: Messages and Codes</u> , GC28-6631, under the heading "System Completion Codes."
20 (14)	4	TCBTRN	
20 (14)	1	TCBFLTRN	Flag byte.
		.... xx.x	Reserved.
		1... ..	Both TESTRAN and decimal simulator programs being used on a Model 91 machine.
		.1..	Suppress taking checkpoints for this step.
		..1.	Job step TCB. This is a graphics foreground job or the graphic job processor.
		...1	This is a 7094 emulator task on a Model 85.
		.... ..1.	TCBOLTEP-OLTEP functions require cleanup before abnormal termination can be invoked.
21 (15)	. 3		TESTRAN: Address of control core table.
24 (18)	1		Reserved.
25 (19)	. 3	TCBMSS	Address of the boundary box.
			With subtasking:
			Job Step TCB: Address of the boundary box.
			Subtask TCB: Address of the gotten subtask area queue element (GQE). A GQE is present only if the system has issued a GETMAIN macro instruction for the space.

				<u>TASK CONTROL BLOCK -- MFT</u>	
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Dig.</u>	<u>Field Description, Contents, Meaning</u>
28	(1C) 1	TCBPKF			Storage protection key for this task. If there is no storage protection, all bits are zero.
		xxxx			Storage protection key.
		.... 0000			Must be zeros.
29	(1D) . 5	TCBFLGS			Flag byte fields.
29	(1D)	Byte 1			
		1...			Abnormal termination in progress.
		.1..			Normal termination in progress.
		..1.			ABEND was initiated by the resident abnormal termination routine.
		...1			TCBGTOFM-Generalized trace facility (GTF) trace has been suspended.
		.... x...			(Reserved)
		.... .1..			TCBPOOL - The ABEND SVRB pool is assigned to this task.
		.... ..1.			Problem program storage has been overlaid to process ABEND.
		.... ...1			Prohibit queuing of asynchronous exits for this task.
30	(1E)	Byte 2			
		1...			System task: ABEND prohibited for this task.
		.x..			(Reserved bits)
		..1.			Task has stopped trace table.
		...1			Task has issued a system-must-complete and set all other tasks in the system non-dispatchable.
		.... 1...			Task has issued a step-must-complete and turned off all other tasks in the step.
		.... .1..			Dump processing initiated in ABEND.
		.... ..1.			ETXR to be scheduled.
		.... ...1			This task is a member of a time-sliced group.
31	(1F)	Byte 3			
		xx.x			(Reserved bits)
		..1.			Exit Effector:
					System error routines already operating for this task.
		.... 1...			Floating point registers exist.
		.... .1..			Job scheduler routines in process.
		.... ..1.			XCTL routine is changing the storage protection key in the PSW from zero to the one used by the problem program.
		.... ...1			TCAM termination invoked.
32	(20)	Byte 4			Reserved.
33	(21)	Byte 5			(If any bit in this byte is 1, the task is non-dispatchable.)
		.1..			System is processing a timer asynchronous exit routine. (MFT)
		.... ...1			Primary non-dispatchability bit. This bit is set to 1 if any of the secondary non-dispatchability bits (offset 173 through 175) is set to 1. This bit is set to 0 if a secondary non-dispatchability bit is set to 0 and all other secondary non-dispatchability bits are 0.
		.... 1...			Another task is in system-must-complete status.
		.... .1..			Another task in this job step is in must-complete status.
		x.xx ..x.			(Reserved bits).
34	(22) . . 1	TCBLMP			Number of resources for which this task is enqueued.

TASK CONTROL BLOCK -- MFT

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
35	(23) . . . 1	TCBDSP	Dispatching priority for this task.
36	(24) 4	TCBLLS	Address of the most recently added RB on the list of programs loaded via the LOAD macro instruction.
40	(28) 4	TCBJLB	Address of a JOBLIB DCB.
44	(2C) 4	TCBFTJST	Without subtasking: Reserved. With subtasking: Address of the job step TCB. For tasks with a protection key of zero, this field contains the address of this TCB.
48	(30) 64	TCBGRS	General register save area.
112	(70) 1	TCBIDF	TCB identifier field.
113	(71) . 3	TCBFSA	Address of the first problem program save area.
116	(74) 4	TCBTCB	Address of next TCB of lower priority on the ready queue.
120	(78) 4	TCBTME	Address of the timer element.
124	(7C) 4	TCBPIB	A field used for two items of information.
124	(7C) 1	00.. 01.. 10.. 11.. .... ..1. .... ..0. .... ...1 ........ ..1. .... ...1 xx..	Partition type. System task partition. Reader partition. Writer partition. Processing program partition. Large partition. Small partition. CPU timing stopped by FINCH until transient is loaded. Writer partition, used by ABEND. Required by transient writer, but used also by resident writer. Scheduler in control. Bit turned off when TIOT written on SYSJOBQE. Used by ABEND. (Reserved bits)
125	(7D) . 3		Address of the partition information block (PIB).
128	(80) 4	TCBNTC	Without subtasking: Reserved. With subtasking: Address of the TCB for the task previously attached by the task that attached this task. For example: If task A attached task B and then task C, this field in task C's TCB points to task B's TCB, and this field in task B's TCB is zero.
132	(84) 4	TCBOTC	Without subtasking: Reserved. With subtasking: Address of the TCB for the task (the originating task) that attached this task. This field is zero in the TCB for a system task.

				<u>TASK CONTROL BLOCK -- MFT</u>	
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Dig.</u>	<u>Field Description, Contents, Meaning</u>
136	(88) 4	TCBLTC			Without subtasking: Reserved. With subtasking: Address of the TCB for the task last attached by this task. Note: If a task (the originating task) has attached other tasks, the TCBS for the other tasks are on the subtask queue of the originating task. TCBLTC in the TCB for the originating task points to the last TCB (the TCB for the last attached task) in the subtask queue. In each TCB on the subtask queue, except the first TCB, TCBNTC points to the preceding TCB on the queue.
140	(8C) 4	TCBIQE			Without subtasking: Reserved. With subtasking: Address of an interruption queue element (IQE) for scheduling the ETXR routine of the task that attached this task.
144	(90) 4	TCBECB			Without subtasking: Reserved. With subtasking: Address of the ECB that will be posted by the supervisor's task termination routines when normal or abnormal termination occurs.
148	(94) 4				Reserved.
152	(98) 1	TCBFTLMP			Without subtasking: Reserved. With subtasking: The limit priority of the task.
153	(99) . 3	TCBFTFLG			Without subtasking: Reserved. With subtasking: Flag bytes.
153	(99)	Byte 1.... .1.. .... ..1. .... ...1 xxxx x...			Top task in tree of abnormally terminating tasks. Abnormal termination dump has been completed. Task is enqueued on dump data set. (Reserved bits)
154	(9A)	Byte 2.... .1.. .... ..1. .... ..0. xxxx x..x			Job step TCB: The SYSABEND (or SYSUDUMP) data set has been opened for the job step. Job step TCB: SYSABEND data set. Job step TCB: SYSUDUMP data set. (Reserved bits)
155	(9B)	Byte 3.... .1.. xxxx x.xx			Job step TCB: No abnormal termination dump (SYSABEND or SYSUDUMP) can be provided for this job step. (Reserved bits)
156	(9C) 4				Reserved.
160	(A0) 4	TCBNSTAE Byte 1 Bytes 2-4			Flags internal to STAE routine. Address of the current STAE control block.

TASK CONTROL BLOCK -- MFT

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Dig. Field Description, Contents, Meaning</u>
164	(A4) 4	TCBTCT Byte 1 Bytes 2-4	Reserved. Address of the Timing Control Table (TCT) if the system management facilities (SMF) option is present in the system. Zeros if SMF is not in the system.
168	(A8) 4	TCBUSER	A field available to the user.
172	(AC) 1	TCBDAR 1... .. .1.. .. ..1. .... ...1 1... .... .1.. .... ...1.... ..x.	Damage assessment routine (DAR) flags. TCBDARP - DAR recursion flag. Set to indicate DAR has been entered for this task. TCBDARS - Task reinstatement has been attempted. If DAR is reentered, task will be set non-dispatchable. TCBDARD - <u>Dump only</u> has been requested. TCBDARMC - DAR has been entered to handle a valid recursion in must-complete status through ABEND. TCBDAROL - Problem program storage has been overlaid to process DAR. TCBDARWT - WTO in progress for 'reinstatement Failure' message. TCBEXSVC - SVC dump is executing for this task. (Reserved bit)
173	(AD) . 3	TCBNDSP	Secondary non-dispatchability bits. If any bit in these bytes is 1, the primary non-dispatchability bit (offset 33.7) is 1, and the task is non-dispatchable.
173	(AD) . 1	TCBNDSP1 xx.. 1... .... .1.. .... ..xx x... ..1. .... ...1 1... .... .xxx	Damage assessment routine bits. The task is temporarily non-dispatchable. The task is permanently non-dispatchable. Recovery management support and system error recovery bits. The task is temporarily non-dispatchable. The task is permanently non-dispatchable. The task is in device allocation and dynamic device reconfiguration (DER) has made it non-dispatchable. (Reserved bits)
174	(AE) . . 1	TCBNDSP2 1... .... ..1. .... .... ...1 ..x.x xxx.	ABDUMP is processing. (With subtasking) TCBNDSVC - This task is non-dispatchable because SVC dump is executing for another task. ABEND routine was entered by this task while the DCB for SYSABEND (or SYSUDUMP) data set was being opened for another task. (With subtasking) (Reserved bits)

<u>TASK CONTROL BLOCK -- MFT</u>			
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
175	(AF) . . . 1	TCBNDSP3	
		1... ..	Task has been terminated. (With subtasking)
		.1.. ..	Task to be terminated by ABEND. (With subtasking)
		..xx xxxx	(Reserved bits)
176	(B0) 4		Reserved.
180	(B4) 1	TCBRECDE	ABEND recursion configuration and communication.
		1xxx xxxx	TCBREC - Valid ABEND recursion (if any other bit is also 1).
		x000 0001	TCBOPEN - OEPN of the SYSABEND (or SYSUDUMP) data set for the job step.
		x000 0010	TCBCLOSD - CLOSE of the direct SYSOUT on tape.
		x000 0011	TCBCLOSE - CLOSE of open data sets.
		x000 0100	TCBCLOSF - Forced CLOSE of DCBs (graphics).
		x000 0101	TCBGREC - Graphics (GFX) interface in control.
		x000 0110	Reserved.
		x000 0111	TCBADUMP - ABDUMP in process for this task.
		x000 1000	Reserved.
		x000 1001	TCBMESG - Message recursion.
		x000 1010	
		x000 1011	Reserved.
		x000 1100	
		x000 1101	
		x000 1110	TCBTCAMR - TCAM Message Control Program reinitialization.
		x000 1111	TCBSAVCD - Reserved.
		x001 0000	TCBTYP1W - Recursion from type 1 SVC WTP message.
		x001 0001	
		.	
		.	Reserved.
		x011 0011	
		x011 0100	TCBTYP1R - Return from type 1 SVC WTP message.
		x011 0101	
		.	
		.	Reserved.
		x111 1111	
181	(B5) . 3	TCBJSCB	Address of the job step control block.

End of the MFT Task Control Block

Task Control Block -- MVT

Figure 26B shows the format of the MVT task control block. Descriptions of the fields follow the illustration.

TASK CONTROL BLOCK -- MVT

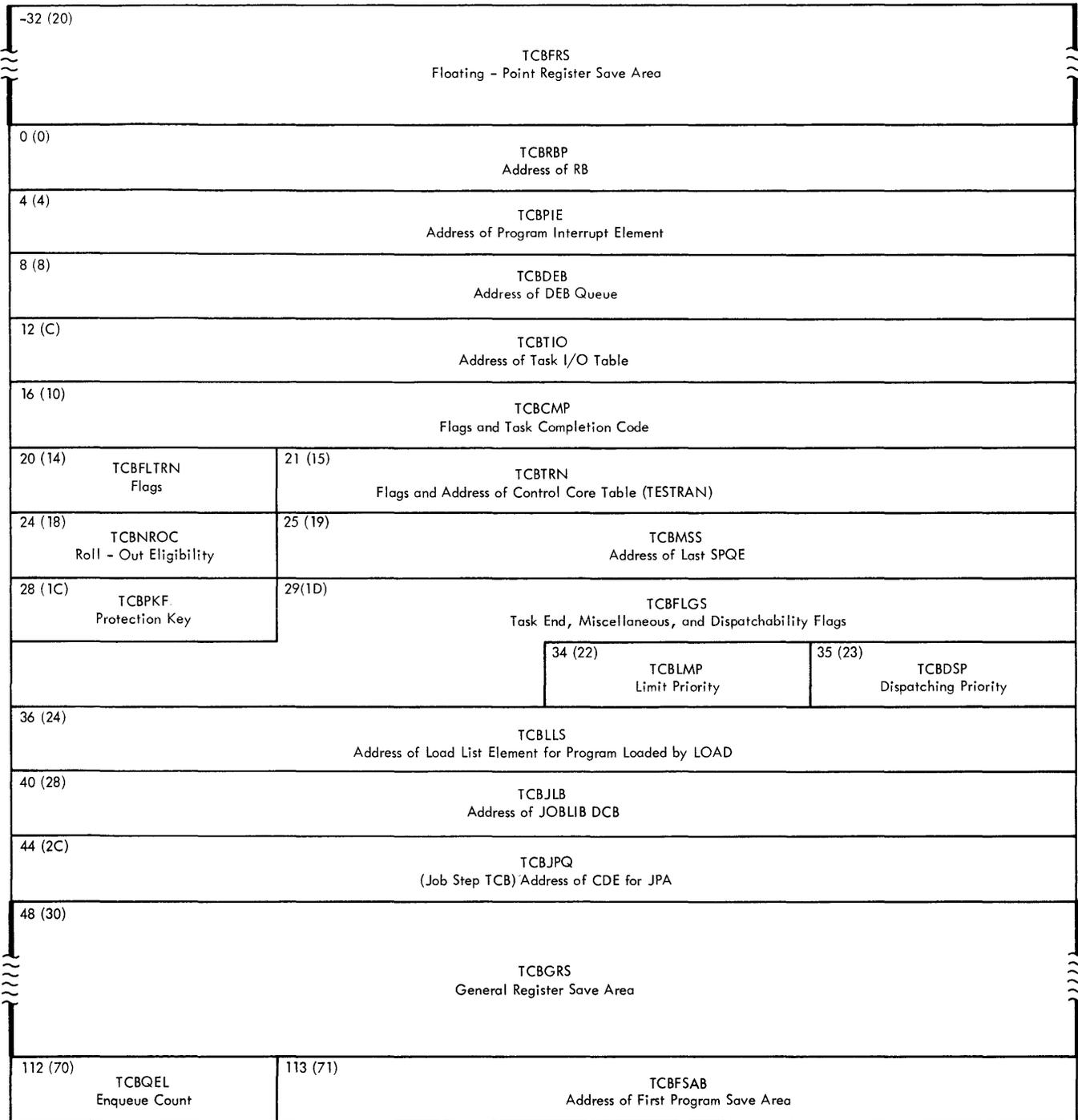


Figure 26B. Task Control Block -- MVT (Part 1 of 2)

TASK CONTROL BLOCK -- MVT

116 (74)			
TCBTCB Address of Next Lower Priority TCB			
120 (78)			
TCBTME Address of Timer Element			
124 (7C)			
TCBJSTCB Address of 1st TCB for Job Step			
128 (80)			
TCBNTC Address of Previous TCB on Subtask Queue			
132 (84)			
TCBOTC Address of Originating TCB			
136 (88)			
TCBLTC Address of Last TCB on Subtask Queue			
140 (8C)			
TCBIQE Address of IQE for ETXR Routine			
144 (90)			
TCBECB Address of ECB Posted on Task Completion			
148 (94)	149(95)	150(96)	151(97)
TCBTSFLG Time Sharing Flags	TCBSTPCT	TCBTSLP Limit Priority of TS Task	TCBTSDP Dispatching Priority
152 (98)			
TCBPQE Address of Region Dummy PQE Minus 8			
156 (9C)			
TCBAQE Address of Allocated Queue Element			
160 (A0)			
TCBNSTAE STAE Flags of Current STAE Control Block			
164 (A4)			
TCBTCT Address of the TCT			
168 (A8)			
TCBUSER			
172 (AC)	173 (AD)	174(AE)	175(AF)
TCBDAR DAR Flags	TCBNDSP1 Secondary Non-dispatchability Bits	TCBNDSP2 Secondary Non-dispatchability Bits	TCBNDSP3 Reserved
176(B0)			
Reserved			
180 (B4)	181 (B5)		
TCBRECDE ABEND Recursion	TCBJSCB Address of the JSCB		
183(B7)			
184 (B8)			
TCBRV001 Reserved			
188 (BC)			
TCBIOBRC Pointer to IOB Restore Chain			

Figure 26B. Task Control Block -- MVT (Part 2 of 2)

TASK CONTROL BLOCK -- MVT

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
-32 (-20)	32	TCBFERS	Floating point register save area.
0 (0)	4	TCBRBP	Address of the RB for executing program.
4 (4)	4	TCBPIE	Address of the program interrupt element (PIE).
8 (8)	4	TCBDEB	Address of the queue of DEBs.
12 (C)	4	TCBTIO	Address of the task I/O table (TIOT).
16 (10)	4	TCBCMP	Task completion code.
16 (10)	1	Byte 1	A flag byte field containing indicators used or set by the ABEND SVC.
		1...	A dump has been requested.
		.1..	A step ABEND has been requested.
		..xx xxxx	Reserved.
17 (11)	. 3	Bytes 2-4	System completion code in first 12 bits; user completion code in last 12 bits. These codes are explained in the manual, <u>IBM System/360 Operating System: Messages and Codes, GC28-6631</u> , under the heading "System Completion Codes."
20 (14)	4	TCBTRN	
20 (14)	1	TCBFLTRN	Flag byte.
		1...	Both TESTRAN and decimal simulator programs being used on a Model 91 machine.
		.1..	Suppress taking checkpoints for this step.
		..1.	Job step TCB:
			This is a graphics foreground job or the graphic job processor.
		...1	This is a 7094 emulator task on a Model 85.
		.... 1...	TCBTCPP-Task to be posted, but currently rolled out.
		.... .1..	TCBTSTCP - This is a time-shared task under control of the TEST command processor.
		.... ..1.	TCBOLTEP - OLTEP functions require clean-up before abnormal termination can be invoked.
		.... ....x	(Reserved bits)
21 (15)	. 3		1. If this task is not operating under TSO and SVC 61 has been issued, this field contains the address of the control core table for TESTRAN.
			2. If this task is operating under TSO and SVC 61 has been issued, this field contains one of the following:
			a.) The address of an SVC information block (if the task is not a subtask of the TEST command processor).
			b.) The address of the test communication table (TCOMTAB) in the TEST command processor (if the task is a subtask of the TEST command processor).
			3. If this task is the Test/TMP task operating under TSO, and TEST initialization has been executed, this task contains the address of the test communication table (TCOMTAB) in the TEST command processor. In this case, the test communication table may point to one or more SVC information blocks.

				<u>TASK CONTROL BLOCK -- MVT</u>	
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Dig.</u>	<u>Field Description, Contents, Meaning</u>
24	(18) 1	TCBNROC			Job Step TCB: Roll-out eligibility.
			00		This job step may be rolled out.
			nz		This job step may not be rolled out. (nz - A non-zero digit.)
25	(19) . 3	TCBMSS			Address of last subpool queue element (SPQE).
28	(1C) 1	TCBPKF			Storage protection key for this task. If there is no storage protection, all bits are zero.
			xxxx		Storage protection key.
			.... 0000		Must be zeros.
29	(1D) . 5	TCBFLGS			Flag byte fields.
29	(1D)	Byte 1			
		1...			Abnormal termination in progress.
		.1..			Normal termination in progress.
		..1.			Generalized trace facility (GTF) trace has been suspended.
		...1			Enter purge routine in ABEND when ABEND in control again.
		.... 1...			TCBPDUMP-Job step TCB: No abnormal termination dump (SYSABEND or SYSUDUMP) can be provided within this job step.
		.... .1..			Top task in tree being abnormally terminated.
		.... ..1.			Abnormal termination dump has been completed.
		.... ...1			Asynchronous exits cannot be scheduled.
30	(1E)	Byte 2			
		1...			Job step TCB: The SYSABEND (or SYSUDUMP) data set for the job step is being opened. Operands of ABEND macro instruction have been saved in TCBCMP field.
		.1..			Initiator TCB: Second job step interval has expired or operator has cancelled the job.
		..1.			Job step TCB: Job step can cause rollout.
		...1			System must complete. Current task can be performed; other tasks in system cannot.
		.... 1...			Step must complete; other tasks in job step cannot be performed.
		.... .1..			Job step TCB: The SYSABEND (or SYSUDUMP) data set has been opened for the job step.
		.... ..1.			ETXR exit requested by attaching task.
		.... ...1			Task is a member of a time-sliced group.

<u>TASK CONTROL BLOCK -- MVT</u>			
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
		TCBFLGS (Continued)	
31 (1F)	Byte 3		
	1... ..		All PSWs for this task in supervisor state.
	.1... ..		Job step TCB: Job step has invoked rollouts that are still in effect.
	..1.		Prevent multiple scheduling of ABENDs.
	...1		RB for this STAE was key zero.
	.... xxxx		(Reserved bits.)
	.... ...1		This task was detached with the STAE=YES option.
32 (20)	Byte 4		(If any bit in this byte is 1, the task is non-dispatchable.)
	1... ..		Set up ABDUMP.
	.1... ..		SER1 non-dispatchability indicator.
	..1.		Supply of I/O request queue elements exhausted.
	...x		(Reserved bit.)
	.... 1...		System is processing a timer asynchronous exit routine.
	.... .1..		Vary or quiesce in multiprocessing system.
	.... ..1.		MVT with Model 65 multiprocessing: Task has been set non-dispatchable by one CPU to prevent any CPU from working on it.
	.... ...1		ABEND routine was entered by this task while DCB for SYSABEND (or SYSUDUMP) data set was being opened for another task in same job step.

TASK CONTROL BLOCK -- MVT

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
		TCBFLGS (Continued)		
33 (21)		Byte 5		(If any bit in this byte is 1, the task is non-dispatchable.)
		1...		Terminated.
		.1..		To be terminated by ABEND.
		..1.		A routine of this task has issued an unconditional GETMAIN which must be satisfied by rollout of another job step.
		...1		The job step has been rolled out.
		.... 1..		Another task is in system-must-complete status.
		.... .1..		Another task in this job step is in step-must-complete status.
		.... ..1.		Initiator task: request for a region could not be satisfied.
		.... ...1		Primary non-dispatchability bit. This bit is set to 1 if any of the secondary non-dispatchability bits (offset 173 through 175) is set to 1. This bit is set to 0 if a secondary non-dispatchability bit is set to 0 and all other secondary non-dispatchability bits are 0.
34 (22)	. . 1	TCBLMP		Limit priority for this task.
35 (23)	. . . 1	TCBDSP		Dispatching priority for this task.
36 (24)	4	TCBLLS		Address of load list element (LLE) for program loaded via the LOAD macro instruction.
40 (28)	4	TCBJLB		Address of a JCBLIB DCB.
44 (2C)	4	TCBJPQ		Job step TCB:
44 (2C)		Byte 1		
		1...		Purge flag.
		.xxx xxxx		(Reserved bits)
45 (2D)		Bytes 2-4		Address of last entry in contents directory for job pack area (JPA) control queue.
48 (30)	64	TCBGRS		General register save area.
112 (70)	1	TCBQEL		Number of resources for which this task is enqueued.
113 (71)	. 3	TCBFSAB		Address of the first problem program save area.
116 (74)	4	TCBTCB		Address of next TCB of lower priority on the ready queue.
120 (78)	4	TCBTME		Address of the timer queue element.
124 (7C)	4	TCBJSTCB		Address of the first TCB for a job step. For tasks with a protection key of zero, this field contains the address of this TCB.
128 (80)	4	TCBNTC		Address of the TCB for the task previously attached by the task that attached this task. For example: If task A attached task B and then task C, this field in task C's TCB points to task B's TCB, and this field in task B's TCB is zero.

TASK CONTROL BLOCK -- MVT

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
132	(84) 4	TCBOTC	Address of the TCB for the task (the originating task) that attached this task. This field is zero in the TCB for a system task.
136	(88) 4	TCBLTC	Address of the TCB for the task last attached by this task. Note: If a task (the originating task) has attached other tasks, the TCBS for the other tasks are on the subtask queue of the originating task. TCBLTC in the TCB for the originating task points to the last TCB (the TCB for the last attached task) in the subtask queue. In each TCB on the subtask queue, except the first TCB, TCBNTC points to the preceding TCB on the queue.
140	(8C) 4	TCBIQE	Address of an interruption queue element (IQE) for scheduling the ETXR routine of the task that attached this task.
144	(90) 4	TCBECB	Address of the ECB that will be posted by the supervisor's task termination routines when normal or abnormal termination occurs.
148	(94) 1	TCBTSFLG	Time-sharing flags. 1... Indicates that this task is a swapped time sharing task. .1.. Indicates that this task should be made non-dispatchable (by using bit 174.1 of the TCB) when it is no longer running a privileged program. ..1. Indicates that this task should not have attention exits scheduled on it by the exit effector or STATUS SVC. ...1 Indicates that an I/O purge of the terminal is required. .... ..1. TCBDYDSP - Model 195: Task is a member of dynamic dispatching group. .... ...1 TCBPUBD - Model 195: I/O bound. .... ...0 Task is CPU bound. xx.. (Reserved bits)
149	(95) . 1	TCBSTPCT	A count of the number of times the STATUS macro instruction (with the START parameter) must be issued to make this task dispatchable.
150	(96) . . 1	TCBTSLP	Limit priority of this time-shared task.
151	(97) . . . 1	TCBTSDP	Dispatching priority of this time-shared task.
152	(98) 4	TCBPQE	Address of the region dummy partition queue element minus 8 (DPQE-8).
156	(9C) 4	TCBAQE	Address of an allocated queue element (AQE).
160	(A0) 4	TCBNSTAE	Flags internal to STAE routine.
		Byte 1	Address of the current STAE control block.
		Bytes 2-4	
164	(A4) 4	TCBTCT	Reserved.
		Byte 1	Address of the timing control table if the system management facilities option is present in the system.
		Bytes 2-4	

<u>TASK CONTROL BLOCK -- MVT</u>			
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Diq. Field Description, Contents, Meaning</u>
168	(A8) 4	TCBUSER	A field available to the user.
172	(AC) 1	TCBDAR	Damage assessment routine (DAR) flags.
		1... ..	TCBDARP - DAR recursion flag; set to indicate DAR has been entered for this task.
		.1..	TCBDARS - Task reinstatement has been attempted. If DAR is reentered, task will be set non-dispatchable.
		...1	TCBDARMC - DAR has been entered to handle a valid recursion in must-complete status through ABEND.
		.... .1..	TCBDARWT - WTO in progress for 'Reinstatement Failure' message.
		.... ...1	TCBEXSVC - SVC dump is executing for this task.
		..x. x.x.	(Reserved bits)
173	(AD) . 3	TCBNDSP	Secondary non-dispatchability bits.
173	(AD) . 1	TCBNDSP1	If any bit in these bytes is 1, the primary non-dispatchability bit (offset 33.7) is 1, and the task is non-dispatchable.
		xx..	Damage assessment routine bits.
		1...	The task is temporarily non-dispatchable.
		.1..	The task is permanently non-dispatchable.
		..xx x...	Recovery management support and system error recovery bits.
		..1.	The task is temporarily non-dispatchable.
		...1	The task is permanently non-dispatchable.
		.... 1...	The task is in device allocation and dynamic device reconfiguration (DDR) has made it non-dispatchable.
		.... .1..	TCBTSPSP- TCAM: In a multiprocessing system, the message command program task is non-dispatchable until a TCAM I/O appendage or SVC routine has completed execution.
		.... ..xx	(Reserved bits)
174	(AE) . . 1	TCBNDSP2	Secondary non-dispatchability bits.
		.1..	Indicates that the task is non-dispatchable because it has been stopped by the STATUS macro instruction.
		..1.	TCBNDSVC - This task is non-dispatchable because SVC dump is executing for another task.
		...1	Indicates that the task is non-dispatchable because it is being or has been swapped out.
		.... 1...	Indicates that the task is non-dispatchable due to input wait.
		.... .1..	Indicates that the task is non-dispatchable due to output wait.
		x... ..xx	(Reserved bits)
175	(AF) . . . 1	TCBNDSP3	Reserved.
176	(B0) 4		Reserved.

<u>TASK CONTROL BLOCK -- MVT</u>			
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
180	(B4) 1	TCBRECDE	ABEND recursion configuration and communication.
		1xxx xxxx	TCBREC - Valid ABEND recursion (if any other bit is also one).
		x000 0001	TCBOPEN - OPEN of the SYSABEND (or SYSUDUMP) data set for the job step.
		x000 0010	TCBCLOSD - CLOSE of the direct SYSOUT on tape.
		x000 0011	TCBCLOSE - CLOSE of open data sets.
		x000 0100	TCBCLOSF - Forced CLOSE of DCBs (graphics).
		x000 0101	TCBGREC - Graphics (GFX) interface in control.
		x000 0110	Reserved.
		x000 0111	TCBADUMP - ABDUMP in process for this task.
		x000 1000	TCBPTAXE - The purge TAXE routine has been given control.
		x000 1001	Reserved.
		x000 1010	TCBDYNAM - The data management module to check TIOT for DD-DYNAM entries invalidly marked busy has been given control.
		x000 1011	Reserved.
		x000 1100	TCBQTIP - Purge of TSO interpartition POST requests.
		x000 1101	TCBTCAMP - TCAM purging POST requests.
		x000 1110	TCBTCAMR - TCAM Message Control Program reinitialization.
		x000 1111	TCBSAVCD - Save old TCB completion code. (ABEND during ASIR processing.)
		x001 0000	TCBTYP1W - Recursion from type 1 SVC WTP message.
		x001 0001	.
		.	Reserved.
		.	.
		x010 1111	.
		x011 0000	TCBNOSTA - STAE/STAI not to be honored.
		x011 0001	TCBSTRET - Return from steal core.
		x011 0010	TCBCONVR - Convert to job step ABEND.
		x011 0011	TCBDARET - Return from DAR.
		x011 0100	TCBTYP1R - Reserved.
		x011 0101	TCBNEWRB - ABEND initiated SVC13 to XCTL to non-ABEND routine.
		x011 0110	.
		.	Reserved.
		.	.
		x111 1111	.
181	(B5) . 3	TCBJSCB	Address of the job step control block.
184	(B8) 4	TCBRV001	Reserved.
188	(BC) 4	TCBIOBRC	Pointer to the IOB restore chain for I/O queued by EOT.

End of the MVT Task Control Block

Timing Control Table

The timing control table (TCT) contains information utilized by the system management facilities (SMF) option. System management facilities is an optional feature that can be selected at system generation for an MFT or MVT configuration of the System/360 Operating System.

The timing control table is pointed to by the TCBTCT field, offset 164 decimal, of the task control block.

The TCT is composed of;

1. The TCT proper which consists of:
 - fields utilized by the SMF modules
 - one or two storage tables depending upon the kinds of storage allocated -- processor storage or IBM 2361 Core Storage.
2. The TCT I/O table consisting of a TCT I/O lookup table, and a TCT I/O counter table.

The TCT I/O table need not be contiguous to the TCT proper.

Figure 27 illustrates the format of the TCT. Descriptions of the fields follow the illustration.

TIMING CONTROL TABLE

0 (0)	TCTQA Reserved	3 (3)	TCTSW TCT Switches
4 (4)	TCTTCB Initiator TCB Address		
8 (8)	TCTCRTBL TCT Storage Table Starting Address		
12 (C)	TCTIOTBL TCT I/O Table Starting Address		
16 (10)	TCTPOOL Subpool Number and Size of TCT		
20 (14)	TCTUTL MFT: Zeros, MVT: Address of User Time Limit Routine (IEFUTL)		
24 (18)	TCTUDATA Address of User Parameter List		
28 (1C)	TCTJMR Address of the Job Management Record		
32 (20)	TCTUSO MFT: Zeros, MVT: Address of User Output Limit Routine (IEFUSO)		
36 (24)	TCTSTOF Step Time Extension Overflow Field		
40 (28)	TCTSACT Total Step Time Extension		
44 (2C)	TCTWLMT Job or Step Maximum Wait Time Limit		47 (2F)
48(30)	TCTLIN TSO Only: Count of Terminal Lines Input		
52(34)	TCILOUT TSO Only: Count of Terminal Lines Output		55(37)
56(38)	TCTAST Time of Day That Device Allocation Started		
60(3C)	TCTPPST Time of Day That Problem Program Was Initially Loaded Into Main Storage		

Figure 27. Timing Control Table (Part 1 of 3)

TIMING CONTROL TABLE

Processor Storage Table

+0(0)		TCTLWM Highest Address Allocated From Bottom of Region.
+4(4)		TCTHWM Lowest Address Allocated From Top of Region
+8(8)	TCTMINC Minimum Difference Between TCTHWM and TCTLWM in 2K Blocks	+10(A) TCTRSZ Region Request in 2K Blocks
+12(C)	TCTRBC Accumulated Rollout Obtained Storage	+14(E) TCTMBC Total Rollout Obtained Storage

Hierarchy Support Storage Table

+16(10)		TCTLWM Highest Address Allocated From Bottom of Region
+20(14)		TCTHWM Lowest Address Allocated From Top of Region
+24(18)	TCTMINC Minimum Difference Between TCTHWM and TCTLWM in 2K Blocks	+26(1A) TCTRSZ Region Request in 2K Blocks
+28(1C)	TCTRBC Accumulated Rollout Obtained Storage	+30(1E) TCTMBC Total Rollout Obtained Storage

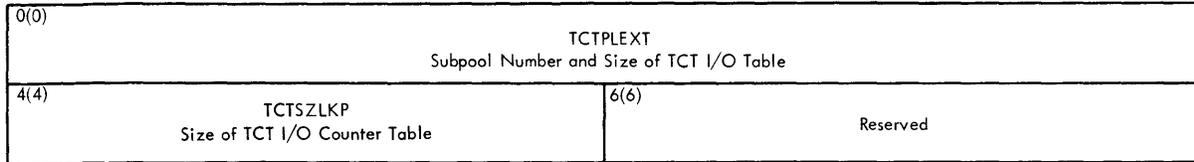
87(57)

Figure 27. Timing Control Table (Part 2 of 3)

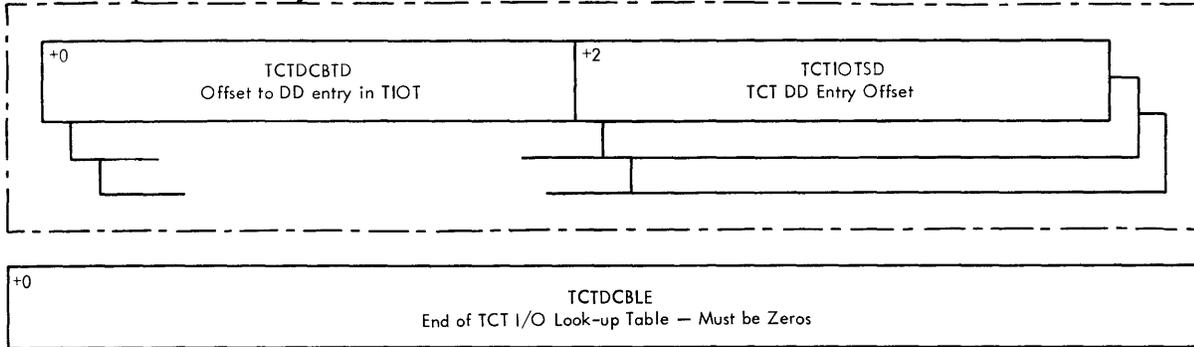
TIMING CONTROL TABLE

TCT I/O Table

TCT I/O Lookup Table



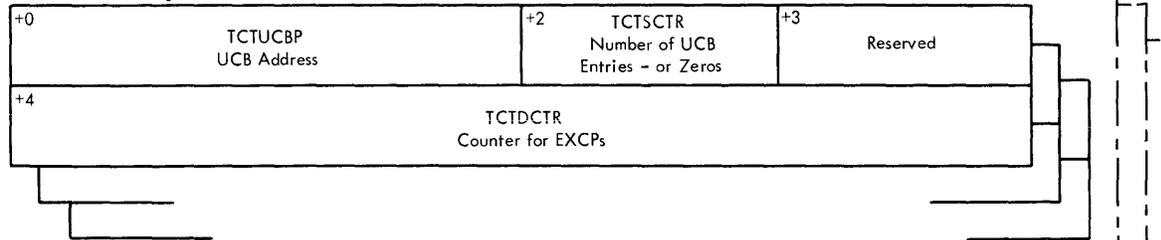
DD Lookup Table Entry



TCT I/O Counter Table

DD Entry

Device Entry



Output Limit Extension

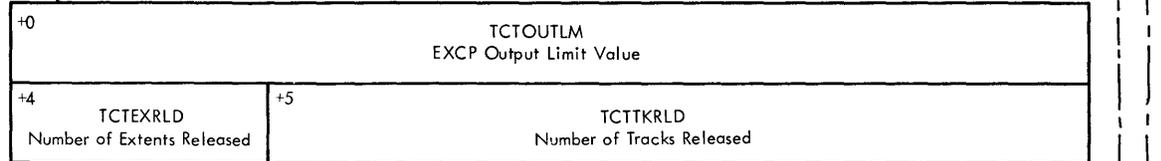


Figure 27. Timing Control Table (Part 3 of 3)

TIMING CONTROL TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3	TCTQA	Reserved.
3	(3) . . . 1	TCTSW	Timing control table switches. 0... .. 1... .. .xxx xxxx TQE contains step time. TQE contains job time. (Reserved bits)
4	(4) 4	TCTTCB	Address of the initiator TCB.
8	(8) 4	TCTCRTBL	Starting address of the TCT storage table. Storage table is contiguous to the TCT.
12	(C) 4	TCTIOTBL	Starting address of the TCT I/O table. TCT I/O table is not necessarily contiguous with the TCT.
16	(10) 1 . 3	TCTPOOL	Subpool in which the TCT resides. Size in bytes of the TCT and the TCT storage tables.
20	(14) 4	TCTUTL	MFT: Zeros (because IEFUTL is link-edited with the nucleus). MVT: Address of user's time limit routine (IEFUTL). If no user time limit routine is present, contains the address of a dummy routine. If no exit is to be taken, contains zeros.
24	(18) 4	TCTUDATA	Address of a one word parameter list which points to the job management record (JMR).
28	(1C) 4	TCTJMR	Address of the job management record.
32	(20) 4	TCTUSO	MFT: Zeros (because IEFUSO is link-edited with the nucleus). MVT: Address of user's output limit routine (IEFUSO). If no user output limit routine is present, contains the address of a dummy routine. If no exit is to be taken, contains zeros.
36	(24) 4	TCTSTOF	Overflow field for user supplied step time extensions.
40	(28) 4	TCTSACT	A running total of the user supplied step time extensions, expressed in timer units.
44	(2C) 4	TCTWLMT	The job or step maximum wait time limit as specified in SMFDEFLT, expressed in timer units.
48	(30) 4	TCTLIN	TSO: Number of lines of terminal input. Other: Contains zeros.
52	(34) 4	TCTLOUT	TSO: Number of lines of terminal output. Other: Contains zeros.
56	(38) 4	TCTAST	The time of day (to one hundredth of a second) that device allocation started.
60	(3c) 4	TCTPPST	The time of day (to one hundredth of a second) that the problem program was initially loaded into main storage.

TIMING CONTROL TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>Processor Storage Table</u>			
+0 (+0)	4	TCTLWM	The current highest address allocated from the bottom of the region.
+4 (+4)	4	TCTHWM	The current lowest address allocated from the top of the region.
+8 (+8)	2	TCTMINC	The minimum difference (in 2K blocks) between TCTLWM and TCTHWM. This figure represents the unused portion of the user's region.
+10 (+10)	. . 2	TCTRSZ	The original region request expressed in 2K blocks.
+12 (+C)	2	TCTRBC	A running total of storage obtained through rollout, expressed in 2K blocks.
+14 (+E)	. . 2	TCTMBC	The maximum storage obtained through rollout, expressed in 2K blocks.

Hierarchy Support Storage Table

Note: If hierarchy 1 storage is not used or unavailable, the section of the table related to hierarchy 1 storage will be zero.

+16 (+10)	4	TCTLWM	The current highest address allocated from the bottom of the region.
+20 (+14)	4	TCTHWM	The current lowest address allocated from the top of the region.
+24 (+18)	2	TCTMINC	The minimum difference (in 2K blocks) between TCTLWM and TCTHWM. This figure represents the unused portion of the user's region.
+26 (+1A)	. . 2	TCTRSZ	The original region request expressed in 2K blocks.
+28 (+1C)	2	TCTRBC	A running total of storage obtained through rollout, expressed in 2K blocks.
+30 (+1E)	. . 2	TCTMBC	The maximum storage obtained through rollout, expressed in 2K blocks.

TIMING CONTROL TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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TCT I/O Table

The TCT I/O table is composed of the TCT I/O lookup table and the TCT I/O counter table. The TCT I/O table is not necessarily contiguous to the TCT: the TCTIOTBL field of the TCT points to it.

TCT I/O Lookup Table

The TCT I/O lookup table includes a DD lookup table entry for each DD entry in the TIOT.

0	(0)	4	TCTPLEXT	Subpool and TCT I/O table size.
---	-----	---	----------	---------------------------------

			Byte 1	Subpool in which the TCT I/O table resides.
			Bytes 2-4	Size in bytes of the TCT I/O table .

4	(4)	2	TCTSZLKP	Number of device entries in TCT I/O counter table times 8.
---	-----	---	----------	--

6	(6)	. . 2		Reserved.
---	-----	-------	--	-----------

DD Lookup Table Entry

The DD lookup table entries are referenced by the system management facilities option code to enter the TCT I/O counter table at the DD entry containing the device entry for the accessed device.

8	(8)	2	TCTDCBTD	Offset from the TIOT origin to the TIOELNGH field in the TIOT entry for the DD statement associated with the accessed data set.
---	-----	---	----------	---

10	(A)	. . 2	TCTIOTSD	Offset from the TCT I/O table origin to the DD entry, within the TCT I/O counter table, associated with the accessed data set.
----	-----	-------	----------	--

Note: Fields TCTDCBTD and TCTIOTSD repeat for each DD entry in the TIOT.

End of the DD Lookup Table Entry

+0		4	TCTDCBLE	Zeros. End of the TCT I/O lookup table.
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TIMING CONTROL TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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TCT I/O Counter Table

The TCT I/O counter table consists of one DD entry for each DD entry in the TIOT.

DD Entry

Each DD entry consists of the following 8 byte device entry repeated for each UCB (device) associated with a DD statement, and an 8 byte output limit extension.

Device Entry

+0	2	TCTUCBP	Address of the UCB associated with this device.
+2	. . 1	TCTSCTR	Number of devices associated with this DD statement. This number represents the number of Device entries within this DD entry. This field contains zeros in all but its first appearance in any DD entry.
+3	. . . 1		Reserved.
+4	4	TCTDCTR	Counter for EXCPs issued against this UCB.

Output Limit Extension

+0	4	TCTOUTLM	Maximum number, in binary, of EXCPs allowed on this SYSOUT data set. Calculated from the OUTLIM parameter on the user's SYSOUT DD statement and any increases to that limit provided in the user exit routine, IEFUSO.
+4	1	TCTEXRLD	A binary number of extents released by the DADSM release routine. Collected only if RLSE was specified in the SPACE parameter for this data set.
+5	. 3	TCTTKRLD	A binary number of tracks released by the DADSM release routine. Collected only if RLSE was specified in the SPACE parameter for this data set.

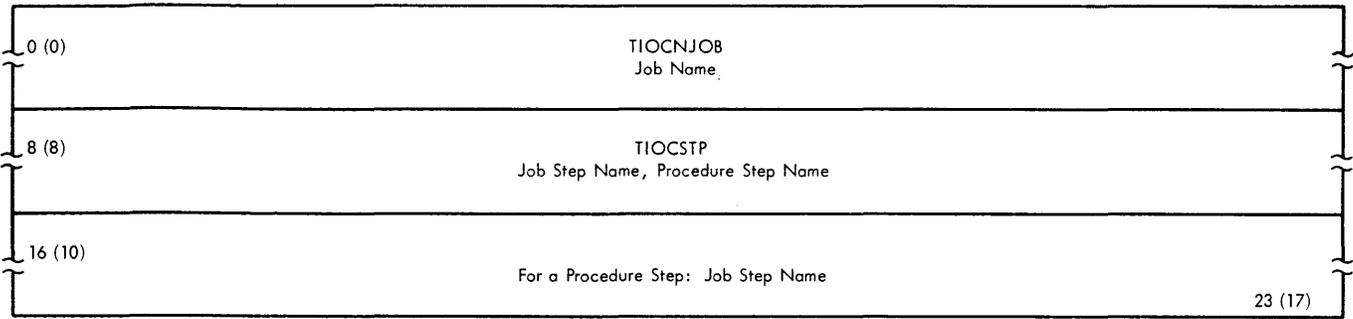
End of Output Limit Extension

End of DD Entry

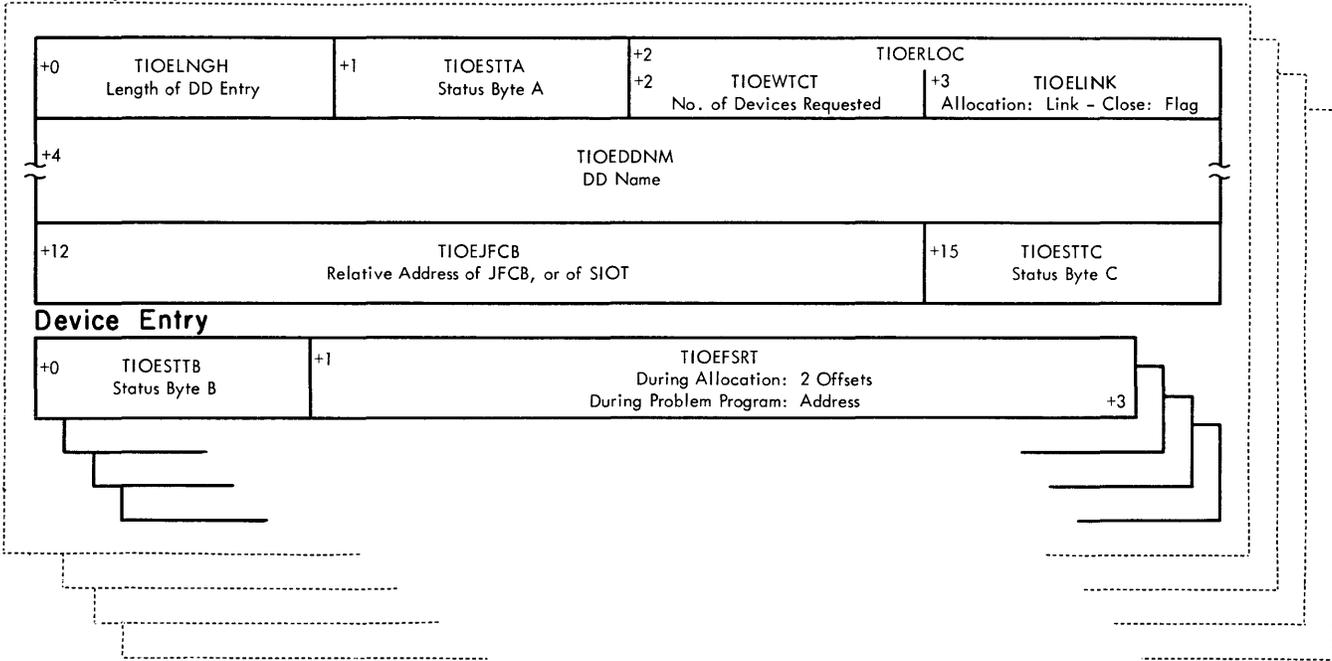
Task Input/Output Table

The task input/output table (TIOT) is constructed by job management routines. It resides in the higher portion of the dynamic area of main storage during step execution. The TIOT provides the I/O support routines (OPEN,CLOSE,EOV) with pointers to JFCBs and allocated devices. Figure 28 shows the format of a TIOT. Descriptions of the fields follow the illustration.

TASK INPUT/OUTPUT TABLE



DD Entry



Device Entry



Figure 28. Task Input/Output Table

TASK INPUT/OUTPUT TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 8	TIOCNJOB	Job name.
8	(8) 8	TIOCSTEP	For a job step that is not a procedure step: Job step name. For a job step that is a procedure step: Procedure step name.
16	(10) 8		For a job step that is not a procedure step: (Field not used.) For a job step that is a procedure step: Job step name of the job step that called the procedure. DD Entries: There is a DD entry for each DD statement in the Job step or procedure step. (References to GDG (all) data sets, the JOBLIB data set or PGM=*.ddname create still other DD entries.) DD Entry: A DD entry includes a device entry. Before allocation, there may be several device entries in each DD entry.
+0	1	TIOELNGH	Length, in bytes, of this DD entry (including all device entries).
+1	. 1	TIOESTTA	Status byte A. Tape label processing to be performed: NL, BLP. SL, SUL. NSL. AL, AUL. During allocation: Split cylinder primary. (This is the first DD entry for a split cylinder.) During step termination: No unallocation necessary. ..1. During allocation: Split cylinder secondary. (This is not the first DD entry for a split cylinder.) During step termination: Rewind but no unloading. ...1 JOB LIB indicator. 1... DADSM allocation necessary. .... ..1. Tape data sets - rewind/unload the tape volume. .... ...1 Tape data sets - rewind the tape volume. TIOERLOC (A 2 byte field consisting of:)
+2	. . 1	TIOEWTCT	During allocation: Number of devices requested for this data set.

TASK INPUT/OUTPUT TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DD Entry (Continued)</u>			
+3	. . . 1	TIOELINK	<p>During allocation: Link to the appropriate prime split, unit affinity, volume affinity or suballocate TIOT entry.</p> <p>After allocation: TIOOPEN- TSO: Data set is open. TIOTERM- TSO: Device is a terminal. TIOEDYNM- TSO: DYNAM coded on DD statement. TIOEQNAM- TCAM: QNAME coded on DD statement. (Reserved bits) After CLOSE: This is a SYSOUT data set that contains data. (Reserved bits)</p>
		.1..	
		..1.	
		...1	
		.... 1...	
		x... .xxx	
		1...	
		.xxx xxxx	
+4	8	TIOEDDNM	DD name.
+12	3	TIOEJFCB	Relative track address (TTR) of the JFCB. (During allocation, TTR of the SIOT if suballocate was requested.)
+15	. . . 1	TIOESTTC	Status Byte C. Used during allocation only. Set to zeros at end of allocation.
		1...	Secondary suballocate.
		.1..	Deferred mount.
		..1.	Primary unit affinity.
		...1	Secondary unit affinity.
		.... 1...	Primary volume affinity.
		.... .1..	Secondary volume affinity.
		.... ..1.	Primary suballocate.
		.... ...1	Secondary suballocate.
<u>DEVICE ENTRIES</u>			
		<u>During allocation:</u>	1 device entry for each device required, or for each public device eligible.
		<u>During problem program:</u>	1 device entry for each allocated device.
+0	1	TIOESTTB	Status byte B -
		1...	During allocation and during problem program: Data set is on device.
		.1..	Data set will use device.
		..1.	Device violates separation.
		...1	Volume serial present.
		.... 1...	Setup message required.
		.... .x..	Disposition:
		.... .1..	Retain unloaded volume if unload required.
		.... .0..	Delete unloaded volume if unload required.
		.... ..1.	Unload required.
		.... ...1	Verification required.

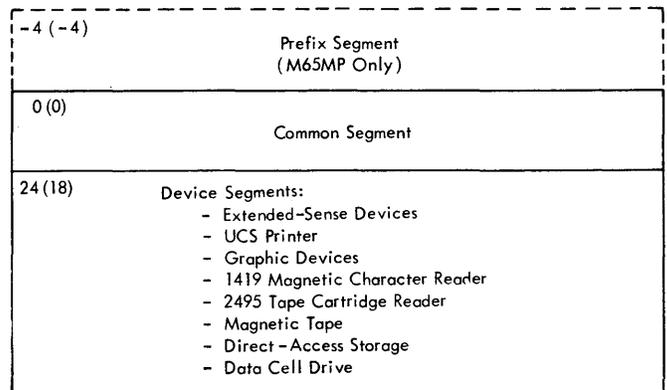
TASK INPUT/OUTPUT TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>DEVICE ENTRIES (Continued)</u>
+1	. 3 <u>During allocation</u>	TIOEFSRT	Bits 0 - 11: Offset, in the UCB look-up table, to an address for a device required or eligible for this data set. For other than a 2321, the UCB look-up table has addresses of UCBs. For a 2321 data cell drive, its addresses are those of the descriptions in the UCB of cells in bins. Bits 12 - 23: Offset, in the step volume table (VOLT), to the volume serial number for the volume required or eligible for this data set. <u>During problem program:</u> Devices other than 2321: Address of the UCB. 2321 data cell drive: Address of the description in the UCB of the cell in the bin. (The description of the cell in bin 0 begins at UCB + 56.) <u>END-OF-TIOT INDICATOR</u>
	4		Binary Zeros.

Unit Control Block

There is a unit control block (UCB) for each device attached to the system. It describes the characteristics of the device to the I/O supervisor and is used by the job scheduler during allocation of the device. Figure 29 shows the format of the UCB. Descriptions of the fields follow the illustrations.

The unit control block consists of three segments: an optional Model 65MP prefix segment, a segment common to all devices (common segment) and segments that vary with different devices (device segments). The following illustrates the relationship of these segments.



The unit control block may also contain a pointer to a device extension or sense extension which need not be contiguous to the UCB proper.

Figure 29A shows the formats of the various UCB extensions. Descriptions of the UCB extension fields follow the description of the UCB proper.

The UCBTYP field is discussed in detail following the UCB sense extension description.

UNIT CONTROL BLOCK

M65MP Prefix

-4	UCBFL3 M65MP Flags	-3	Reserved	-1	M65MP Flags
----	-----------------------	----	----------	----	-------------

Common Segment

0 (0)	SRTEJBNR Internal Job No.	1 (1)	UCBFLS Allocation Channel Mask	2 (2)	UCBID Identifier	3 (3)	SRTESTAT Status Byte A
4 (4)	UCBCHA Channel Address and Flags	5 (5)	UCBUA Unit Address	6 (6)	UCBFL1 Flag Byte 1	7 (7)	UCBDTI Index to Device Table
8 (8)	UCBETI Error Routine ID	9 (9)	UCBSTI Statistics Table Index	10 (A)	UCBLCI Logical Channel Word Table Index	11 (B)	UCBATI Attention Table Index
12 (C)	UCBWGT Flags and Mask	13 (D)	UCBNAME Unit Name				
16 (10)	UCBTYP Device Type						
20 (14)	UCBLTS Last Request Element			22 (16)	UCBSNS Sense Information (for devices with one to six sense bytes) Unused (for devices with extended sense bytes)		

Device Segment

Extended - Sense Device Segment

24 (18)	UCBNBRSN Number of Sense Bytes	25 (19)	UCBSNADR Address of Sense Information
---------	-----------------------------------	---------	--

UCS Printer Segment

24 (18)	UCBNBRSN Number of Sense Bytes	25 (19)	UCBSNADR Address of Sense Information
28 (1C)	UCBXTADR Address of UCB Extension for UCS		
			31 (1F)

2495 Tape Cartridge Reader Segment

24 (18)	UCBCRWKA Address of the Tape Cartridge Reader UCB Extension	27(1B)
---------	--	--------

Optical Reader (1285,1287,1288)Segment

24 (18)	UCBCRWKA Address of Optical Reader UCB Extension	27(1B)
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Graphic Device Segment

24 (18)	Additional Sense Information	25 (19)	Additional Optional Features	26 (1A)	Use Count	27 (1B)	(GCB) Control Byte
28 (1C)	IRB Address						
32 (20)	Initialized RLN	33 (21)	Reserved				
36 (24)	Device Index	37 (25)	Control Block Link				39 (27)

Figure 29. Unit Control Block (Part 1 of 3)

UNIT CONTROL BLOCK

Magnetic Tape

24 (18)	Number of Bytes of Sense Information	Address of Sense Information (for 3400 series tape units)	
24 (18)	Additional Sense Information (2400 series magnetic tape units)		
28 (1C)	SRTEVOLI Volume Serial No.		
		34 (22)	35 (23)
		UCBSTAB Status Byte B	SRTEDMCT Vol M Sw, DCB Count
36 (24)	SRTEFSCT Sequence Count	38 (26)	SRTEFSEQ Sequence No.
40 (28)	Message IDs or Data Set Serial Number		
		46 (2E)	Reserved
48 (30)	UCBVOPT Option Bits	49 (31)	UCBXTN Address of Magnetic Tape UCB Extension
			51 (33)

Direct Access Storage Device (Except Data Cell Drive)

24 (18)	Additional Sense Information		
28 (1C)	SRTEVOLI Volume Serial No.		
		34 (22)	35 (23)
		SRTESTAB Status Byte B	SRTEDMCT No. of DCBs Open
36 (24)	SRTEFSCT Relative Address of VTOC		
40 (28)	UCBSQC RESERVE Count	41 (29)	42 (2A)
		UCBDVRES Device Reservation Indicator	UCBRQESV Address of RQE
44 (2C)	UCBFL4	45 (2D)	UCBORSV Address of the DEB
48 (30)	UCBSKA Direct-Access Address of Last Seek		
56 (38)	SRTEUSER No. of Users	57 (39)	SRTEECBA Direct Access ECB Address
60 (3C)	UCBWKADB Address of the Direct Access UCB Extension		
			63 (3F)

Figure 29. Unit Control Block (Part 2 of 3)

UNIT CONTROL BLOCK

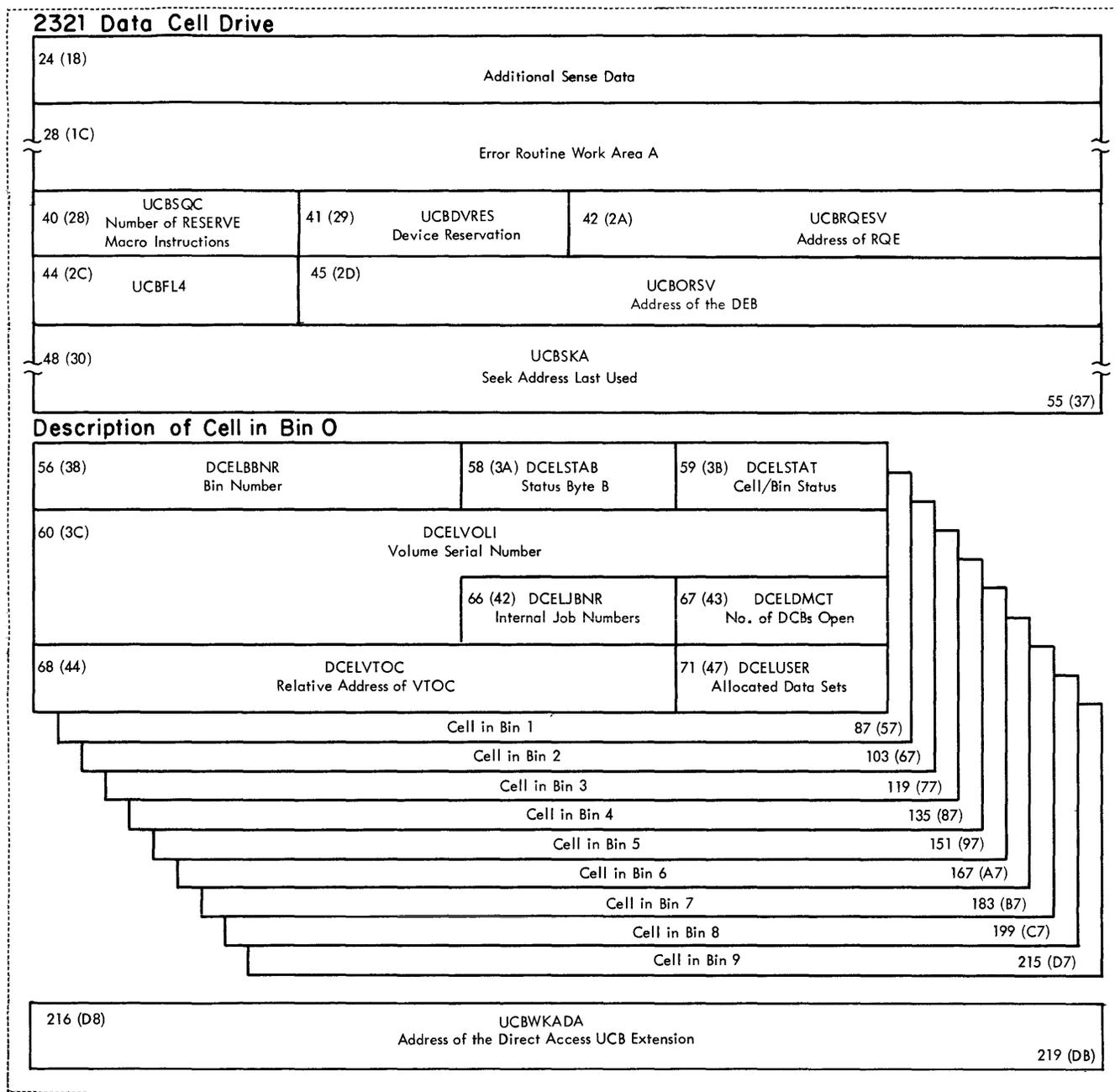
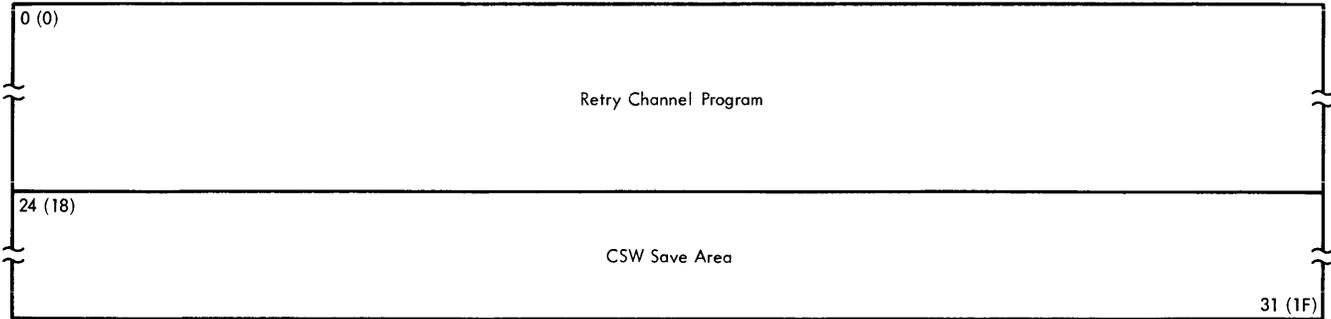


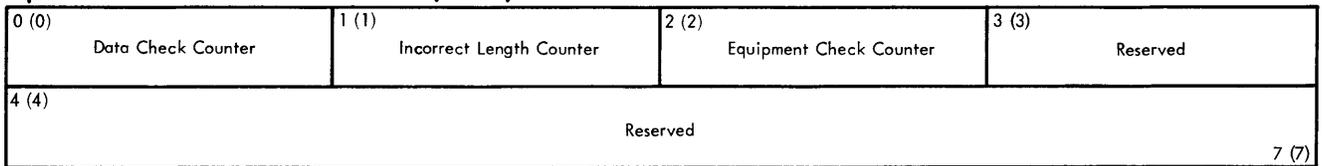
Figure 29. Unit Control Block (Part 3 of 3)

UNIT CONTROL BLOCK

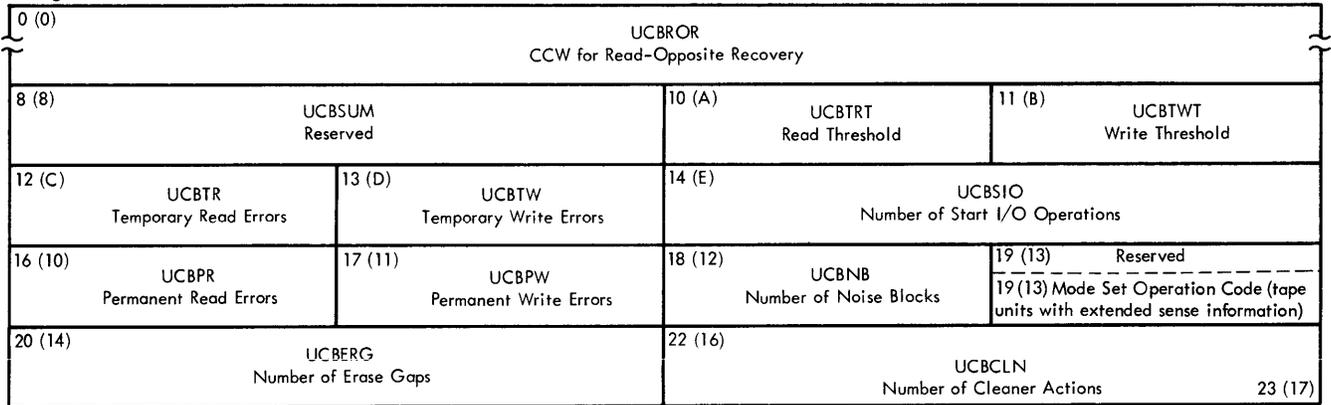
2495 Tape Cartridge Reader Extension



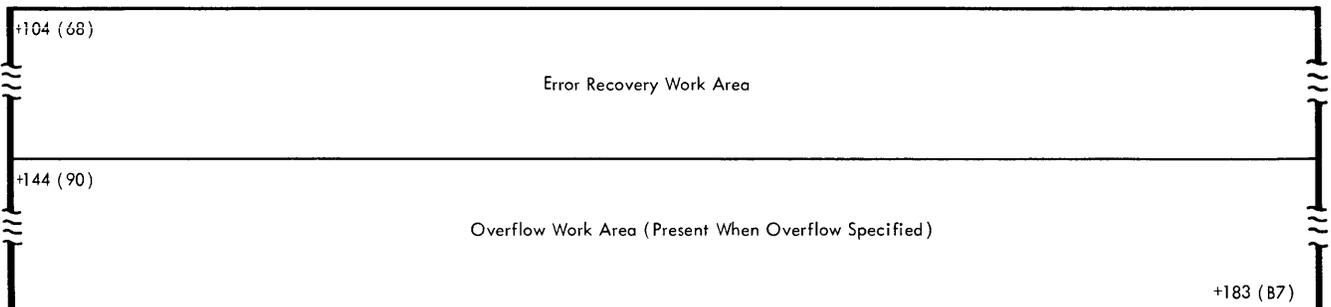
Optical Reader Extension (1285,1287,1288)



Magnetic Tape Extension



Direct Access Extension



Note: The first valid field of this extension is at offset 104.

Figure 29A. Unit Control Block Extension Blocks (Part 1 of 2)

UNIT CONTROL BLOCK

UCS I403 Printer Extension

0 (0)		UCBUSCID UCS Image Identification
4 (4)	UCBUSOP UCS Options	5 (5) Reserved

UCS 3211 Printer Extension

0 (0)				UCBUSCID UCS Image Identification		
4 (4)	UCBUSOP UCS Options	5 (5)	UCBFCBOP FCB Options	6 (6) Reserved	7 (7) UCBERCNT Error Count	
8 (8)						UCBFCBID FCB Image Identification
12 (C)						UCBERADR Address of the ERP Logout Area

3284 and 3286 Printer Extension

16 (10)	Model Code	17 (11)	No Optional Features	18 (12)	Device Class	19 (13)	Unit Type
---------	------------	---------	----------------------	---------	--------------	---------	-----------

UCB Sense Extension

0 (0)		UCBSNSXT Sense Information
n	n+1	Reserved
		m

Figure 29A. Unit Control Block Extension Blocks (Part 2 of 2)

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PREFIX SEGMENT</u>			
Present only if M65MP was specified in the system generation (SYSGEN) process.			
-4	(-4) 1	UCBFL3	MVT with Model 65 multiprocessing flags.
		0... ..	No alternate control units exist.
		1... ..	Alternate control units exist.
		...1 ...	CPU A is to use an HIO instruction for this device.
		...1 ...	CPU B is to use as HIO instruction for this device.
		.... 0..	CPU A last used an SIO instruction for this device.
		.... 1..	CPU B last used an SIO instruction for this device.
		.... ..0.	CPU B has path to this device.
		.... ..1.	CPU B has no path to this device.
		.... ...0	CPU A has a path to this device.
		.... ...1	CPU A has no path to this device.
		.... ..00	Both CPUs have a path to this device, or neither CPU has a path to this device.
		.x.. .x..	(Reserved bits)
-3	(-3) . 2		Reserved.
-1	(-1) . . . 1	UCBMPFLG	M65MP Flags.
		..1.	UCBRIC - During IPL, device was reserved for the CPU from which the IPL was performed.
		...1	UCBRNIC - During IPL, device was reserved for the CPU from which no IPL was performed.
		.... .1..	UCBNRO - During IPL, device was not reserved because of operator's request.
		.... ..1.	One-bit switch used by processing modules, always 0 on exit.
		.... ...0	Device online at IPL.
		.... ...1	Device offline at IPL.
		xx.. x...	(Reserved bits)
<u>SEGMENT COMMON TO ALL DEVICES</u>			
0	(0) 1	SRTEJBNR	Internal job identification.
		xxxx	Job protection key - set if the mounted volume is to be retained or contain a passed data set.
		.... 00..	Zeros.
		.... ..1.	Set during device allocation if the volume is to be demounted and retained or contains a passed data set.
		.... ...1	Causes job name in demount message.
		.... ...1	Set during device allocation if the volume to be mounted is to be retained or contain a passed data set.
1	(1) . 1	UCBFL5	UCBTICBT - Channel end and/or device end or mount condition pending.
		..1.	UCBVSDR - Device has variable-length SDRS.
		...1	UCBEXTSN - UCB+24 (UCBNBRSN) contains the number of bytes of sense information and UCB+25 (UCBSNADR) contains the address of sense information.
		.... 1..	UCBNALOC - Device is not to be allocated. Set by OLTEP to allow use of the device by OLTEP.
		.... ..1.	UCBALTCU - Device has an alternate control unit address.
		.... ...1	UCBALTPH- Device has alternate path.
		xx..	(Reserved bits).
2	(2) . . 1	UCBID	UCB identification - Hex FF.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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SEGMENT COMMON TO ALL DEVICES (Continued)

3 (3) . . . 1 SRTESTAT

Status byte A.

Non-console devices and console device without MCS:

0... ..	Device is offline.
1... ..	Device is online.
11... ..	Device status is to be changed from online to offline, and either allocation is queued on devices or the device is allocated.
..1.	The mount status of the volume on this device is reserved. (See note A.)
...1	UNLOAD operator command has been addressed to this device; the device is not yet unloaded.
.... 1...	Device is allocated.
.... .1..	The mount status of the volume on this device is permanently resident. (See note A.)
.... ..1.	One of these: System residence device. Primary console.
.... ...1	One of these: Standard labels have been verified for this tape volume. Secondary console.

Note A: If the mount status is neither reserved nor permanently resident, then it is removable.

Console devices with MCS - Status during execution of a VARY command:

10.. 0.01	Device status is to be changed from online unallocated to online active console, and allocation is enqueued on devices.
10.. 0.11	Device status is to be changed from online active console to online.
10.. 1.01	Device status is to be changed from online allocated to online active console. The status will be changed when the device is no longer allocated.
11.. 0.00	Device status is to be changed from online unallocated to offline, and allocation is enqueued on devices.
11.. 1.00	Device status is to be changed from online allocated to offline.
11.. 0.11	Device status is to be changed from online active console to offline.

Console devices with MCS - Status after execution of a VARY command.

00.. 0.00	Device is offline.
10.. 0.00	Device is online and unallocated.
10.. 1.00	Device is online and allocated.
10.. 0.10	Device is an online active console.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>SEGMENT COMMON TO ALL DEVICES (Continued)</u>			
4	(4) 1	UCBCHA	Channel address.
		1... ..	Halt I/O.
		.1.. ..	Status modifier.
		..1.	UCBDSNS - A sense command for this device has been delayed due to a channel logout pending condition.
		...1	UCBDHIO - A halt I/O command for this device has been delayed due to a channel logout pending condition.
		.... xxxx	Physical channel address of the last physical channel used for the device represented by this UCB.
5	(5) . 1	UCBUA	Unit address.
6	(6) . . 1	UCBFL1	Flag byte 1.
		1... ..	Busy - Device status.
		.1.. ..	Not-ready - Device status.
		..x.	Post flag.
		..0.	No channel program is being executed using this device.
		..1.	A channel program using this device has not yet been posted as having completed.
		...1	After a channel end status a separate device end status occurred with an error indication. (IOB-intercept flag.)
		.... 1..	Busy - Control unit status.
		.... .xx.	Direct access storage devices:
		.... .01.	Stand-alone channel program of I/O supervisor is being or was executed. (Arm seeking.)
		.... .11.	User's channel program is being executed. (Data transfer.)
		.... .01.	Telecommunications devices:
		.... ...1	Inhibit HIO instruction because the line is in receive status.
			I/O error routine is in control of this device. No other I/O operations are permitted on this device.
7	(7) . . . 1	UCBDTI	Index to the device table.
8	(8) 1	UCBETI	A binary number used by the exit effector routine to complete the 8 byte name of an IBM-supplied error routine for this device.
9	(9) . 1	UCBSTI	Increment which, when multiplied by 10, becomes an index to the statistics table (STATAB).
10	(A) . . 1	UCBLCI	Increment which, when multiplied by 8, becomes an index to the logical channel table (LCHTAB).
11	(B) . . . 1	UCBATI	Index to the attention table (ANTAB).
12	(C) 1	UCBWGT	Flags and channel mask.
		xx..	(Reserved bits.)
		..1.	Assumed that this device will be allocated for a public volume request.
		...1	Rewind command has been addressed to this magnetic device by I/O support.
		.... xxxx	I/O supervisor path mask. (Used where there are two or more paths to a device):
		.... 1..	Primary path to the device is inoperative.
		.... .1..	Optional path 1 to the device is inoperative.
		.... ..1.	Optional path 2 to the device is inoperative.
		.... ...1	Optional path 3 to the device is inoperative.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>SEGMENT COMMON TO ALL DEVICES (Continued)</u>			
13	(D) . 3	UCBNAME	Unit name (EBCDIC).
16	(10) 4	UCBTYP	Device type.
THIS FIELD IS DESCRIBED SEPARATELY AND IN DETAIL AT THE END OF THE DESCRIPTION OF THE OTHER UCB FIELDS.			
20	(14) 2	UCBLTS	Last request element.
22	(16) . . 2	UCBSNS	The first two bytes of sense information for devices having one to six sense bytes. Unused for devices having extended sense bytes.

DEVICE SEGMENTS

EXTENDED-SENSE DEVICE SEGMENT

For 3505 and 3525; for 3211, see UCS Printer Segment.

24	(18) 1	UCBNBRSN	Number of sense bytes.
25	(19) . 3	UCBSNADR	Address of the sense information. Pointer to the UCB sense extension.

UCS PRINTER SEGMENT

This segment is present if the system generation process specifies the universal character set (UCS) feature.

24	(18) 1	UCBNBRSN	Number of sense bytes.
25	(19) . 3	UCBSNADR	The address of the sense information. For the 1403, the sense information is in UCBSNS (UCB+22). For the 3211 printer, the sense information is in UCBSNSXT.
28	(1C) 4	UCBXTADR	The address of the UCB extension for UCS.

2495 TAPE CARTRIDGE READER SEGMENT

24	(18) 4	UCBCRWKA	Address of a 32 byte TCR UCB extension containing an error recovery channel program and a CSW save area.
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1285/1287/1288 OPTICAL READER SEGMENT

24	(18) 4	UCBCRWKA	Address of an 8 byte optical reader UCB extension containing binary error counters.
----	--------	----------	---

GRAPHIC DEVICES SEGMENT

24	(18)	Byte 1	Additional optional features. An extension of the optional byte of the UCBTYP field.
		1...	Magnetic Card Reader Adapter.
		.1..	Selector Pen.
		..1.	Numeric Lock.
		...x xxxx	(Reserved bits).

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>GRAPHIC DEVICES SEGMENT (Continued)</u>			
25	(19)	Byte 2 xxxx xxxx	Additional optional features. (Reserved bits).
26	(1A) . . 1		Attention count. The number of attentions not serviced in the line group. Present only if the Device Index field is 1. Otherwise, this field is reserved.
27	(1B) . . . 1		<u>GCB</u> : Graphic control byte used for attention handling.
28	(1C) 4		Address of the IRB for scheduling the second level attention routine.
32	(20) 1		Initialized RLN. The relative line number of the IOB initialized for a Read Initial. If 0, no read initial is outstanding. Present only if the Device Index field is reserved.
33	(21) 3		Reserved.
36	(24) 1		Device Index. Index to the DEB UCB address field for this device.
37	(25) . 3		Control block link. If the Device Index field is 1, this field contains the address of the DEB for the line group. If the Device Index is between 2 and 255 inclusive, this field contains the address of the UCB with a Device Index of 1.
<u>MAGNETIC TAPE DEVICES SEGMENT</u>			
24	(18) 4		Additional sense information (2400 series magnetic tape units).
24	(18) 1		Number of bytes of sense information (for devices with extended sense information).
25	(19) . 3		Address of area containing sense information for devices with extended sense information.
28	(1C) 6	SRTEVOLI	Volume serial number.
34	(22) . . 1	UCBSTAB	Status byte B - Volume status.
		x...	Device sharability:
		0...	Not Sharable.
		1...	Sharable among several CPU's (3420 Magnetic Tape devices only)
		..1.	Additional volume label processing.
		...1	Private - Volume use status.
		.... 1...	Public - Volume use status.
		.... .1..	The volume mounted has an American National Standard label.
		.... ...1	If the multiple console support option is in the system - demount or mount messages have been issued and the message IDs are at offset 40 through 45. OPEN will delete the messages and turn this bit off.
		.x... ..x.	(Reserved bits)

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>MAGNETIC TAPE DEVICES SEGMENT (Continued)</u>			
35	(23) . . . 1	SRTEDMCT	Volume mount switch. This switch shows whether a volume has been mounted and whether the volume label found on the volume has been verified to be the type specified by the DD statement parameter. DD Stat. <u>Parm.</u> Any Scheduler: 0... .. No volume has been mounted. 1... .. A volume has been mounted but no volume label processing has been performed. (Normal scheduler processing, effective with release 11.) SL OPEN routine: 1... .. Volume label is not standard format or serial number is not correct. (A mount message has been issued.) 0... .. Standard volume label and correct serial number has been verified. 1... .. NSL OPEN routine: Volume label is not standard format. (Control passes to the processing program's non-standard label processing routine.) Volume label is standard format. (Control remains with the OPEN routine. A mount message has been issued.) 0... .. Processing program: Non-standard volume label has been verified. NL OPEN routine: 1... .. Standard volume label has been found. (A mount message has been issued.) 0... .. No standard volume label has been found. 0... .. BLP OPEN routine: Volume label has not been processed. .xxx xxxx Number of DCBs open for this volume.
36	(24) 2	SRTEFSCT	Data set sequence count.
38	(26) . . 2	SRTEFSEQ	Data set sequence number.
40	(28) 6		Before OPEN: Message IDs. See SRTESTAB bit 7. After OPEN: Data set serial number.
46	(2E) . . 2		Reserved.
48	(30) 1	UCBVOPT	Volume statistics option bits. 00.. .. Neither error volume analysis (EVA) nor error statistics by volume (ESV) records kept. 01.. .. Only EVA records kept. 110. ESV, or ESV and EVA records kept; ESV records sent to SYS1.MAN (X or Y) data set. 111. ESV, or ESV and EVA records kept; ESV records sent to console. ...1 An error recovery procedure has control. 1... An ESV record has been issued for this volume because of an EOVS condition. .... ...1 Unsolicited device end. .... .xx. (Reserved bits)
49	(31) . 3	UCBXTN	Address of the magnetic tape UCB extension.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DIRECT ACCESS STORAGE DEVICE (EXCEPT DATA CELL DRIVE) SEGMENT</u>			
24	(18) 4		Additional sense information for devices with six sense bytes. For devices with more than six sense bytes this field contains the following information: Byte 1: The number of expanded sense information Bytes 2-4: The address of expanded sense information
28	(1C) 6	SRTEVOLI	Volume serial number.
34	(22) . . 1	SRTESTAB x... .. 0... .. 1... .. ..1. .... .x.. .... ...1 1... .... .1.. .... ..1. .... ...1	Volume sharability: Sharable. Not sharable. This device specified in response to message (IEF2501) listing volumes and device types of volumes specified in PRESRES, but not mounted at IPL. (Reserved bit) Private - Volume use status. Public - Volume use status. Storage - Volume use status. Joblib data set is on this volume. Control volume - A catalog data set is on this volume.
35	(23) . . . 1	SRTEDMCT 1... .. 0... .. .xxx xxxx	Volume mount switch and number of DCBs open for this volume. A mount request has been issued. A mount verification has been performed. Number of ECBS open for this volume.
36	(24) 4	SRTEFSCT	Relative address of VTOC for this volume, in form TTR0.
40	(28) 1	UCBSQC	Number of RESERVE macro instructions issued.
41	(29) . 1	UCBDVRES	Device reservation indicator. In a system that includes the shared DASD option, this indicator is set equal to the contents of the UCBSQC field after a successful completion of an SIO instruction for a direct access storage device (DASD).
42	(2A) . . 2	UCBRQESV	Address of RQE used to verify the volume serial number in the UCB. Set from UCBLTS after an unsolicited device end interrupt.
44	(2C) 1	UCBFL4 1... .. .1.. .... ..1. .... ...1 1... xxx	A flag byte. A mount request has been issued by the volume serial verification routine. Volume serial verification routine is in control. Indicates a first entry of the volume serial verification routine for this volume. Volume label is on an alternate track; the alternate track procedure is in progress. Volume has been verified by the volume serial verification routine. The number of requests for the device from the first user on the queue.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DIRECT ACCESS STORAGE DEVICE (EXCEPT DATA CELL DRIVE) SEGMENT (Continued)</u>			
45	(2D) . 3	UCBORSV	Address of the DEB for the first user on the queue for this device.
48	(30) 8	UCBSKA	Disk address (MBBCCHHR) for last seek.
56	(38) 1	SRTEUSER	Number of current users.
57	(39) . 3	SRTEECBA	Direct access ECB address.
60	(3C) 4	UCBWKADB	Address of the direct access UCB extension. First valid field is at offset+104.
<u>2321 DATA CELL DRIVE SEGMENT</u>			
24	(18) 4		Additional sense information.
<u>Error Routine Work Area</u>			
28	(1C) 12		A work area for the error routine.
40	(28) 1	UCBSQC	Number of RESERVE macro instructions issued.
41	(29) . 1	UCBDVRES	Device reservation indicator. In a system that includes the shared DASD option, this indicator is set equal to the contents of the UCBSQC field after a successful completion of an SIO instruction for a direct access storage device (DASD).
42	(2A) . . 2	UCBRQESV	Address of RQE used to verify the volume serial number in the UCB. Set from UCBLTS after an unsolicited device end interrupt.
44	(2C) 1	UCBFL4	A flag byte.
		1...	A mount request has been issued by the volume serial verification routine.
		.1..	Volume serial verification routine is in control.
		..1.	Indicates a first entry of the volume serial verification routine for this volume.
		...1	Volume label is on an alternate track; the alternate track procedure is in progress.
		.... 1...	Volume has been verified by the volume serial verification routine.
		.... .xxx	The number of requests for the device from the first user on the queue.
45	(2D) . 3	UCBORSV	Address of the DEB for the first user on the queue for this device.
48	(30) 8	UCBSKA	Address for last Seek, in the form MBBCCHHR.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>Description of Cell in Bin 0</u>			
56 (38)	2	DCELBBNR	Bin number.
+2	. . 1	DCELSTAB	Status byte B - volume status.
		x... ..	Volume sharability:
		0... ..	Sharable.
		1... ..	Not sharable.
		.x... ..	(Reserved bit)
		..1.	DCEPRES - This device was specified in response to a message (IEF2501) listing volumes and device types of volumes specified in PRESRES, but not mounted at IPL.
		...1	Private - Volume use status.
		.... 1...	Public - Volume user status.
		.... .1..	Storage - Volume use status.
		.... ..1.	Joblib data set is on this volume.
		.... ...1	Control volume - A catalog data set is on this volume.
+3	. . . 1	DCELSTAT	Cell/bin status.
		1... ..	Bin is online and a normal cell is mounted in it.
		0... ..	Bin is offline or a ballast cell is mounted in it.
		.x... ..	(Reserved)
		..1.	Reserved. - Mount status of the cell in this bin. (See note A.)
		...1	UNLOAD operator command has been addressed to this bin; the bin has not yet been unloaded.
		.... 1...	Bin is allocated.
		.... .1..	Permanently resident. - The mount status of this cell. (See note A.)
		1100 00..	Bin status is to be changed from online to offline.
		.... ..xx	Not available for assignment because of code referring to SRTESTAT.
Note A:			
If the mount status is neither reserved nor permanently resident, then it is removable.			
+4	. 6	DCEVOLI	Volume serial number.
+10	. . 1	DCELJBNR	Internal job number.
+11	. . . 1	DCELDMCT	Mount verification has been performed.
		0... ..	Mount request has been issued.
		1... ..	Number of data sets opened for this cell.
		.xxx xxxx	
+12	3	DCELVTOC	Address of VTOC, in form TTR.
+15	. . . 1	DCELUSER	Number of data sets allocated to this cell.
End of Description of cell in bin 0.			
72 (48)	16		<u>Description of Cell in Bin 1</u> (Same format as description of cell in bin 0).
88 (58)	16		<u>Description of Cell in Bin 2</u> (Same format as description of cell in bin 0).
104 (68)	16		<u>Description of Cell in Bin 3</u> (Same format as description of cell in bin 0).

This extension is pointed to by the UCBCRWKA field of the UCB, and is not contiguous to the UCB.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>2321 DATA CELL DRIVE SEGMENT (Continued)</u>
152	(98) 16		<u>Description of Cell in Bin 6</u> (Same format as description of cell in bin 0).
168	(A8) 16		<u>Description of Cell in Bin 7</u> (Same format as description of cell in bin 0).
184	(B8) 16		<u>Description of Cell in Bin 8</u> (Same format as description of cell in bin 0).
200	(C8) 16		<u>Description of Cell in Bin 9</u> (Same format as description of cell in bin 0).
216	(D8) 4	UCBWKADA	Address of the direct access UCB extension. First valid field is at offset +104.

UNIT CONTROL BLOCK DEVICE EXTENSION BLOCKS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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2495 Tape Cartridge Reader Extension

This extension is pointed to by the UCBCRWKA field of the UCB, and is not contiguous to the UCB.

0	(0)	24	A retry-channel program: The error recovery procedure (ERP) constructs up to 3 CCWs for whichever type error is encountered. ERP uses this channel program to attempt to recover from the error.
---	-----	----	--

24	(18)	8	CSW save area.
----	------	---	----------------

End of the 2495 Tape Cartridge Reader Extension

1285/1287/1288 Optical Reader Extension

This extension is pointed to by the UCBCRWKA field of the UCB, and is not contiguous to the UCB.

0	(0)	1	A binary count of data check errors.
1	(1)	. 1	A binary count of incorrect length errors.
2	(2)	. . 1	A binary count of equipment check errors.
3	(3)	. . . 5	Reserved.

End of the 1285/1287/1288 Optical Reader Extension

Magnetic Tape Extension

This extension is pointed to by the UCBXTN field of the UCB, and is not contiguous to the UCB.

0	(0)	8	UCBROR	CCW for opposite-direction recovery.
| 8	(8)	2	UCBSUM	Reserved.

UNIT CONTROL BLOCK DEVICE EXTENSION BLOCKS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>Magnetic Tape Extension (Continued)</u>			
10	(A) . . 1	UCBTRT	Temporary read error threshold (if 0, EVA is not in effect). A binary number from 1 through 255 as selected at SYSGEN time on the SCHEDULR macro: EVA=(n1,n2); n1= temporary read error threshold.
11	(B) . . . 1	UCBTWT	Temporary write error threshold (if 0, EVA is not in effect.) A binary number from 1 through 255 as selected at SYSGEN time on the SCHEDULR macro: EVA=(n1,n2); n2= temporary write error threshold.
12	(C) 1	UCBTR	The number (binary) of temporary read errors that has occurred.
13	(D) . 1	UCBTW	The number (binary) of temporary write errors that has occurred.
14	(E) . . 2	UCBSIO	The number (binary) of start I/O operations that has occurred.
16	(10) 1	UCBPR	The number (binary) of permanent read errors that has occurred.
17	(11) . 1	UCBPW	The number (binary) of permanent write errors that has occurred.
18	(12) . . 1	UCBNB	The number (binary) of noise blocks that has been encountered.
19	(13) . . . 1	UCBMS	For tape units with extended sense information, mode set operation code for the last tape operation.
20	(14) 2	UCBERG	The number (binary) of erase gaps that has been encountered.
22	(16) . . 2	UCBCLN	The number (binary) of cleaner actions that has occurred.

End of the Magnetic Tape Extension

Direct Access Extension

This extension is not contiguous to the UCB but is pointed to by the address contained at offset 60 (decimal) in the direct access storage device segment, or by the address contained at offset 216 (decimal) in the 2321 Data Cell Drive segment. The first valid field of this extension is at offset 104.

104	(68) 40		Error recovery storage and work area.
144	(90) 40		Track overflow work area. If track overflow is installed, these additional bytes are always a part of the direct access UCB extension.

End of the Direct Access Extension

UNIT CONTROL BLOCK DEVICE EXTENSION BLOCKS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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UCS 1403 Printer Extension

This extension is pointed to by the UCBXTADR field of the UCB, and is not contiguous to the UCB.

0	(0) 4	UCBUCSID	UCS image identification.
---	-------	----------	---------------------------

4	(4) 1	UCBUCSOP	UCS options.
		1... ..	UCS image is a default image.
		.1.. ..	UCS image is in FOLD mode.
		..xx xxxx	(Reserved bits).

5	(5) . 3		Reserved.
---	---------	--	-----------

End of the UCS 1403 Printer Extension

UCS 3211 Printer Extension

This extension is pointed to by the UCBXTADR field of the UCB, and is not contiguous to the UCB.

0	(0) 4	UCBUCSID	UCS image identification.
---	-------	----------	---------------------------

4	(4) 1	UCBUCSOP	UCS options.
		1... ..	UCS image is a default image.
		.1.. ..	UCS image is in FOLD mode.
		.... ...1	UCBUJSCPE - UCS image has parity error.
		..xx xxx.	(Reserved bits).

5	(5) . 1	UCBFCBOP	FCB options.
		1... ..	FCB image is a default image.
		.xxx xxxx	(Reserved bits).

6	(6) . . 1		Reserved.
---	-----------	--	-----------

7	(7) . . . 1	UCBERCNT	Contains a count of the errors that have occurred. The count, which may wrap around, is written in standard OBR records (one per error) and in new device-dependent OBR records (0 to 3 per error) and serve to relate to each other the standard and device-dependent OBR records that pertain to each error.
---	-------------	----------	--

8	(8) 4	UCBFCBID	The FCB image identification.
---	-------	----------	-------------------------------

12	(C) 4	UCBERADR	The address of the ERP logout area.
----	-------	----------	-------------------------------------

End of the UCS 3211 Printer Extension

UNIT CONTROL BLOCK DEVICE EXTENSION BLOCKS

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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3270 Display System Devices
3284 and 3286 Printer Extension

16	(10)	1	Byte 1	X-	Model Code.
			0001 0001	-1	Model 1.
			0001 0010	-2	Model 2.

17	(11)	1	Byte 2		No optional features.
----	------	---	--------	--	-----------------------

18	(12)	. . . 1	Byte 3		Device Class.
			0001 0000	10	Graphics.

19	(13)	. . . 1	Byte 4		Unit Type.
			0000 1010	0A	3284 Printer.
			0000 1011	0B	3286 Printer.

End of the 3284 and 3286 Printer Extension

UCB Sense Extension

This extension is pointed to by the UCBSNADR field of the UCB, and is not contiguous to the UCB.

0	(0)	n	UCBSNSXT		Sense information. The length n is the value in UCBNBRSN.
---	-----	---	----------	--	---

		m			Reserved. The length m is the number of bytes needed to fill out the extension to a fullword boundary. to fill out the extension to a fullword boundary.
--	--	---	--	--	--

The UCBTYP Field in the UCB

The UCBTYP field completely describes the device type. It is the exact analog of the full device name, except that it includes terminal adapters and similar units when they are part of the necessary description. Figure 29B shows the type of entries in the field. Following the illustration, the field is described separately by type of entry and by type of device.

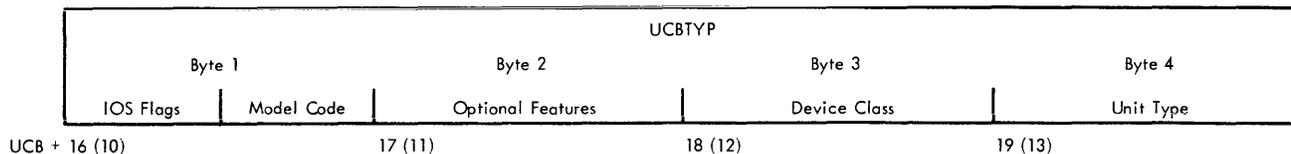


Figure 29B. The UCBTYP Field

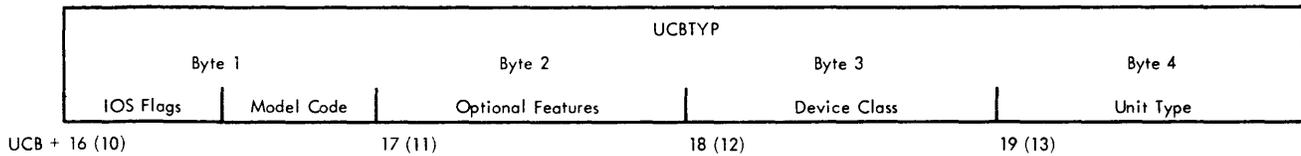
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
---------------	----------------------------	----------------------	------------------	---

ENTRY

Devices Other Than Graphic Devices

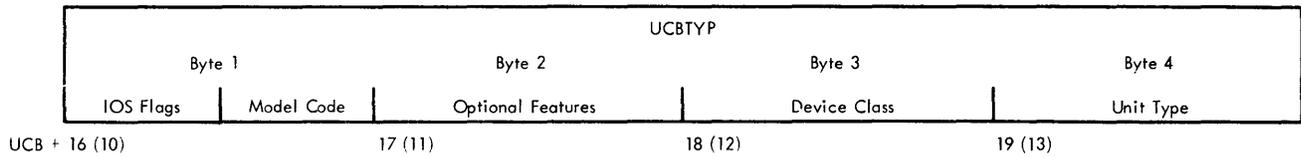
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>Byte 1</u>				
16 (10)	1	xxxx x... .... .1. .... ..1. .... ..0. .... ...1		I/O supervisor flags. (Reserved bit) Overrunable device. Burst mode. Byte mode. Data chaining.
<u>Graphic Devices</u>				
		xxxx 0001 0011 xxxx	1- 3-	Device class. 1053, 2260 2250 Model code. See following description of UCBTYP field by device class.
17 (11)	. 1			<u>Byte 2</u> Optional features. See following description of UCBTYP field by device class.
18 (12)	. . 1			<u>Byte 3</u> Device class. 08 Unit record. 10 Graphics. 20 Direct access storage. 40 Communication equipment. 80 Magnetic tape.
19 (13)	. . . 1			<u>Byte 4</u> Unit type. See following description of UCBTYP field by device class.

DESCRIPTION OF THE UCBTYP FIELD BY DEVICE CLASS:
UNIT RECORD DEVICE CLASS



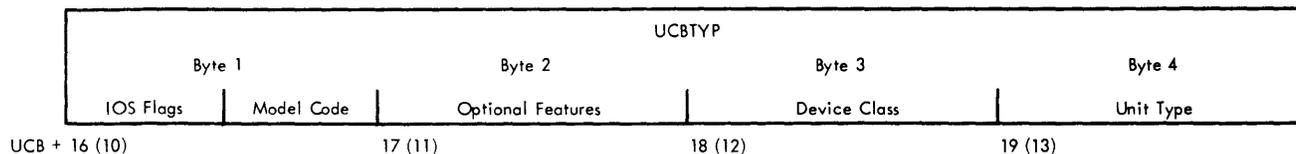
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	Byte 1		
		xxxx		I/O supervisor flags.
		x...		(Reserved bit)
		.1..		Overrunable device.
		..1.		Burst mode.
		..0.		Byte mode.
		...1		Data chaining.
		.... xxxx		Model code.
		.... 0000		With 1442, 2520 Read Punch.
		.... 0001	-1	Punch only.
17 (11)	. 1	Byte 2		
		1...		Optional features. Universal character set (UCS).
		.x.. xxx.		(Reserved bits)
		.... ...1		Card image (binary mode).
		..1.		3525 two-line feature.
		...1		3525 multi-line feature.
18 (12)	. . 1	Byte 3		
			08	Device class. Unit record.
19 (13)	. . . 1	Byte 4		
				Unit type.
			01	2540 Card Reader.
			02	2540 Card Punch.
			03	1442 Card Read Punch.
			03	2596 Card Read Punch.
			04	2501 Card Reader.
			05	2520 Card Read Punch.
			06	3505 Card Reader.
			08	1403 Printer (models N1,2,3,7) and 1404 Printer (continuous form support only).
			09	3211 Printer
			0A	1443 Printer (model N1 only).
			0B	2245 Printer.
			0C	3525 Card Punch.
			10	2671 Paper Tape Reader.
			18	2495 Tape Cartridge Reader
			1A	1285 Optical Reader.
			1B	1287 Optical Reader.
			1C	1288 Optical Page Reader.
			1D	1419 Magnetic Character Reader (primary control unit).
			1E	1419 Magnetic Character Reader or 1275 Optical Reader Sorter (secondary control unit).
			1F	1275 Optical Reader Sorter (primary control unit).
			20	1052 Console Printer-Keyboard.
			22	3210 Console Printer-Keyboard.
			23	3215 Console Printer-Keyboard.

MAGNETIC TAPE DEVICE CLASS



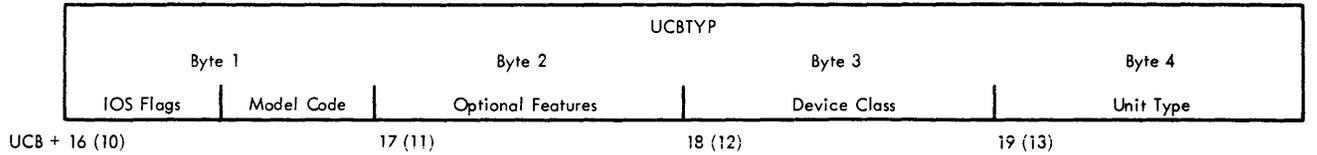
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
				Byte 1
16	(10) 1	xxxx		I/O supervisor flags.
		0...		(Reserved bit)
		.1..		Overrunable device.
		..1.		Burst mode.
		..0.		Byte mode.
		...1		Data chaining.
		.... xxxx		Model code.
		.... x.xx		(Reserved bits)
		.... .1..		Phase-encode code (Models 4, 5, 6, 7)
17	(11) . 1	Byte 2		Optional features.
		1...		7-track compatibility (2400, 3400).
		.1..		Data conversion (2400, 3400).
		..1.		Dual-density (2400, 3400).
		...x xxxx		(Reserved bits)
18	(12) . . 1	Byte 3		Device Class.
			80	Magnetic tape.
19	(13) . . . 1	Byte 4		Unit type.
			01	2400 series magnetic tape device.
			03	3400 series magnetic tape device.

DIRECT ACCESS STORAGE DEVICE CLASS



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
				Byte 1
16	(10)	1	xxxx	I/O supervisor flags.
			x...	(Reserved bit)
			.1..	Overrunable device.
			..1.	Burst mode.
			..0.	Byte mode.
			...1	Data chaining.
			.... 0000	Model code.
17	(11)	. 1	Byte 2	Optional features.
			.1..	Track overflow.
			..1.	This device can be shared between two or more CPUs.
			...1	Rotational position sensing device.
			x... xxxx	(Reserved bits)
18	(12)	. . 1	Byte 3	Device class.
			20	Direct access storage device.
19	(13)	. . 1	Byte 4	Unit type.
			01	2311 Disk Storage Drive.
			02	2301 Parallel Drum.
			03	2303 Serial Drum.
			04	2302 Disk Storage.
			05	2321 Data Cell Drive.
			06	2305 Fixed Head Storage Facility Model 1.
			07	2305 Fixed Head Storage Facility Model 2.
			08	2314 Direct Access Storage Facility.
			09	3330 Disk Storage.

GRAPHICS DEVICES CLASS
2250 Display Unit

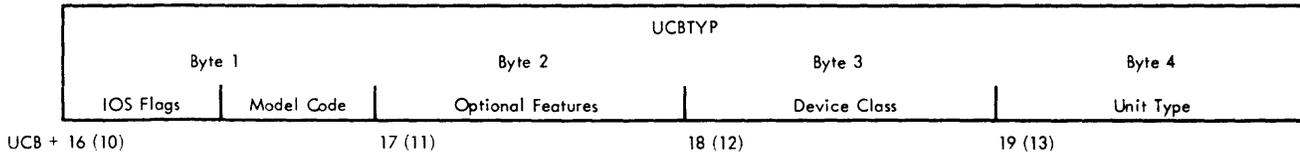


<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1 Byte 1	J-	Device class 1- 1053,2260 3- 2250 -K Model code -1 Model 1. -2 Model 2. -3 Model 3.
17 (11)	. 1 Byte 2		Optional Features <u>Model</u> <u>Optional Features</u> 0- 1,2,3 No optional features. 1- 1,2,3 Programmed function keyboard only. 2- 1,2 Light pen only. 3- 1,2 Programmed function key board, and light pen. 4- 1,2,3 Alphameric keyboard only. 5- 1,2,3 Programmed function keyboard and alphameric keyboard. 6- 1,2 Alphameric keyboard and light pen. 7- 1,2 Alphameric keyboard, light pen and programmed function keyboard. 8- 1,2 Absolute vector graphics only. 9- 1,2 Absolute vector graphics and programmed function keyboard. A- 1,2 Absolute vector graphics and light pen. B- 1,2 Absolute vector graphics, programmed function keyboard and light pen. C- 1,2 Absolute vector graphics and alphameric keyboard. D- 1,2 Absolute vector graphics, programmed function keyboard and alphameric keyboard. E- 1,2 Absolute vector graphic, alphameric keyboard, and light pen. F- 1,2 Absolute vector graphics, alphameric keyboard, light pen and programmed function keyboard.

GRAPHICS DEVICE CLASS
3270 Display System Devices

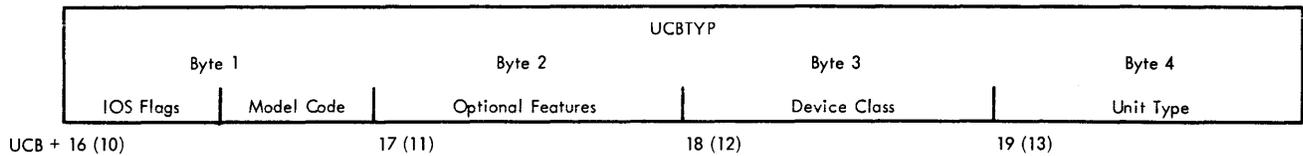
Offset	Bytes and Alignment	Hex. Dig.	Field Description, Contents, Meaning
<u>Additional Optional Features for the 3277</u>			
24	(18)	Byte 1 1... .. .1.. .. ..1. .... ...x xxxx	Additional optional features. Magnetic card reader adapter. Selector pen. Numeric lock. (Reserved bits).
25	(19)	Byte 2 xxxx xxxx	Additional optional features. (Reserved bits).
26	(20)	1	If the device index is 1, this byte contains the number of attentions not serviced in the line group; otherwise, this byte is reserved (local 3270 display system only).
27	(21)	1	Attention handling flags (local 3270 display system only). 1... .. OLDTEP executing flag. .xxx x... (Reserved bits). .... .1.. Read initial pending flag. If flag is 1, a Read Initial is outstanding and waiting for attention interruption. If flag is 0, and the initialized RLN field is nonzero, the second-level attention routine was scheduled to start a read operation. Device index is not 1, this bit reserved. 1. Skip flag. .... ...1 Attention flag.
28	(22)	4	Address of the interruption request block (IRB) that points to the second-level attention routine (local 3270 display system only).
32	(26)	1	Initialized relative line number (local 3270 displays system only). Device index is 1, and this byte is 0, no Read Initial is pending for the line group. If this byte is 1-255, it is the relative line number of the IOB initialized by the BTAM Read/Write routine for a pending Read Initial. Device index is not one, this byte reserved.
36	(2A)	1	The device's relative line number, which is an index to the table of UCB addresses in the DEB (local 3270 display system only).
37	(2B)	3	Control block link (local 3270 display system only). Device index is 1, this field contains the address of the DEB for the line group. Device index is 0, this field contains the address of the UCB with a device index of 1.

GRAPHICS DEVICE CLASS
2260 Display Station



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1 Byte 1	J- 1- 3- -K -1 -2	Device class. 1053, 2260 2250 Model code Model 1. Model 2.
17 (11)	. 1 Byte 2		Optional features <u>Optional Features</u> 0- No optional features. 1- Line addressing only. 2- Numeric keyboard only. 3- Line addressing and numeric keyboard. 4- Alphameric keyboard only. 5- Line addressing and alphameric keyboard. 6- Non-destructive cursor only. 7- Line addressing and non-destructive cursor. 8- Numeric keyboard, and non-destructive cursor.
17 (11)	(Cont)	9- A- B- C- D- E- F- -B -C -D -E	<u>Optional Features</u> Line addressing, numeric keyboard and non-destructive cursor. Alphameric keyboard and non-destructive Cursor. Line addressing, alphameric keyboard and non-destructive cursor. Data entry keyboard only. Data entry keyboard and line addressing. Data entry keyboard and non-destructive cursor. Data entry keyboard, line addressing, and non-destructive Cursor. 2848 Display Control, Model 1 with 240 character display capability. 2848 Display Control, Model 2 with 480 character display capability. 2848 Display Control, Model 3 with 960 character display capability. 2848 Display Control, Model 21 with 240 character display capability. 2848 Display Control, Model 22 with 480 character display capability.
18 (12)	. . 1 Byte 3	10	Device class Graphics.
19 (13)	. . . 1 Byte 4	03	Unit type 2260 Display Station.

GRAPHICS DEVICE CLASS
Other Than 2250 or 2260



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1 Byte 1	J-	Device class. 1- 1053, 2260, Model 85 Operator Console with CRT display. 3- 2250 -K Model code -0 Model 85 Operator Console. -0 2280 Film Recorder. -0 2282 Film Recorder Scanner. -4 1053 Printer, Model 4.
17 (11)	. 1 Byte 2		Optional features <u>Device</u> 00 1053 No optional features. 00 2280 No optional features. 00 2282 No optional features. 00 Model 85 Operator Console No optional features.
18 (12)	. . 1 Byte 3	10	Device class Graphics.
19 (13)	. . . 1 Byte 4		Unit type 04 1053 Printer. 05 2280 Film Recorder. 06 2282 Film Recorder/Scanner. 07 Model 85 Operator Console (SF 5450). 08 3066 System Console.

COMMUNICATION EQUIPMENT DEVICE CLASS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
		.... ..xx		Binary Value 0 SADZER 1 SADONE 2 SADTWO 3 SADTHREE
		xxx.		Keyboard Type (local 3277 display station)
		000.		No keyboard
		001.		66-key EBCDIC typewriter keyboard
		010.		78-key EBCDIC typewriter keyboard
		011.		66-key data entry keyboard
		100.		78-key operator console keyboard
		101.		66-key ASCII typewriter keyboard
		110.		78-key ASCII typewriter keyboard
		....1		Audible Alarm (local 3277 display station)
		.... xxx.		Character Generator Type (local 3277 display station)
		.... 000.		Domestic character generator
		.... 001.		ASCII A character generator
		.... 010.		ASCII B character generator
		.... 011.		United Kingdom character generator
		.... 100.		French character generator
		.... 101.		German character generator
		.... ...x		Character Generator Case (local 3277 display station)
		.... ...0		Monocase character generator
		0000 0000		No Optional Features (local 3277 display station)
18	(12)	. . . 1	Byte 3	Device class. 40 Communication equipment. 10 Graphics.
19	(13)	. . . . 1	Byte 4	Adapter Type. 1- IBM Terminal Adapter, Type I. 2- IBM Terminal Adapter, Type II. 3- IBM Telegraph Adapter. 4- Telegraph Adapter, Type I. 5- Telegraph Adapter, Type II. 6- World Trade Telegraph Adapter. 7- Synchronous Adapter, Type I. 8- IBM Terminal Adapter, Type III. 9- Synchronous Adapter, Type II. Control Unit -1 2702 -2 2701 -3 2703 Unit Type (local 3270 display system). 09 3277 Display Station. 0A 3284 Printer. 0B 3286 Printer.

Volume Label

A volume label is 80 characters long and identifies the volume and its owner. Figure 30 shows the volume label format. Description of the fields follows the illustration. Figure 30A shows the ASCII tape volume label format. A description of the fields follows the illustration.

Magnetic tape volumes, the volume label is the first record on the tape. On nine-track tape it is written in EBCDIC, on seven-track tape in BCD.

On direct access volumes, it is record number three, following the two IPL records. It is recorded as an 84 byte physical record consisting of a 4 byte key area containing 'VOL1', and an 80 byte data area. Both areas are written in EBCDIC.

VOLUME LABEL

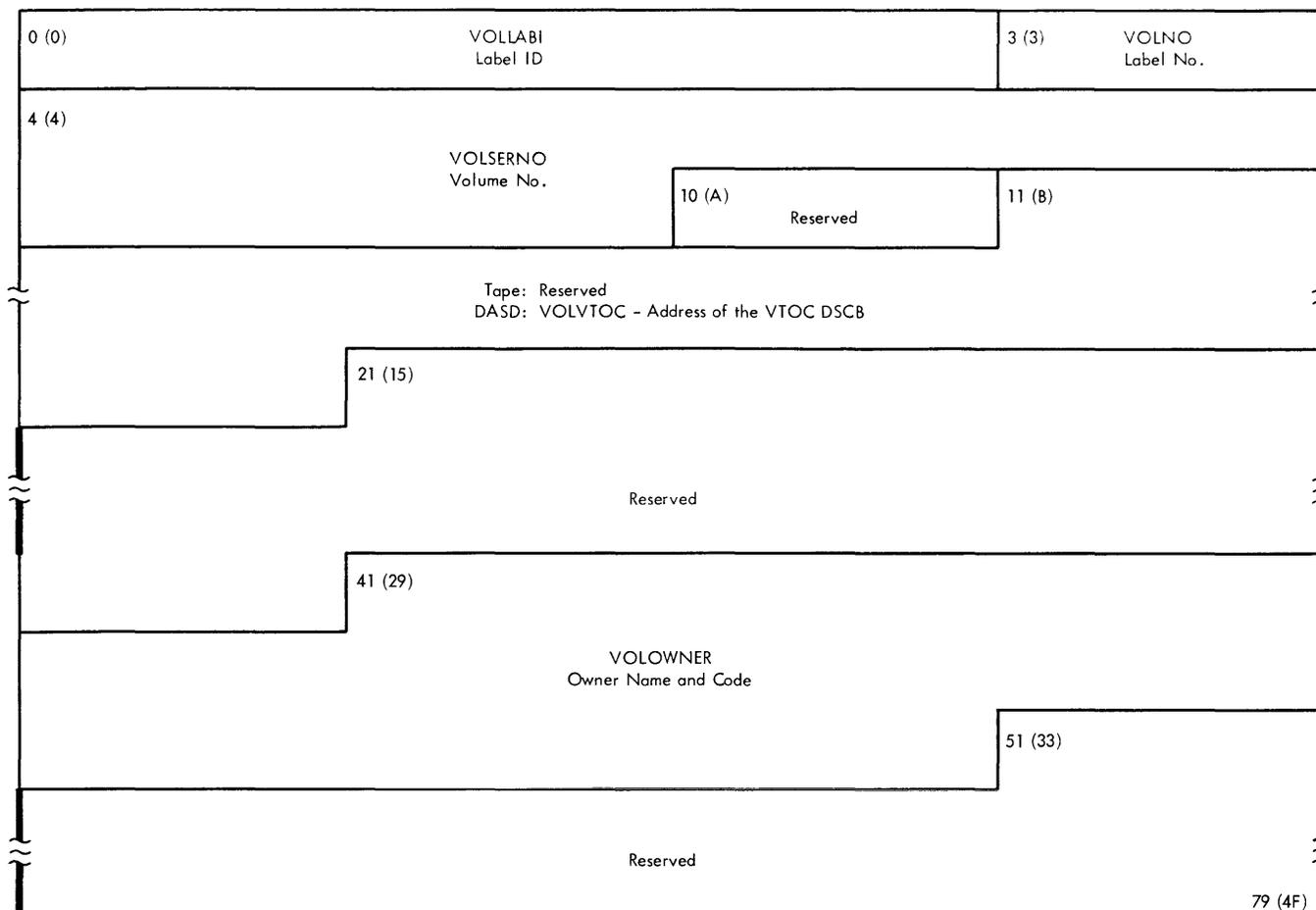


Figure 30. Volume Label

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3	VOLLABI	Label identifier - VOL.
3	(3) . . . 1	VOLNO	Volume label sequence number.
4	(4) 6	VOISERNO	Volume serial number that uniquely identifies the volume. This field may contain from one to six alphabetic or numeric characters, left justified with blanks in the remainder of the field.
10	(A) . . 1		Reserved - must be recorded as EBCDIC zero.
11	(B) . . . 5		Magnetic Tape: Reserved - must be recorded as blanks.
11	(B) . . . 5	VOLVTOC	Direct Access Storage: The CCHHR address of the VTOC DSCB on this volume.
16	(10) 5		Reserved - must be recorded as blanks.
21	(15) . 20		Reserved - must be recorded as blanks.
41	(29) . 10	VOLOWNER	The name and address code of the installation or user to whom the volume belongs.
51	(33) . . . 29		Reserved - must be recorded as blanks.

ASCII Volume Header Label

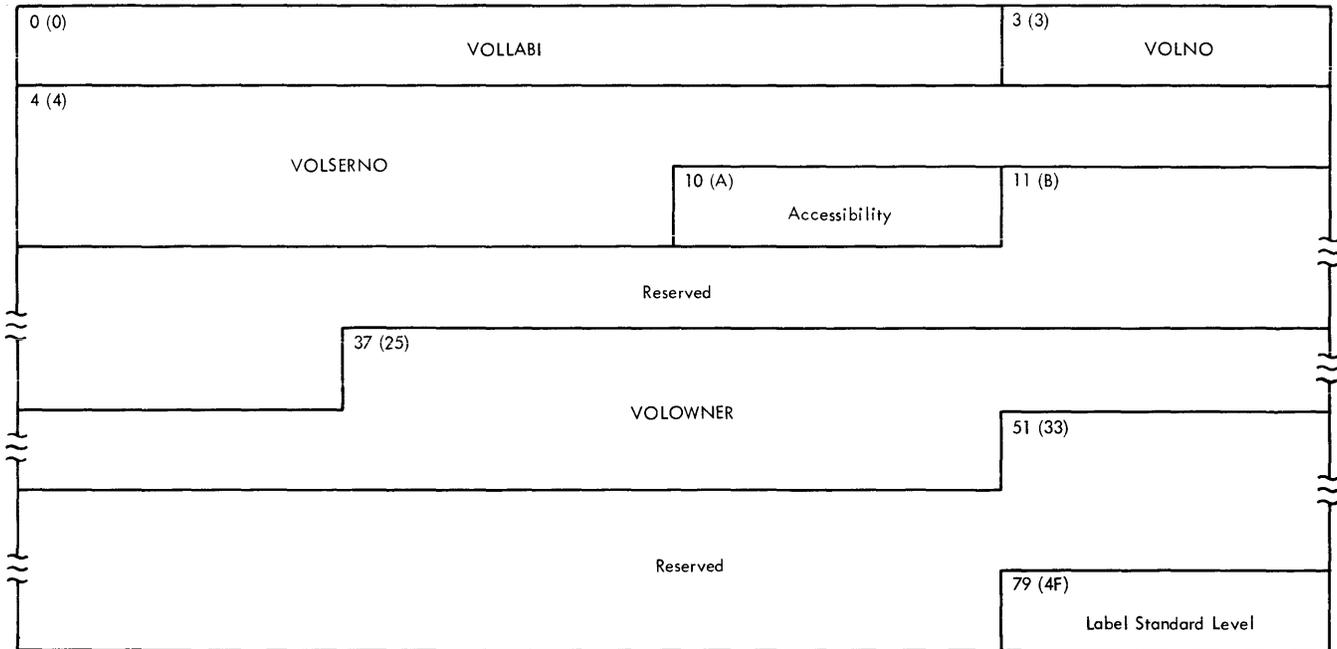


Figure 30A. ASCII Volume Label

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3		Label identifier - VOL.
3	(3) . . . 1		Volume label number-must be one.
4	(4) 6		Unique identification permanently assigned to the owner to identify this physical volume.
10	(A) . . 1		Indicates any restriction on who may have access to the information on this volume. A space indicates unlimited access. Any other character means that this volume is protected and will not be processed. A message will be written to the operator.
11	(B) . . . 26		Reserved for future use. Must be recorded as spaces.
37	(25) . 14		Identifies the owner of the physical volume.
51	(33) . . . 28		Reserved for future use. Must be recorded as spaces.
79	(4F) . . . 1		One indicates the labels and data formats on this volume conform to the requirements of this standard.

Volume Table of Contents

The volume table of contents (VTOC) is a data set consisting of data set control blocks (DSCB). The format of the VTOC, and its relation to user labels, is shown in Figure 31. A description follows the illustration. (The DSCBs are describes separately, under that heading, in this publication.)

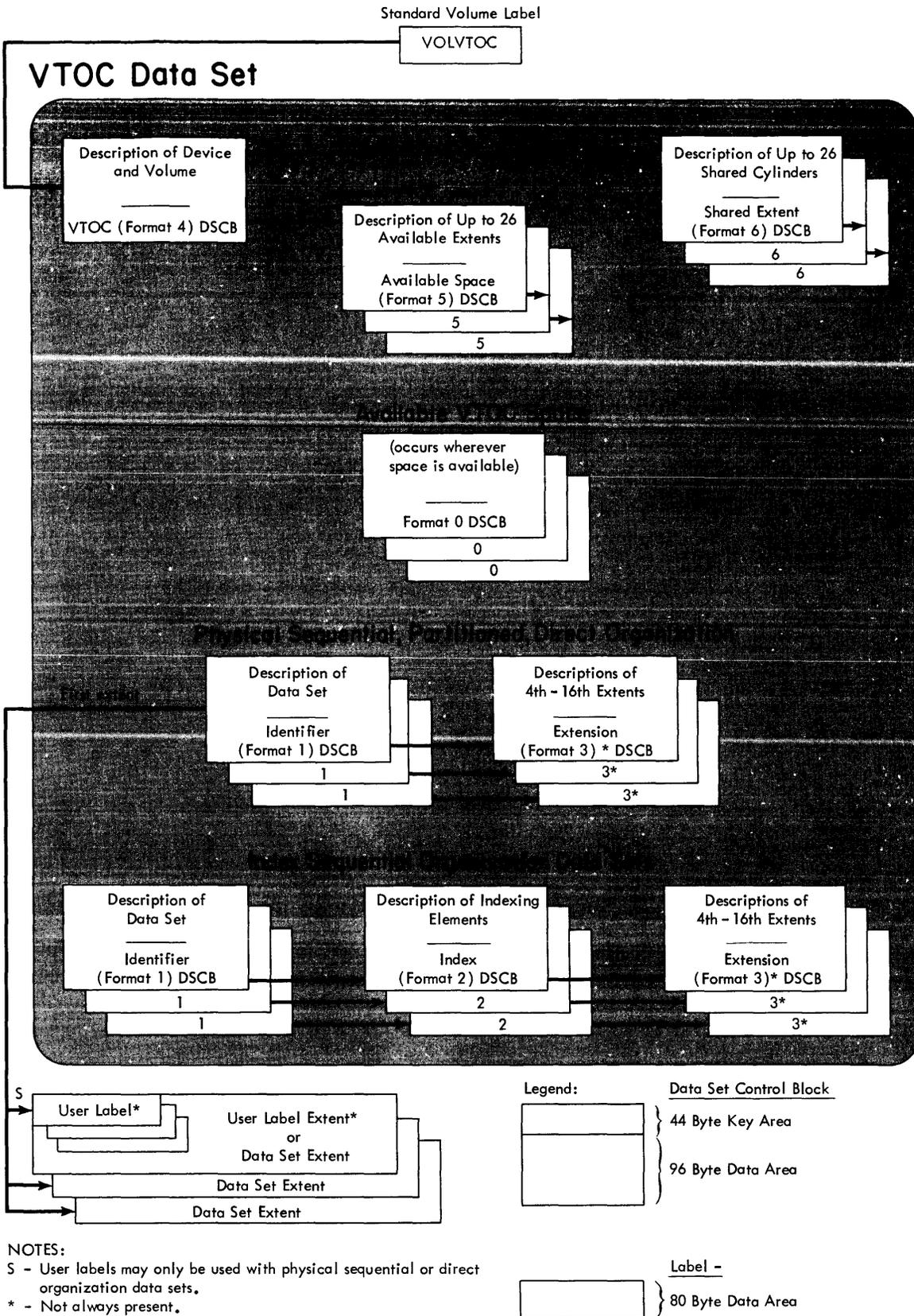


Figure 31. Volume Table of Contents

Volume Table of Contents

The volume table of contents (VTOC) is a data set consisting of control blocks that describe the contents of a direct access storage device volume. (The data set has a single extent; its address is found in the standard volume label. See figure 39.) On secondary storage, the control blocks that make up this data set consist of a 44 byte key segment and a 96 byte data segment; in main storage, each forms a 140 byte block. Each 140 byte block makes up a data set control block (DSCB).

Seven DSCB formats exist to accommodate various kinds of information about a volume and the data sets that reside on it. DSCB formats 1, 2, and 3 provide data set information; DSCB format 4 describes the VTOC data set itself, its size and the characteristics of the device it resides on; DSCB formats 5 and 6 describe the available or shared space on the volume. The 140-byte records that are not occupied by one of these DSCBs are called format 0 DSCBs and contain binary zeros. (For additional information about each DSCB format, refer to the DSCB section of this publication.)

At the beginning of the VTOC is a single format 4 DSCB. It is followed by at least one format 5 DSCB. If there are any more format 5 DSCBs, they are chained from the first format 5 DSCB.

If there are any format 6 DSCBs, they are chained from the format 4 DSCB. For every data set on the volume there is a format 1 DSCB, and also a format 2 DSCB if the data set has index sequential organization. Format 1 DSCBs are found by using a Search (Equal) command with an argument of the DSNAME operand; they are not chained to one another nor to the format 4 DSCB. If the data set has more than three extents, a format 3 DSCB is chained from the format 1 DSCB, or the format 2 DSCB in the case of index sequential organization. Any space remaining in the VTOC extent carries format 0 DSCBs.

User labels, if used, occupy the first extent described by a format 1 DSCB. This extent, a separate one for each data set, is one track long; the labels form 80 byte data segments.

Time-Sharing Option Control Blocks

The time sharing (TSO) control blocks described in this portion of the manual are (1) those that can be used to write and interpret TSO commands, and (2) those required to replace the TSO driver routines with user-written driver routines. For description of the TSO control blocks not found in this manual, see the publications IBM System/360 Operating System: Service Aids, GC28-6719 and IBM System/360 Operating System: TSO Control Program PIM, GY27-7199.

Driver Parameter Area

The driver parameter area (DPA) contains parameter information for the time sharing driver. The DPA is 96 bytes long and is part of the resident portion of the time sharing sub-system.

Figure 32 illustrates the format of the DPA. Descriptions of the fields follow the illustration.

DRIVER PARAMETER AREA

0 (0)	DPATJID Time-Sharing Job ID	2 (2)	Reserved	3 (3)	DPAENT Entry Code
4 (4)	DPAVAR Variable Information				
8 (8)	DPATOD The Current Time of Day				
12 (C)	DPATSIA Address of TSIA				
16 (10)	DPADCA Address of Driver Control Area				
20 (14)	DPASILF2 Address of Entry Point IKJSILF2				
24 (18)	DPASAVE DPA Save Area				

95 (5F)

Figure 32. Driver Parameter Area

<u>DRIVER PARAMETER AREA</u>					
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>		
0	(0) 2	DPATJID	The time sharing job ID (TJID) associated with the request.		
2	(2) . . 1		Reserved.		
3	(3) . . . 1	DPAENT	Entry code identifying the reason for entry to the time sharing driver.		
4	(4) 4	DPAVAR	Contents of register 1 on entry to the time sharing interface program (TSIP) or, on return from the time sharing driver, any return information for the TSIP caller.		
8	(8) 4	DPATOD	The current time of day in timer units.		
12	(C) 4	DPATSIA	The address of the time sharing interface area (TSIA).		
16	(10) 4	DPADCA	The address of the driver control area.		
20	(14) 4	DPASILF2	The address of the entry point of the system-initiated logoff routine (IKJSILF2).		
24	(18) 72	DPASAVE	The driver parameter area (DPA) save area.		

Environment Control Table

The environment control table (ECT) is a 32-byte data area constructed by the terminal monitor program (TMP) initialization routine (IKJEFT01). It contains information about the user's environment in the foreground region. This data area resides in subpool 1 and is updated by the command processors. It is used by the command processors and the TMP processors.

An explanation of the fields of the ECT follows Figure 33.

ENVIRONMENT CONTROL TABLE

0 (0)	ECTRCD ABEND Indicator	3 (3)	ECTRCD Command Processor Return Code
4 (4)	ECTIOWA Address of I/O Work Area		
8 (8)	ECTMSGF Msg Delete Indicator	9 (9)	ECTMSG Address of Second Level Message Chain
12 (C)	ECTPCMD Name of Primary Command		
20 (14)	ECTSCMD Name of Subcommand		
28 (1C)	ECTSWS Switches		ECTDDNUM Counter for Temporary DDNAMES
32 (20)	ECTUSER Reserved for Installation		
36 (24)	Reserved		

39 (27)

Figure 33. Environment Control Table

ENVIRONMENT CONTROL TABLE

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Descriptor, Contents, Meaning</u>
0	(0) 1	ECTRCDF	
		1...	Indicates that the command processor has abnormally terminated.
		.xxx xxxx	(Reserved bits)
1	(1) . 3	ECTRTCD	The return code from the last command processor. If ECTRCDF is set, this field contains the ABEND code.
4	(4) 4	ECTIOWA	Address of the I/O work area.
8	(8) 1	ECTMSGF	
		1...	Indicates that the second level messages are to be deleted.
		.xxx xxxx	(Reserved bits)
9	(9) . 3	ECTSMMSG	The address of the second level message chain.
12	(C) 8	ECTPCMD	Name of the last primary command entered correctly by the terminal user.
20	(14) 8	ECTSCMD	Name of the last subcommand entered correctly by the terminal user.
28	(1C) 1	ECTSWS	Switches
		1...	ECTNOPD - No operands exist in the command buffer.
		..1.	ECTATRM - The command processor is being terminated by the terminal monitor program.
		...1	ECTLOGF - The logon/logoff command processor has requested the terminal monitor program to log the user off.
		.... 1...	ECTNMAL - No user messages at logon.
		.... .1..	ECTNNOT - No broadcast notices (NOTICES) at logon.
		.x.. ..xx	(Reserved bits)
29	(1D) . 3	ECTDDNUM	Counter for temporary DDNAMES.
32	(20) 4	ECTUSER	Reserved for installation use.
36	(24) 4		Reserved.

Protected Step Control Block

The protected step control block (PSCB) contains accounting information related to a single user. All timing information is in software timer units. A software timer unit is equal to 26.04166 microseconds. The job step control block (JSCB), offset 264, points to the PSCB.

A description of the fields follows Figure 34.

PROTECTED STEP CONTROL BLOCK

0 (0)	PSCBUSER User ID		7 (7)	PSCBUSRL
8 (8)	PSCBGNM Group Name			
16 (10)	PSCBATRI IBM User Attributes		18 (12)	PSCBATR2 Available for Installation
20 (14)	PSCBCPU Cumulative CPU Time Used in Session			
24 (18)	PSCBSWP Cumulative Time Terminal User Resident in Region			
28 (1C)	PSCBLTIM Time of Day at Logon			
32 (20)	PSCBTCPU			
36 (24)	PSCBTSWP Total Time User Resident in Region			
40 (28)	PSCBTCON Total "Connect" Time for User During Accounting Period			
44 (2C)	PSCBTCOI			
48 (30)	PSCBRLGB Address of Re-logon Buffer			
52 (34)	PSCBUPT Address of UPT			
56 (38)	PSCBUPTL Length of UPT		58 (3A)	Reserved
60 (3C)	PSCBRSZ Requested Region Size			
64 (40)	PSCBU Available for Installation Use			
				71 (47)

Figure 34. Protected Step Control Block

PROTECTED STEP CONTROL BLOCK

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 7	PSCBUSER		Contains the user ID left aligned and followed by blanks if necessary.
7	(7) . . . 1	PSCBUSRL		The length of the non-blank portion of the user ID.
8	(8) 8	PSCBGPNM		Group name initialized by logon from the user attribute data set (UADS).
16	(10) 2	PSCBATR1		IBM user attributes.
		Byte 1		
		1... ..		PSCBCTRL - OPERATOR command user.
		.1.. ..		PSCBACCT - ACCOUNT command user.
		..1.		PSCBJCL - SUBMIT, STATUS, CANCEL, OUTPUT command user.
		...x xxxx		(Reserved bits)
		Byte 2		Reserved.
18	(12) . . 2	PSCBATR2		Available for use by the installation.
20	(14) 4	PSCBCPU		The cumulative time used by this terminal user during this session. This field is set to zero during logon.
24	(18) 4	PSCBSWP		The cumulative time that this terminal user has been resident in the region. This field is set to zero during logon.
28	(1C) 4	PSCBLTIM		The actual time of day that this user logged onto the time sharing system for this session.
32	(20) 4	PSCBTCPU		The total CPU time used by this terminal user, excluding the current session.
36	(24) 4	PSCBTSWP		The total time that the terminal user has been resident in the region during this accounting period, excluding the current session.
40	(28) 4	PSCBTCON		The first four bytes of an eight byte field containing the total "connect" time for the user during this accounting period, excluding the current session.
				<u>Note:</u> All times are in 26.04166 microsecond timer units.
44	(2C) 4	PSCBTCO1		Second word of PSCBTCON.
48	(30) 4	PSCBRLGB		Address of the re-logon buffer block.
52	(34) 4	PSCBUPT		Address of the user profile table (UPT).
56	(38) 2	PSCBUPTL		Length of the UPT in bytes.
58	(3A) . . 2			Reserved.
60	(3C) 4	PSCBRSZ		Requested region size in number of 2K blocks.
64	(40) 8	PSCBU		Available for use by the installation.

Time-Sharing Job Block

The time sharing job block (TJB) contains information about a time sharing job's status. This information must be retained in storage while a user is swapped out. TJBs are obtained during time sharing initialization and reside in the time sharing control task region. Status information about terminals is contained in the terminal status block (TSB). The address of the terminal status block is the first word of the TJB.

Figure 35 illustrates the format of a TJB. Descriptions of the fields follow the illustration.

TIME-SHARING JOB BLOCK

0 (0) TJBTSB Address of TSB			
4 (4) TJBATTN	5 (5) TJBSTAX No. of Unscheduled STAX	6 (6) TJBSTAT Status Flags	7 (7) TJBSTAT2 Status Flags
8 (8) TJBEXTNT Address of TJB Extension			
12 (C) TJBRCB Address of RCB			
16 (10) TJBUMSM Address of UMSM			
20 (14) TJBSDCB Address of SWAP DCB			
24 (18) TJBUTTMQ	26 (1A) TJBRESTOR	27 (18) TJBIMSMN	
28 (1C) TJBUSER User Identification			
36 (24) TJBIPPB Address of Chain of Post Blocks			
40 (28) TJBNEWID Region ID	TJBGLUSL STAX Level	TJBTTJD Terminal Job ID	
44 (2C) TJBMONI Flags	45 (2D) TJBSTAT3 Status Flags	46 (2E) TJBLINE Unit Address of Line Being Used	47 (2F)

Figure 35. Time-Sharing Job Block

TIME-SHARING JOB BLOCK

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	TJBTSB	The address of the terminal status block (TSB) that owns this terminal job. If this byte is zero, this job was started by operator command.
4	(4) 1	TJBATTN	The number of unprocessed attentions for this job.
5	(5) . 1	TJBSTAX	The number of scheduled STAX exits.
6	(6) . . 1	TJBSTAT	Status flags. 1... TJB NJB - This TJB is currently unused by TSO. .1... TJB INCOR - This user is currently swapped in. ..1. TJB LOGON - Set by terminal input/output control (TIOC) at dial-up to request logon. ...1 TJB IWAIT - Terminal job is in input wait state. 1... TJB OWAIT - Terminal job is in output wait state. .... .1.. TJB SILF - Indicates that the user is to be logged off. Set by IKJSILF subroutine. .... ..1. TJB DISC - Set by logon/logoff to request TIOC to disconnect line. .... ...1 TJB SILF2- System initiated logoff.
7	(7) . . . 1	TJBSTAT2	Status flags. 1... TJB HUNG - User's communication line is disconnected. .1... TJB HOLD - User is in an output wait due to a hold option. ..1. TJB OCAB - TSO failure resulting in an out-of-main storage abnormal termination. ...1 TJB RNAV - The user cannot be logged onto TSO because of a machine check in region or lack of a large enough region. 1... TJB SURSV - Do not mark the swap unit available for use on next swap-in. .... .xxx (Reserved bits)
8	(8) 4	TJBEXTNT	Address of the TJB extention.
12	(C) 4	TJBRCB	Address of the region control block for this job.
16	(10) 4	TJBUMSM	Address of the user main storage map for this job.
20	(14) 4	TJBSDCB	Address of the swap DCB for this user.
24	(18) 2	TJBUTTMQ	Offset in TT map to first swap data set track map queue entry. Byte 1 1... TJBUTTMP- Parallel swap. .xxx xxxx These bits along with byte 2 contain the offset into the map queue. The map queue contains a chain of allocation units for this user on the swap data set. The address of the queue is in the RCBUTTMQ field of the time sharing region control block. Byte 2 (See explanation of byte 1.)

TIME-SHARING JOB BLOCK

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
26	(1A) . . 1	TJBRSTOR	Restore flags. Tested by the region control task (RCT) restore operation (IKJEAR03).
		1... ..	TJBOWP - Set by terminal input/output coordinator (TIOC) to end an output wait condition.
		.1.. ..	TJBIWP - Set by TIOC to end an input wait condition.
		...1 ..	TJBLGP - Post the ECB that the logon image is waiting for. Set by time sharing control logon and by IKJSILF.
		.... 1...	TJBLWAIT - This user is in a long wait condition. If user is not made ready by restore processing, swap the user out again.
		.... .1..	TJBDDR - Reset DDR nondispatchability flag in TCB whose address is in IORMSCOM.
		.... ..1.	TJBFAT - An attention exit is requested for this user.
		.... ...1	TJBDDND - Set DDR nondispatchability flag in TCB whose address is in IORMSCOM.
		..x.	(Reserved)
27	(1B) . . . 1	TJBUMSMN	The number of map entries in the user main storage map (UMSM).
28	(1C) 8	TJBUSER	The ID of the user owning this job. Padded with trailing blanks.
36	(24) 4	TJBIPPB	The address of the first in a chain of inter-partition post blocks (IPPBs) indicating ECBs to be posted by the restore routine.
40	(28) 1	TJBNEWID	The region ID of the region into which this user should be logged on. When this field is set by the end-of-task routine for logon/logoff, it identifies the new region to which the user will be shifted.
41	(29) . 1	TJBFLUSL	Reserved.
42	(2A) . . 2	TJBTJID	The terminal job ID for this job.
44	(2C) 1	TJBMONI	Flags indicating information requested. Set by the MONITOR subcommand. Used by job management.
		1... ..	TJBMDSN - Indicates that the first non-temporary data set allocated to a new volume should be displayed on this user's terminal as part of the mount message. (Dsname requested.)
		.1.. ..	TJBMJBN - Indicates that the name of each job is to be displayed on this user's terminal when each job is initiated and terminated, and that the unit record allocations are to be displayed when a job step is initiated. (Jobname requested.)
		..1.	TJBMSES - Indicates that when a terminal session is initiated or terminated, a message is displayed on this user's terminal. (Session requested.)
		...1 ..	TJBMSPA - Indicates that the available space on a direct access device is to be displayed on this user's terminal as part of the demount message. (Space requested.)
		.... 1...	TJBMSTA - Indicates that, at the end of a job or job step, certain data set disposition information should be printed with the demount messages. These dispositions are: KEEP, CATLG, or UNCATLG. (Status requested.)

TIME-SHARING JOB BLOCK

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
44	(2C) 1	TJBMONI (Continued) .... .1.. .... ..XX	TJBGETBF-TPUT should attempt to obtain additional buffers for the user before entering a wait condition. (Reserved bits)
45	(2D) . 1	TJBSTAT3 1... .. .... .1.. .xxx x.xx	Status flags. TJBDISC2- This TJB is being disconnected. TJBSOEM- Swap-out error message recursion flag. Reserved.
46	(2E) . . 2	TJBLINE	Binary representation of the unit address of the line being used.

Time-Sharing Interface Area

The time sharing interface area (TSIA) is an eight-byte area plus a four-byte region for each region specified. It is used for communication between the time sharing driver and the time sharing interface program (TSIP).

Figure 36 illustrates the format of the TSIA. Descriptions of the fields follow the illustration.

TIME-SHARING INTERFACE AREA

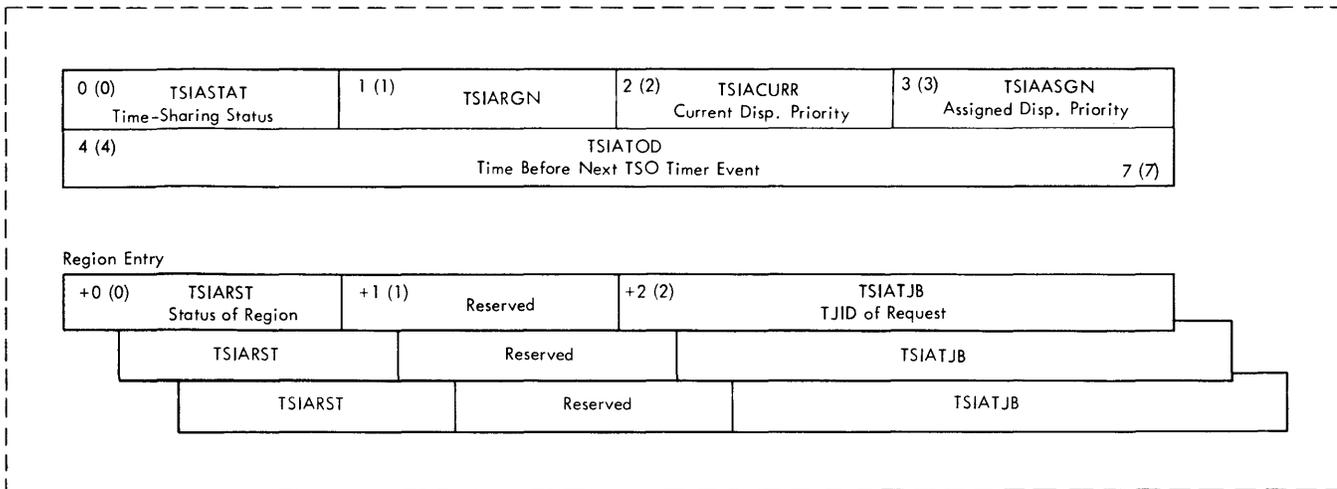


Figure 36. Time-Sharing Interface Area

TIME SHARING INTERFACE AREA

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	TSIASAT	Time-sharing system status. If this byte is zero, the time sharing driver has requested no modifications to the time sharing system. Other-wise, the status bits have the following meanings: 1... TSIATMS- New time of day requested. .1.. TSIAPRI- The region of highest priority has been changed. ..1. TSIAMOD- Modification is required to the TSIARST byte. Each region entry must be checked to determine the status change. ...1 TSIABKL- Make background tasks last. xxxx (Reserved bits)
1	(1) . 1	TSIARGN	Region number of the highest priority time sharing region. If this field is zero, the background region has the highest priority.
2	(2) . . 1	TSIACURR	Current dispatching priority of the time sharing task group.
3	(3) . . . 1	TSIAASGN	Assigned dispatching priority of the time sharing task group.
4	(4) 4	TSIATOD	The length of time before the next TSO timer event. There is one four-byte region entry for each region specified. The first entry begins at offset eight.
+0	(+0) 1	TSIARST	Status of region. .1.. TSIAQUI-Quiesce. Swap out current user. ..1. TSIARES-Restore. Swap in specified user. x..x xxxx (Reserved bits)
+1	(+1) . 1		Reserved.
+2	(+2) . . 2	TSIATJD	Terminal job ID associated with the request.

Time-Sharing Communications Vector Table

The time sharing communications vector table (TSCVT) is a secondary CVT pointed to from CVTTSCNT (offset 229) in the CVT. The TSCVT resides in the time sharing control region; therefore, it exists only while the time sharing region is active. When time sharing does not exist in the system, the CVT pointer to the TSCVT is zero.

Figure 37 illustrates the format of a TSCVT. Descriptions of the fields follow the illustration.

TIME-SHARING COMMUNICATIONS VECTOR TABLE

0 (0)	TSCVTTJB Address of TJB Table	
4 (4)	TSCVTRCB Address of RCB Table	
8 (8)	TSCVTRPT Address of Reference Table	
12 (C)	TSCVFLG TSC Function Request Flags	14 (E) TSCVFL1 Indicators of Atypical TSC Function
16 (10)	TSCVTSDC Address of First SWAP DCB	
20 (14)	TSCVTCUS Current No. of TSO Users	22 (16) TSCVTLUS The Limit No. of TSO Users
24 (18)	TSCVTNTJ No. of TJBs and TSBs Allocated With START	26 (1A) TSCVTSZU Size of TJB
28 (1C)	TSCVTCTR No. of RCBs Allocated With START	30 (1E) TSCVTMUS Maximum No. of TSO Users
32 (20)	TSCVTSAV Address of Save Areas Used by TSC, TSIP, and TSO Dispatcher	
36 (24)	TSCVTECB Address of TSECBTAB	
40 (28)	TSCVTSIA Address of TSIA	
44 (2C)	TSCVTICB Address of TSICB	
48 (30)	TSCVTI01 Address of Entry Point IKJEA101	
52 (34)	TSCVTTQE Address of TQE	
56 (38)	TSCVTI02 Address of Entry Point IKJEAD02	
60 (3C)	TSCVTI03 Address of Entry Point IKJEAD02	

Figure 37. Time-Sharing Communications Vector Table (Part 1 of 2)

TIME-SHARING COMMUNICATIONS VECTOR TABLE

64 (40)	TSCVTD02 Address of Entry Point IKJEAD02	
68 (44)	TSCVTLCQ Address of Top Element on Logon Comm. Queue	
72 (48)	TSCVTTRB Address of Trace Control Block Chain	
76 (4C)	TSCVTLPA Address of First CDE in TSO Link Pack Area	
80 (50)	TSCVTSLF Address of System Initiated Logoff Routine	
84 (54)	TSCVTTSC Address of TSC's TCB	
88 (58)	TSCVTSPL Address of START Parameter List	
92 (5C)	TSCVTRS2 Minimum No. of 2K Blocks for Logon	94 (5E) Reserved
96 (60)	TSCVTSVT SVC Table Entry for TSIP Before START	
100 (64)	TSCVTSVQ SVC Table Entry for QTIP Before START	
104 (68)	TSCVTABN Address of IKJEAT07	
108 (6C)	TSCVTD03 Address of Entry Point IKJEAD03	
112 (70)	TSCVTFLM Address of Entry Point IKJEFLM	
116 (74)	TSCVTQTP Address of Entry Point IKJGGQT1	
120 (78)	TSCVTT08 Address of Entry Point IKJEAT08	
124 (7C)	TSCVTDMP Address of IKJTSDMP	
128 (80)	TSCVTT06 TCB Address of IKJEAT06	

131 (83)

Figure 37. Time-Sharing Communications Vector Table (Part 2 of 2)

TIME-SHARING COMMUNICATIONS VECTOR TABLE

<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	TSCVTTJB		The address of the time sharing job block (TJB) table. The TJB table is an indexed table containing the TJBs for the maximum number of users allowed to use TSO.
4	(4) 4	TSCVTRCB		The address of the region control block (RCB) table. The RCB table is an indexed table containing the RCBs for the maximum number of regions to be used by TSO.
8	(8) 4	TSCVTRPT		The address of the reference pointer table used by the TIOC.
12	(C) 2	TSCVTFLG		Flags used to indicate functions requested from time sharing control.
		Byte 1		
		1... ..		TSCSWPND - Swap ended.
		.1.. ..		TSCSWPBG - Swap should be started.
		..1.		TSCLOGON - Logon required.
		...1		TSCDISC - Disconnect required.
		.... xxxx		Reserved.
		Byte 2		Reserved.
14	(E) . 2	TSCVTFL1		Flags used to indicate atypical function required of time sharing control (TSC)
		Byte 1		
		1... ..		TSCSSTOP - SYSTEM STOP requested and TSC is stopping.
		.1.. ..		TSCRSTOP - REGION STOP requested.
		..1.		TSCASTOP - ABEND-STOP flag to tell TSC to stop time sharing. Set by TSO/RMS interface routine when TCAM incurs a machine check and by the TCAM STAE exit routine when TCAM abnormally terminates.
		...x xxxx		(Reserved bits)
		Byte 2		Reserved.
16	(10) 4	TSCVTSDC		The address of the first DCB for SWAP data sets.
20	(14) 2	TSCVTCUS		Current number of users logged onto TSO. If this number is not less than the number in TSCVTLUS, a request to logon will not be honored.
22	(16) . 2	TSCVTLUS		The limit number of users that can be logged on TSO.
24	(18) 2	TSCVTNTJ		The number of TJBs (exclusive of the dummy TJB for TJID=0) and time sharing blocks (TSBs) allocated by TSO when the START command was issued. This value must be greater then or equal to value in TSCVTLUS.
26	(1A) . 2	TSCVTSZU		The size of the TJB in bytes.
28	(1C) 2	TSCVTCTR		The number of RCBs allocated by TSO when the START command was issued.
30	(1E) . 2	TSCVTMUS		The maximum number of users allowed to use TSO.
32	(20) 4	TSCVTSAV		The address of the save areas used by TSC, the time sharing interface program (TSIP), and the time sharing dispatcher.
36	(24) 4	TSCVTECB		The address of the the TSECBTAB control block which contains time sharing ECBs.

TIME-SHARING COMMUNICATIONS VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
40	(28) 4	TSCVTSIA	Address of the time sharing interface area (TSIA).
44	(2C) 4	TSCVTICB	The address of the the time sharing interface control block (TSICB).
48	(30) 4	TSCVTI01	The address of entry point IKJEAI01.
52	(34) 4	TSCVTTQE	The address of the the timer queue element (TQE) used by TSO for time slicing.
56	(38) 4	TSCVTI02	The address of the entry point IKJEAI02 in the time sharing dispatcher.
60	(3C) 4	TSCVTI03	The address of the entry point IKJEAI03 in the time sharing dispatcher.
64	(40) 4	TSCVTD02	The address of the entry point IKJEAD02 or its equivalent in the user written time sharing driver routine.
68	(44) 4	TSCVTLCQ	The address of the first element on the logon communications queue.
72	(48) 4	TSCVTTRB	The address of trace control block chain.
76	(4C) 4	TSCVTLPA	The address of the first contents directory entry (CDE) in the time sharing link pack area.
80	(50) 4	TSCVTSLF	The address of the system initiated logoff routine (IKJEFLF).
84	(54) 4	TSCVTTSC	The address of the time sharing control task's TCB.
88	(58) 4	TSCVTSPL	The address of the start parameter list.
92	(5C) 2	TSCVTRSZ	The minimum region size for the logon routine.
94	(5E) . 2		Reserved.
96	(60) 4	TSCVTSVT	SVC table entry for TSIP (SVC 95) prior to start time sharing .
100	(64) 4	TSCVTSVQ	SVC table entry for QTIP (SVC 101) prior to start time sharing .
104	(68) 4	TSCVTABN	The address of the routine (IKJEAT07) for the abnormal termination of a swapped out user.
108	(6C) 4	TSCVTD03	The address of entry point IKJEAD03 or its equivalent in a user written routine.
112	(70) 4	TSCVTFLM	The entry point address (IKJEFLM) of TSO EXIT from IEFSD263.
116	(74) 4	TSCVTQTP	The entry point address (IKJGGQT1) for the branch entry to the QTAM interface program (QTIP).
120	(78) 4	TSCVTT08	The entry point address to the TSO dump routine (IKJEAT08).
124	(7C) 4	TSCVTDMP	The address of the TSO dump control block (IKJTSMDMP).
128	(80) 4	TSCVTT06	The address of the TCB for the TSO modify routine (IKJEAT06).

User Profile Table

The user profile table (UPT) is a 16-byte data area located in subpool zero. The UPT contains information about the terminal user and is created by the LOGON/LOGOFF scheduler. It is updated by the PROFILE command processor.

Figure 38 illustrates the format of the UPT. Descriptions of the fields follow the illustration.

USER PROFILE TABLE

0 (0) Reserved		2 (2)	
UPTUSER Reserved for Installation Use			
12 (C) UPTSWS User Envir. Switches	13 (D) UPTCDEL Character Deletion	14 (E) UPTLDEL Line Deletion	15 (F) Reserved

Figure 38. User Profile Table

<u>USER PROFILE TABLE</u>			
<u>Offset</u>	<u>Byte and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
0	(0) 2		Reserved.
2	(2) . . 10	UPTUSER	Reserved for installation use.
12	(C) 1	UPTSWS	User environment switches.
		.0..	UPTNPRM-No prompting is to be done.
		.1..	Prompting is to be done.
		..0.	UPTMID-Message identifiers suppressed.
		..1.	Message identifiers printed.
		...0	UPTNCOM-Allow user communication via SEND command.
		...1	No user communication.
		.... 0...	UPTPAUS-No prompting pause for '?' when in non-interactive mode (i.e., when next input is not from terminal.)
		.... 1...	Prompting pause for '?' when in non-interactive mode.
		.... .0..	UPTALD-ATTENTION is not a line delete character.
		.... .1..	ATTENTION has been specified as a line delete character.
		x... ..xx	(Reserved bits)
13	(D) . 1	UPTCDEL	Character deletion control character.
		0000 0000	Backspace (default option).
		0001 0110	Backspace (chosen by user after default has been overridden).
		xxxx xxxx	Character chosen by user.
		1111 1111	User requested no character deletion.
		0110 1101	SHIFT and Backarrow keys pressed together (default for Teletype *terminals).
14	(E) . . 1	UPTLDEL	Line deletion control character.
		0000 0000	ATTN (default option).
		0001 0110	ATTN (chosen by user after default has been overridden).
		xxxx xxxx	Character chosen by user.
		1111 1111	User requested no line deletion.
		0001 1000	X and CTRL keys pressed together (default for Teletype *terminals).
15	(F) . . . 1		Reserved.

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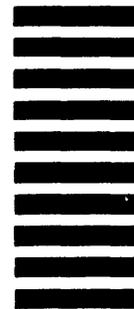
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