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OS

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IBM System/360 Operating System: System Control Blocks

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.

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: SAM, ISAM, DAM, TAM, GAM.

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: Concepts and Facilities, GC28-6535

IBM System/360 Operating System: Supervisor and Data Management Services, GC28-6646

Sixth Edition (June, 1970)

This is a major revision of, and obsoletes, GC28-6628-4. The changes in content made in this edition for this release are enumerated in a summary of revisions which follows the table of contents. Changes to the text, and small changes to illustrations, are indicated by a vertical line to the left of the change; changed or added illustrations are denoted by the symbol • to the left of the caption.

This edition applies to release 19, 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 SRL Newsletter, Order No. GN20-0360, 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, Programming Systems Publications, Department D58, PO Box 390, Poughkeepsie, N. Y. 12602

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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:

PCP - The primary control program configuration of the System/360 Operating System.
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.

MBBCCHHR - Actual Address Format

In the operating system, the actual address for a location on direct-access storage is expressed in the 8 byte format MBBCCHHR. 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.

Table 1 shows how the BBCCHH number relates to the various types of devices.

Table 1. 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:

```
┌──────────────────────────────────────────────────────────────────────────────┐
│          Bytes and  Field    Hex.                                            │
│ Offset   Alignment  Name     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, fcllowed (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.
- O - 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.

POINTER DIAGRAM

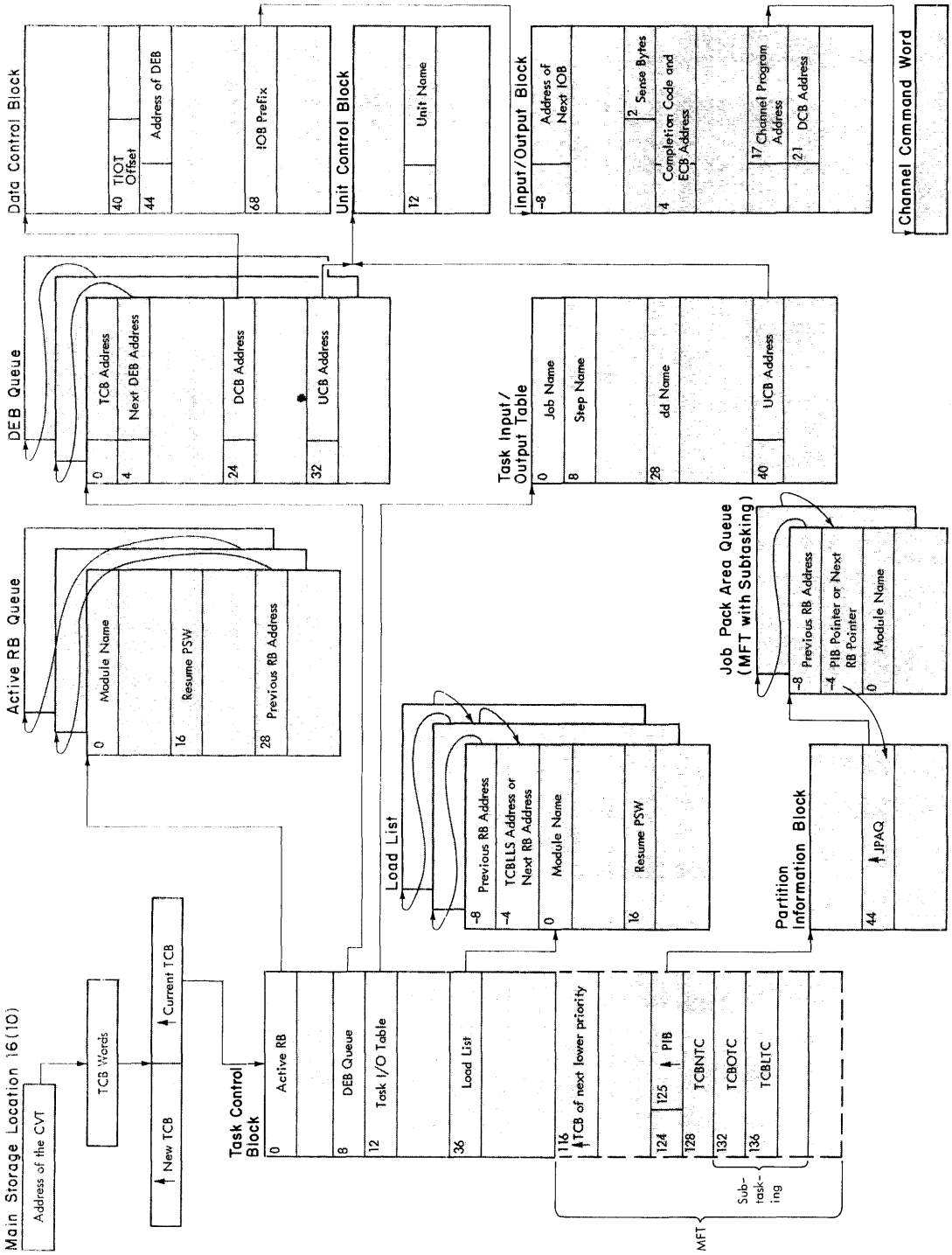
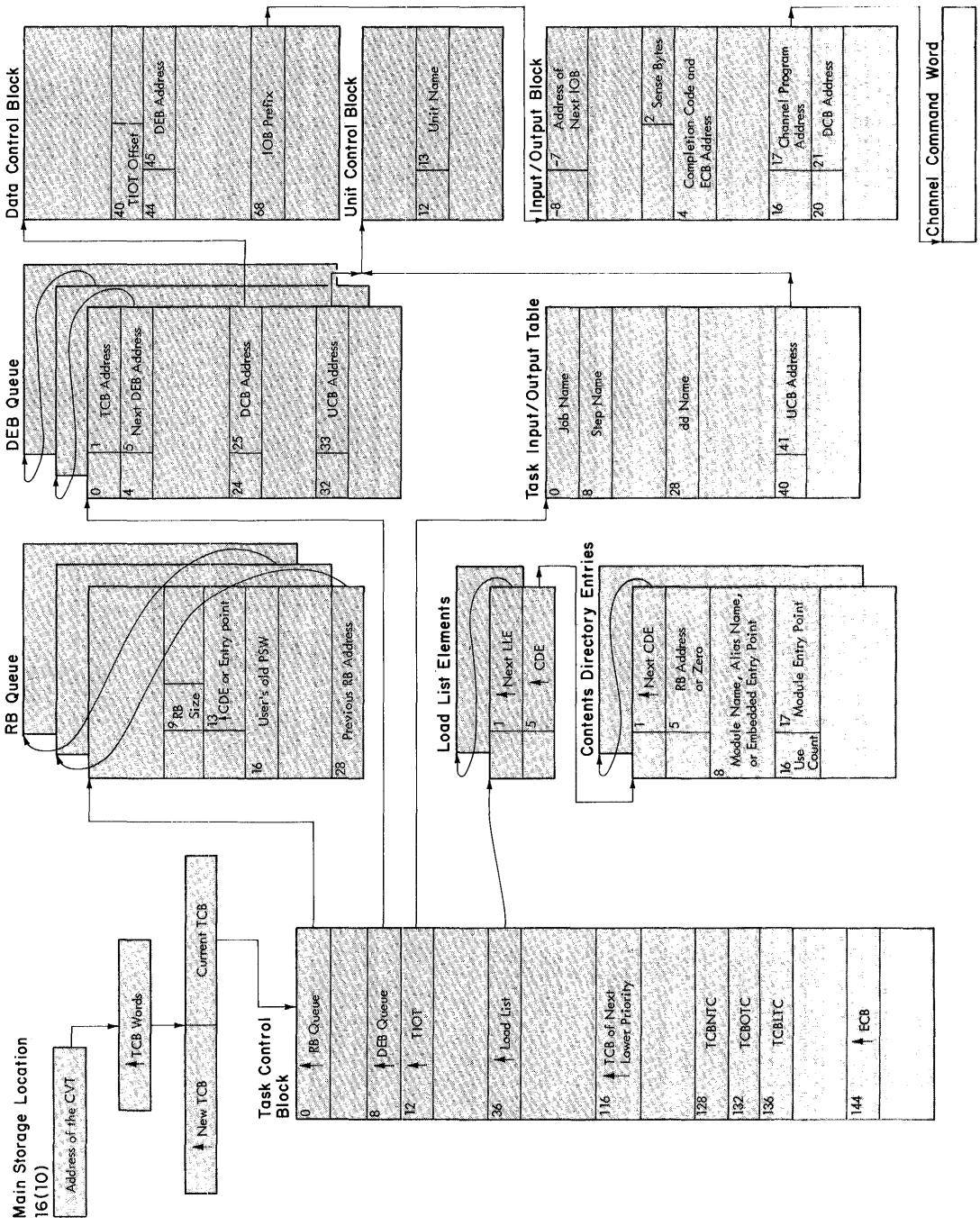


Figure 1A. Pointer Diagram -- PCP, MFT Control Blocks

POINTER DIAGRAM



• 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

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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 CDXLMJP 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 last RB that controlled 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..	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.
			x... ..xx	Reserved bits.
21	(15)	. 3	CDXLMJP	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) CVTXTLER 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) CVTBTERM Address of Entry-Point of ABTERM Routine	
56 (38) CVTDATE Current Date in Packed Decimal	
60 (3C) CVTMSLT PCP: Address of Master Resident Core MFT, MVT: Address of Master Scheduler Resident Data Area	

Continued

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

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)	CVT0FN00 Entry-Point Address to FINCH		
80 (50)	CVTEXIT 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		

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

Continued

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)	CVTMSER PCP: Address of Major QCB MFT, MVT: Address of Master Scheduler Resident Data Area
152 (98)	CVT0PT01 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)	CVT1EF00 Address of IRB Creation Routine
172 (AC)	CVTQOCR PCP: Reserved MFT, MVT: Address of a GFX Parameter List Word, or Zeros
176 (B0)	CVTQMWR PCP: Reserved MFT, MVT: Address of Queue Manager's Communication Data Area
180 (B4)	CVTSNCTR PCP, MFT, MVT: Serial Number Counter
182 (B6)	CVTOPTA Flags
183 (B7)	Reserved
184 (B8)	PCP: CVTCRTTR - TTR of JCT for Restart
187 (BA)	PCP: CVTSTUSA
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)	PCP: Reserved
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 PCP, MFT: Reserved MVT: Address of M65MP Secondary CVT
196 (C4)	CVTSMCA PCP: Zeros MFT, MVT: Address of the SMCA
200 (C8)	CVTABEND PCP, MFT: Reserved MVT: Address of Secondary CVT
204 (CC)	CVTUSER PCP, MFT, MVT: Field Available to the User 207 (CF)

MFT, MVT Extension

208 (D0)	MFT, MVT: Reserved		
212 (D4)	CVTQABST MFT: Reserved MVT: An SVC 13 Instruction	214 (D6)	CVTLNKSC MFT with Subtasking: An SVC 6 Instruction MVT: Reserved
216 (D8)	CVTTSCE MFT: Address of TSCE MVT: Address of First TSCE 219 (DB)		
220 (DC)	Reserved		
224(E0)	CVTRMS RMS Communications Vector 227 (E3)		

MFT With Subtasking Extension

244(F4)	CVTTSKS Maximum Number of TCB Address Table Entries	245 (F5)	CVTTAT Pointer to Partition 0 TBC Address
246 (F8)	CVTSYST Number of SYSGENED TCBs		

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

COMMUNICATION VECTOR TABLE

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
-8	(-8)	2			Reserved.
-6	(-6)	2	CVTMDL		Model ID. The model number of this CPU in hexadecimal.
-4	(-4)	4	CVTRELNO		Release number. The level of this release, in EBCDIC.
0	(0)	4	CVTTCBP		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	CVT0EF00		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	CVT0VL00		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 (MBBCCHHR).
32	(20)	4	CVTPRLTV		Address of entry point of the routine which converts an absolute track address (MBBCCHHR) 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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
60	(3C)	4	CVTMSLT		PCP: Address of master resident core. MFT,MVT: Address of master scheduler resident data area. Note: The PCP Master Resident Core consists of a buffer area followed by the Master Common Area. The MFT/MVT Master Scheduler Resident Data Area consists of a data area followed by the Master Common Area. The Master Common Area is currently at the same offset (136 dec., 88 hex.) from the beginning of both the Master Resident Core and the Master Scheduler Resident Data Area, but its offset from the beginning of the Master Scheduler Resident Data Area may change in future releases. Therefore, in MFT and MVT, 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	CVT0FN00		Address of entry point of the FINCH routine.
80	(50)	2	CVTEXIT		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 BLDL 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 40 PCP
117	(75)	. 3			Address of the DCB for the SYS1.LOGREC (outboard recorder) data set for system environment recording.

COMMUNICATION VECTOR TABLE

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
120	(78)	4	CVTIOQET		Address of request element table.
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		PCP: Address of the major QCB used to share direct access devices. MFT,MVT: Address of master scheduler resident data area. Note: In MFT and MVT, 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	CVT0PT01		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		PCP: Reserved MFT,MVT: 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		PCP: Reserved MFT,MVT: Address of system output communications-data-area (CDA) used by the queue manager, which is stored on an external device.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
180	(B4)	2	CVTSNCTR		PCP,MFT,MVT: 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 LXXXYY.)
182	(B6)	. . 1	CVTOPTA		Option indicators.
			xxx.		MFT,MVT: Indicate which Recovery Management Support (RMS) options are present in the system:
			1...		Channel Check Handler (CCH).
			.1..		Alternate Path Retry (APR).
			..1.		Dynamic Device Reconfiguration (DDR).
			...1		NIP is executing.
			.... 1...		This is an MFT system with the subtasking option.
			.... .x..		MVT: Main Storage Hierarchy Support option indicator.
			.... .1..		Main Storage Hierarchy Support is included in the system.
			.... .0..		Main Storage Hierarchy Support is not included in the system.
			xx		(Reserved bits)
183	(B7)	. . . 1			Reserved.
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.
184	(B8)	3	CVTCRTTR		PCP: TTR address of the modified job control table (JCT) used in automatic restart.
187	(BB)	. . . 1	CVTSTUSA		PCP: Status byte A.
			.... 1...		A requested automatic checkpoint restart was initiated for the job step that caused ABEND processing.
			.... .1..		A requested automatic step restart was initiated for the job step that caused ABEND processing.
			.... ..1.		DD DATA statement in input stream. The bit is set to 0 when the data following the statement is completely read.
			xxxx ...x		(Reserved bits)
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.
188	(BC)	4			PCP: Reserved
192	(C0)	4	CVTMPCVT		PCP, 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		PCP: Must be zeros. MFT,MVT: 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.

COMMUNICATION VECTOR TABLE

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
200	(C8)	4	CVTABEND		PCP,MFT: Reserved MVT: Address of a secondary CVT in the end-of-task (EOT) routine used by the ABEND routine.
204	(CC)	4	CVTUSER		PCP,MFT,MVT: A field available to the user of System/360 Operating System.
					MFT,MVT EXTENSION
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.
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			Reserved.
224	(E0)	4	CVTRMS		Recovery Management Support (RMS) communications vector. Address of a machine status block.
					END OF MFT,MVT EXTENSION.
					MFT WITH SUBTASKING EXTENSION
244	(F4)	1	CVTTSKS		The maximum allowable number of entries in the TCB address table.
245	(F5)	. 3	CVTTAT		Address of the first entry in the TCB address table. The first entry is for Partition 0.
248	(F8)	1	CVTSYST		The number of entries in the TCB address table, for TCBs created during system generation.
					END OF THE MFT WITH SUBTASKING EXTENSION
					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)	CVTWTTCB Address of Dispatcher WAIT Task
12 (c)	CVTTKRM 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

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

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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 (DCB) 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 foundataion 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

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

Direct-Access Storage Devices

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

Magnetic Tape

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

Paper Tape

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

Card Reader, Card Punch

16 (10)	17 (11)	18 (12)
DCBMODE, DCBSTACK Code, Stacker	DCBDEVT Device Type	Reserved

Printer

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

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

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/DCBRESCN 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
28 (1C) DCBIOBAD Address of IOB Prefix When Chained Scheduling is Used or for 1419/1275 Flags and Address of DEB When QSAM Spanned Record, BFTEK=A, During EOV	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

Access Method Segments

EXCP Access Method Interface

	49 (31) Reserved
52 (34) DCBOPTCD Option Codes	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	66 (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		
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		82 (52) DCBLRECL Logical Record Length or Block Size	
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)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				DEVICE INTERFACE SEGMENTS
				DIRECT-ACCESS STORAGE DEVICES INTERFACE
0	(0)	4	DCBRELAD	Partitioned organization data set: Address (in the form TTRN) of member currently used. 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 IEAQFXCO, in MVT systems in CSECT IEAAIHOO.
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
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).
				MAGNETIC TAPE INTERFACE
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. Code
			0010 0011	E Even parity.
			0011 1011	T BCD/EBCDIC translation.
			0001 0011	C Data conversion.
			0010 1011	ET Even parity and translation.
17	(11)	. 1	DCBDEVT	Device type
			1000 0001	2400 Series Magnetic tape unit (7-track or 9-track).

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			MAGNETIC TAPE INTERFACE (Continued)
18 (12)	. . 1	DCBDEN	Tape density - 2400 series magnetic tape units.
			Code 7-tracks 9-tracks
		0000 0011	0 200 bpi -
		0100 0011	1 556 bpi -
		1000 0011	2 800 bpi 800 bpi
		1100 0011	3 - 1600 bpi
19 (13)	. . . 1		Reserved
			PAPER TAPE INTERFACE
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.
			Code
		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
17 (11)	. 1	DCBDEVT	Device type.
		0101 0000	2671 Paper Tape Reader.
18 (12)	. . 1		Reserved
19 (13)	. . . 1		Paper Tape Flags (P.T. Flage).
		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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			CARD READER, CARD PUNCH INTERFACE
16 (10)	1	DCBMODE, DCBSTACK	
			Code
		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
17 (11)	. 1	DCBDEVT	Device type
		0100 0011	1442 Card Read Punch
		0100 0001	2540 Card Reader
		0100 0010	2540 Card Punch
		0100 0100	2501 Card Reader
		0100 0101	2520 Card Read Punch
18 (12)	. . 2		Reserved
			PRINTER INTERFACE
16 (10)	1	DCBPRTSP	Number indicating normal printer spacing.
			Code
		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
18 (12)	. . 1		Test-for-printer-overflow mask (PRTOV mask). If printer overflow is to be tested for, the PRTOV macro instruction sets the mask as follows:
			Code
		0010 0000	9 Test for Channel 9 overflow.
		0001 0000	12 Test for Channel 12 overflow.
19 (13)	. . . 1		Reserved
			1285,1287,1288 OPTICAL READER INTERFACE
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).

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				1285,1287,1288 OPTICAL READER INTERFACE (Continued)
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 DSPLY (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 tc force cn-line correction of unreadable characters.
16	(10)	1	DCBORBYT	Optical reader byte used by BSAM/QSAM.
			1...	SYNAD in contrcl
			.1..	End of file (EOF).
			..1.	Buffers primed (QSAM).
			...x xxxx	(Reserved bits)
17	(11)	. 1	DCBDEVT	DEVICE Type.
			0101 1010	1285 Optical Reader.
			0101 1011	1287 Optical Reader.
			0101 1100	1288 Optical Reader.
18	(12)	. . 1	DCBEIB	Error indicator byte.
			.1..	The 1287 or 1288 scanner was unable to locate the reference mark.
			..1.	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.
			...1	A nonrecoverable error has occurred.
			.... 1...	An equipment check resulted in an incomplete read.
			.... .1..	A wrong-length record condition has occurred.
			.... ..1.	QSAM: The operator entered one or more characters from the keyboard. BSAM: A hopper empty condition has occurred.
			1	A data check has occurred.
			x...	Reserved.
19	(13)	. . . 1		Reserved.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				1419 MAGNETIC CHARACTER READER AND 1275 OPTICAL READER SORTER INTERFACE
				BEFORE DCB IS OPENED
0	(0)	4	DCBSSID	Name of user's stacker select routine.
				AFTER DCB IS OPENED
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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				1419 MAGNETIC CHARACTER READER AND 1275 OPTICAL READER SORTER INTERFACE (Continued)
17	(11)	. 1	DCBDEVT	Device type.
			0101 1101	1419 Magnetic Character Reader.
			0101 1111	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 IBM System/360 Operating System IBM 1419 Magnetic Character Reader, IBM 1275 Optical Reader Sorter, Device Dependent BSAM PLM, GY21-0012, for information concerning the use of this field.
19	(13)	. . . 1		Reserved.
				END OF DEVICE INTERFACE SEGMENTS
				COMMON INTERFACE
20	(14)	1	DCBBUFNO	Number of buffers required for this data set. May range from 0 to a maximum of 255.
21	(15)	. 3	DCBBUFCB	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. Code
			Byte 1	
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	DCBIOBAD	Address of the IOB when chained scheduling is used or for 1419/1275.
28	(1C)	1		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		Address of the old DEB.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			FOUNDATION EXTENSION
32 (20)	1	DCBHIARC, DCBBFTEK, DCBBFALN	
			Code
		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	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 DCBECBW (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
		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	End-of-data address. Address of a user-provided routine to handle end-of-data conditions.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				FOUNDATION EXTENSION (Continued)
36	(24)	1	DCBRECFM	Record Format
				Code
			10..	F Fixed record length.
			01..	V Variable record length.
			11..	U Undefined 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.
				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 1 by EOV when it calls the Close routine for concatenation of data sets with unlike attributes.
			...1	An OPEN has been successfully completed.
			.... 1...	Set to 1 by a problem program to indicate a concatenation of unlike attributes.
			.... .1..	Tape mark has been read.
			.... ..0.	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.
			.... ..1.	Set to 1 on return from the user exit to the I/O support function which took the exit.
			1	Set to 1 by an I/O support function if the DCB is to be processed by that function.

Offset	Bytes and Address	Field Name		Field Description, Contents, Meaning
				FOUNDATION SEGMENT -- BEFORE OPEN (Continued)
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.
				EXCP ACCESS METHOD
		Byte 1		Code
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..		MFT and MVT only: 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		BSAM - Input
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		BSAM - Output
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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			FOUNDATION SEGMENT -- BEFORE OPEN (Continued)
		DCBMACR (Cont'd.)	Code
		Byte 1	
50 (32)		0...	QSAM - Input 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.
		Byte 2	
51 (33)		0...	QSAM - Output 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.
		Byte 1	
50 (32)		00..	BPAM - Input Always zero for BPAM.
		..1.	R READ
		.... .1..	P POINT (which implies NOTE).
		...x x.xx	(Reserved bits)
		Byte 2	
51 (33)		00..	BPAM - Output Always zero for BPAM.
		..1.	W WRITE
		.... .1..	P POINT (which implies NOTE).
		...x x.xx	(Reserved bits)
			FOUNDATION SEGMENT -- AFTER OPEN
40 (28)	2	DCBTIOT	Offset from the TIOT origin to the TIOEINGH 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.
			Note: The above fields are overlaid on the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.
48 (30)	1	DCBOFLGS	Contents and meaning are the same as those of the DCBOFLGS field in the foundation segment before OPEN.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				ACCESS METHOD INTERFACE SEGMENTS
				EXCP ACCESS METHOD INTERFACE
49	(31)	. 3		Reserved
52	(34)	1	DCBOPTCD	Option Codes Code xxxx x.xx (Reserved bits) .... .1.. Z Magnetic tape devices: Use reduced error recovery procedure.
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 Note: 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.
				BSAM, BPAM INTERFACE
49	(31)	. 3	DCBREAD, DCBWRITE	Address of READ or WRITE module.
52	(34)	1	DCBOPTCD	Option codes Code 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. .... .1.. Z Magnetic Tape Devices: use reduced error recovery procedure. .... ..1. T BSAM only: User Totaling. .... x..x (Reserved bits)
53	(35)	. 3	DCBCHECK	Address of the CHECK module.
56	(38)	1	DCBICBL	IOB length in double words.
57	(39)	. 3	DCBSYNAD	Address of user's synchronous error routine to be entered when a permanent error occurs.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			BSAM, BPAM INTERFACE (Continued)
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 volume - used by channel-end appendage routines.
		 xxxx	(Reserved bits)
61 (3D)	. 1	DCBCIND2	Condition Indicators
		1...	Partitioned data set: STOW has been performed. Sequential data set: Update.
		.1..	Direct organization data set: Last I/O was a write record zero. Sequential data set: UPDATE EOF is indicated.
		..1.	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	DCBWCPO	Write channel program offset. Offset of write channel program from the start of the IOB.
65 (41)	. 1	DCBWCPL	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	DCBICBA	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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BSAM, BPAM INTERFACE (Continued)
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	DCBECBR	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	DCBDIRCT	For BPAM only: Directory count. Number of bytes used in last directory block. May range from 0 to a maximum of 254.
82	(52)	. . 2	DCBLRECL	Logical record length. For fixed-length blocked record format, the presence of DCBLRECL allows BSAM to read truncated records. For undefined records, contains blocksize not record length.
84	(54)	4	DCBCNTRL, DCBNOTE, DCBPOINT	Address of the CNTRL module or of the NOTE/POINT module.

DATA CONTROL BLOCK -- SAM (Continues)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				QSAM INTERFACE
49	(31)	. 3	DCBGET, DCBPUT	Address of GET module or PUT module.
52	(34)	1	DCBOPTCD	Option codes.
				Code
			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 .1..	Z Magnetic tape devices. Use reduced error recovery procedure.
			.... ..1.	T User Totaling.
			.... x..x	(Reserved bits)
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 DCBLRECL. For variable-length records this must include, 4 byte block length field provided by the access method.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
64	(40)	1	DCBWCPO	Write channel program offset; offset of Write channel program from the start of the ICB.
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	DCBICBA	Normal Scheduling: Address of QSAM prefix of IOB. Chained Scheduling: Address of ICB.
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.
76	(4C)	4	DCBRECAD	Locate mode logical record interface processing of spanned records (see note under DCBICBAD, offset 28):
			1...	TRUNC macro has been issued.
			.1..	First GET after OPEN.
				Simple buffering and spanned record processing:
			1111	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)	2	DCBQSWS	Flags.
			Byte 1	
80	(50)	1	1	TRUNC entry point entered.
			xxxx xxx.	(Reserved bits)
81	(51)	. 1	Byte 2	Reserved.
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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				QSAM INTERFACE (Continued)
			DCBLRECL (continued)	Move mode - GET: Record length. PUT: Actual or maximum record length. Data mode, GET - Data records up to 32,752 bytes: Data length. Data records exceeding 32,752 bytes: Before Open: X'8000'. After Open: Data Length. Output mode, PUTX (output data set): Segment length.
84	(54)	1	DCBEROPT	Error option. Disposition of permanent errors if the user returns from a synchronous error exit (DCBSYNAD), or if the user has no synchonous error exit.
				Code
			1...	ACC Accept
			.1..	SKP Skip
			..1.	ABE Abnormal end of task.
			...x xxxx	(Reserved bits)
85	(55)	. 3	DCBCNTRL	Address of the CNTRL module.
88	(58)	2		Reserved
90	(5A)	. . 2	DCBPRECL	Format F records: Block length. Format U records: Maximum block length. Format V records - Unspanned record format: Maximum block length. Spanned record format - Other than data mode, PUT: Maximum block length. Data mode, PUT: Data length.
92	(5C)	4	DCBECB	Address of the end of block module.

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)

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) DCBRELSE Work Area for Register Contents		
100 (64) DCBPUTX Work Area for Register Contents		
104 (68) DCBRELX Address of Read Exclusive Module		
108 (6C) DCBFREED Address of Dynamic Buffering Module		
112 (70) DCBHIRT1 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		
128 (80)	125 (7D) DCBFTMI3 Direct-Access Address of Third-Level Master Index	

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) DCBHIRCM Highest R for Indexes	145 (91) DCBHIRPD Highest R for Prime Data	146 (92) DCBHIROV Highest R for Overflow	147 (93) DCBHIRSH Last R of Shared Track
		Variable Length Records: Unused	
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) DCBHIIOV Highest R for Independent Overflow	169 (A9) DCBFTMI1 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)

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)	DCBLEMII 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) Reservea
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)

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

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					FOUNDATION EXTENSION
32	(20)	1	DCBHIARC, DCBBFTEK, DCBBFALN		
					Code
				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.
					Code
				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.

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
				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 1 by EOV routine when it calls the Close routine for concatenation of data sets with unlike attributes.
			...1	An OPEN has been successfully completed.
			.... 1...	Set to 1 by a problem program to indicate a concatenation of unlike attributes.
			.... .1..	Tape mark has been read.
			.... ..0.	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.
			.... ..1.	Set to 1 on return from the user exit to the I/O support function which took the exit.
			1	Set to 1 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)

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					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
			Byte 1		BISAM
50	(32)		00.0 0...		Always zero for BISAM.
			..1.	R	READ
			.... .1..	S	Dynamic buffering.
			.... ..1.	C	CHECK
			x		(Reserved bit)
			Byte 2		BISAM
51	(33)		00.0 0000		Always zero for BISAM.
			..1.	W	WRITE
			Byte 1		QISAM
50	(32)		0.0. .0..		Always zero for QISAM.
			.1..	G	GET
			...1	M	Move mode of GET.
			.... 1...	L	Locate mode for GET.
			xx		(Reserved bits)
			Byte 2		QISAM
51	(33)		1...	S	SETL
			.1..	P	PUT or PUTX.
			..0.		Always zero for QISAM.
			...1	M	Move mode of PUT.
			.... 1...	L	Locate mode of PUT.
			.... .1..	U	Update in place (PUTX).
			.... ..1.	K	SETL by key.
			1	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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					ACCESS METHOD INTERFACE -- ISAM
49	(31)	. 3	DCBGET, DCBPUT		Address of GET module or of PUT module.
52	(34)	1	DCBOPTCD		Option codes: Code 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. Code 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 Supervisor and Data Management Services manual, Form number C28-6646, 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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					ACCESS METHOD INTERFACE -- ISAM (Continued)
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	DCBRELSE		Work area for temporary storage of register contents.
100	(64)	4	DCBPUTX		Work area for temporary storage of register contents.
104	(68)	4	DCBRELX		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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					ACCESS METHOD INTERFACE -- ISAM (Continued)
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	Device is a 2301 drum.
				FF	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
				.... .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).

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					Access Method Interface -- ISAM (Continued)
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. Descrip-tions of the fields follow the illustration.

DATA CONTROL BLOCK -- BDAM

Device Interface

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

Common Interface

20 (14)	21 (15)
DCBBUFNO No. of Buffers Required	DCBBUFCB Address of Buffer Pool Control Block

24 (18)	26 (1A)
DCBBUFL Buffer Length	DCBDSORG Data Set Organization

28 (1C)
DCBIOBAD First IOB Address 31 (1F)

Foundation Extension

32 (20)	33 (21)
DCBHIARC, DCBBTFEK, DCBFALN	Reserved

36 (24)	37 (25)
DCBRECFM Record Format	DCBEXLST Exit List Address 39 (27)

Foundation

Before OPEN

40 (28)
DCBDDNAM DD Statement Name

48 (30)	49 (31)	50 (32)
DCBOFLGS Open Flags	DCBIFLG IOS Flags	DCBMACR Type of I/O Macro Instruction and Options 51 (33)

After OPEN

40 (28)	42 (2A)
DCBTIOT Offset to DD Entry in TIOT	DCBMACRF Type of I/O Macro Instruction and Options

44 (2C)	45 (2D)
DCBIFLGS IOS Flags	DCBDEBAD Address of DEB

48 (30)
DCBOFLGS Open Flags

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

BDAM 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)	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)	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)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				DEVICE INTERFACE
16	(10)	1	DCBKEYLE	Key length.
17	(11)	. 3	DCBREL	Number of relative tracks or blocks in this data set.
				COMMON INTERFACE
20	(14)	1	DCBBUFNO	Number of buffers required for this data set. May range from 0 to 255.
21	(15)	. 3	DCBBUFCB	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.
			Byte 1	Code
26	(1A)		xx.x xxx.	(Reserved bits)
			..1.	DA Direct organization.
			1	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.
				FOUNDATION EXTENSION
32	(20)	1	DCBHIARC, DCBBFTEK, DCBBFALN	
				Code
			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.
			..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 DCBBUFCB, 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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				FOUNDATION EXTENSION (Continued)
32	(20)	1	DCBHIARC, DCBBFTEK, DCBBFALN (continued)	
			xx	Buffer alignment:
			10	Doubleword boundary.
			01	Fullword not a doubleword boundary, coded in the DCB macro instruction.
			11	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.
				Code
			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 INOUT or OUTPUT.
			.x.. .x..	(Reserved bits)
			..0. 0....	Always set to 0.
			...1	An OPEN has been successfully completed.
			.... ..0.	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.
			.... ..1.	Set to 1 on return from user exit to the I/O support function which took the exit.
			1	Set to 1 by an I/O support function if the DCB is to be processed by that function.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				FOUNDATION SEGMENT -- BEFORE OPEN (Continued)
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	Code
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	Code
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).
				FUNDATION SEGMENT -- AFTER OPEN
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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				ACCESS METHOD INTERFACE -- BDAM
49	(31)	. 3	DCBREAD, DCBWRITE	Address of the READ/WRITE module.
52	(34)	1	DCBOPTCD	Option Codes: Code 1... .... W 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)	4	DCBDRDX	Address of the READ exclusive module.
92	(5C)	4	DCBDFCR	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.

WTTA Interface

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

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		31 (1F)

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

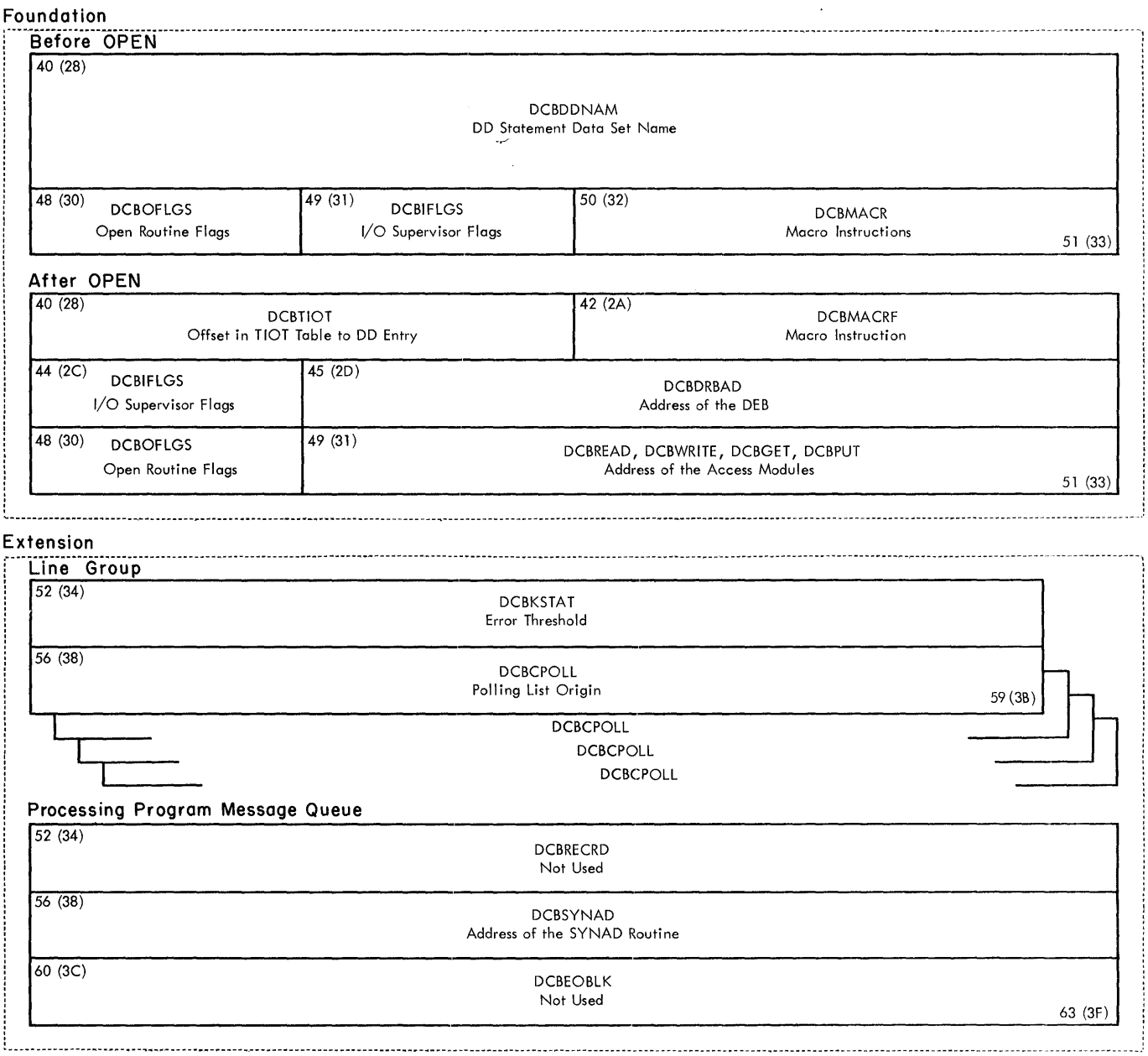


Figure 8. Data Control Block - QTAM (Part 2 of 2)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				WTTA INTERFACE
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.
				LINE GROUP INTERFACE
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	DCBACLOC	Offset, relative to zero, of the device access field for each terminal table entry.
26	(1A)	. . 2	DCBDSORG	Data set organization.
26	(1A)		Byte 1	Code
			xx.. xxxx	(Reserved bits)
			..01	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.
				Code
			xxxx x...	(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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				PROCESSING PROGRAM MESSAGE QUEUE INTERFACE
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.
			Byte 1	Code
26	(1A)		xxxx x.xx	(Reserved bits)
			.... .1..	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.
				Code
			0000 0010	R Record
			0000 0100	G Message
			0000 1000	S Segment
37	(25)	. 3	DCBEXLST	Address of the exit list.
				DIRECT ACCESS STORAGE DEVICE (DASD) MESSAGE QUEUE INTERFACE, CHECKPOINT DATA SET INTERFACE
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.
			Byte 1	Code
26	(11A)		xxxx .xxx	(Reserved bits)
			.... 1...	CQ Direct-access message queue
27	(1B)		Byte 2	Reserved
28	(1C)	4	DCBIOBAD	Address of input/output block.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				FOUNDATION SEGMENT -- BEFORE OPEN
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). Note: If the DD name is TPCHKPNT, this DCB is used for the checkpoint data set.
48	(30)	9	DCBOFLGS	Flags used by OPEN.
			xxx. xxx.	(Reserved bits)
			...1	Opening has been successfully completed.
			1	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..	Not in error procedure.
			01..	Error correction in process.
			11..	Permanent error condition.
			..10	Channel 9 printer carriage punch.
			..01	Channel 12 printer carriage punch.
			.... 00..	Always use IOS error routine.
			.... 11..	Never use IOS error routine.
			.... 10..	Never use IOS error routine.
			.... 01..	Never use IOS error routine.
			xx	(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.
			Byte 1	
50	(32)		x..x xxxx	(Reserved bits)
			.1..	PUT for message queue.
			..1.	WRITE for line group.
			Byte 2	
51	(33)		x..x xxxx	(Reserved bits)
			.1..	GET for message queue.
			..1.	READ for line group.
				FOUNDATION SEGMENT -- AFTER OPEN
40	(28)	2	DCBTICT	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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				LINE GROUP EXTENSION (POLLING LIST ORIGIN)
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.
				PROCESSING PROGRAM MESSAGE QUEUE EXTENSION
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.

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)

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) DCBBSSYN SYN, SYN, SYN		
76 (4C) DCBBSONL SOH %		78 (4E) DCBBSSAK WACK	
80 (50) DCBBSRVI DLE @		82 (52)	
Reserved			99 (63)

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

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				WTTA INTERFACE
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.
				COMMON INTERFACE
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:
			Byte 1	Code
26	(1A)		xxx. xxxx	(Reserved bits)
			...1	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)
				FOUNDATION EXTENSION
32	(20)	1	DCBHIARC, DCBBFTEK	
				Code
			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 ..xx	(Reserved bits.)
			.... x...	Buffering Technique:
			.... 1...	D Dynamic buffering.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				FOUNDATION EXTENSION (Continued)
33	(21)	. 1	DCBERROP	Error recovery procedure: Code
			xxx.	(Reserved bits)
			...1	T On-line test facilities to be used.
			.... 1...	C Threshold and cumulative error counts to be maintained.
			.... .1..	W Text-write errors to be retried.
			.... ..1.	R Text-read errors to be retried.
			0	E Basic error procedures to be followed.
			1	N No error recovery procedures to be followed.
34	(22)	. . 1	DCBBUFCT	Contains maximum number of buffers to be obtained by BTAM for a 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.
				FOUNDATION SEGMENT
				FOUNDATION SEGMENT -- BEFORE OPEN
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:
			xxx. xx.x	(Reserved bits)
			...1	OPEN has been successfully completed.
			.... ..0.	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.)
			.... ..1.	Set to 1 on return from the user exit to the I/O support function which took the exit.
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)

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			FOUNDATION SEGMENT -- BEFORE OPEN (Continued)
50 (32)	. . 2	DCBMACR	Macro instruction reference:
		Byte 1	
50 (32)		xx.x xxxx	(Reserved bits)
		..1.	READ
		Byte 2	
51 (33)		xx.x xxxx	(Reserved bits)
		..1.	WRITE
			FOUNDATION SEGMENT -- AFTER OPEN
40 (28)	2	DCBTICT	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
			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 meaning are the same as in DCBOFLGS field before OPEN.
			ACCESS METHOD INTERFACE -- BTAM
49 (31)	. 3	DCBREAD, DCBWRITE	Address of READ/WRITE routine.
52 (34)	4	DCBLERB	Address of line error block.
			BSC Interface -- Before Open
56 (38)	1		Reserved
57 (39)	. 1	DCBXCODE	PTOP flag.
		x.xx xxxx	(Reserved bits)
		.1..	If PTOP is specified in the SYSGEN procedure: Schedule an asynchronous exit to the interface resolution routine.
58 (3A)	. . 2		Reserved
60 (3C)	4	DCBBSTSX	If PTOP is specified in the SYSGEN procedure: Address of the interface resolution routine.
64 (40)	36		Reserved

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BSC Interface -- After Open
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	DCBXCODE	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	DCBBSDLE	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 @ 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) DCBBRSA 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

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					DEVICE-DEPENDENT INTERFACE
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		Type of buffer management and attention handling.
				00	Express
				01	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.
					COMMON INTERFACE
20	(14)	6			Reserved
26	(1A)	. . 2	DCBDSORG		Data set organization.
26	(1A)		Byte 1		All zeros.
			Byte 2		Code
27	(1B)		1...		GS Graphics organization.
			.xxx xxxx		(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.
					FOUNDATION EXTENSION
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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					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 1 by EOV when it calls the Close routine for concatenation of data sets with unlike attributes.
				...1	An OPEN has been successfully completed.
				.... 1...	Set to 1 by a problem program to indicate a concatenation of unlike attributes.
				.... .1..	Tape mark has been read.
				.... ..0.	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.
				.... ..1.	Set to 1 on return from the user exit to the I/O support function which took the exit.
				1	Set to 1 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	Read operation to be performed.
				 0010	Control operation to be performed with the read operation.
51	(33)	Byte 2		0010	Write operation to be performed.
				 0010	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.
					Note: The above fields are overlayed on the DCBDDNAM field during OPEN and are restored to their original form at CLOSE.
48	(30)	1	DCBOFLGS		Contents and meaning are the same as DCBOFLG field in the foundation segment before OPEN.
49	(31)	. 3	DCBGICCR		Address of the graphics input/output control routine.

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 11 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.)

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
-14 (-20)	DEBXCEA (1) Address of Abnormal-End Appendage -17 (-11)

DEB Prefix

-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	-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) DEBEXSCL 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 11. Data Extent Block -- Ordinary (Part 1 of 4)

DATA EXTENT BLOCK -- ORDINARY

ISAM 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) DEBDISAD Address of Privileged Module 47 (2F)	

Device Dependent Section

Unit Record, Magnetic Tape Devices Section

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

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

DEBUCBAD

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 No. of Tracks Allocated in this Extent +15

EXCP Access Method, BSAM, QSAM Dependent Section

+0 DEBVOLSQ Volume Sequence Number	+2 DEBVOLNM No. of Volumes

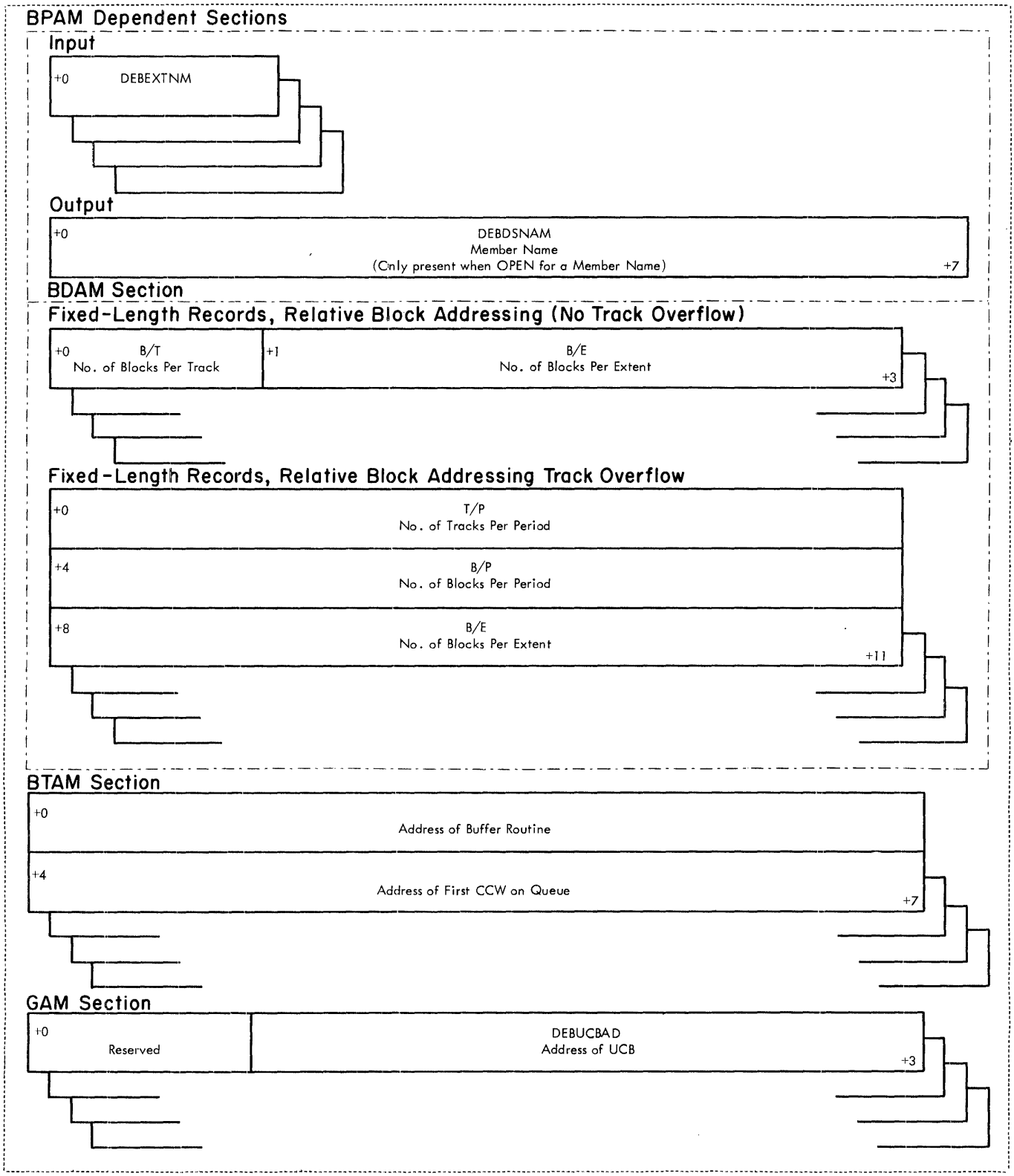
+4 DEBDSNM (Only present when OPEN for a Member Name) +11

+4 Reserved	+5 DEBUTSA Address of User Totaling Save Area +7

(Only present if User Totaling Specified in DCB)

+12 DEBBLKSI Contents of DCBBLKSI	+14 DEBLRECL Contents of DCBLRECL +15

• Figure 11. Data Extent Block -- Ordinary (Part 2 of 4)



• Figure 11. Data Extent Block -- Ordinary -- (Part 3 of 4)

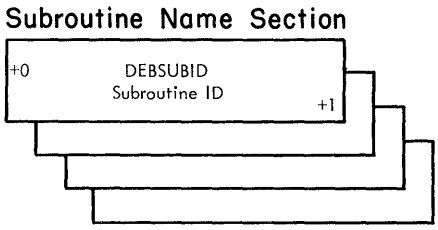


Figure 11. Data Extent Block -- Ordinary (Part 4 of 4)

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			APPENDAGE TABLE
			BSAM, QSAM, BPAM, BDAM, GAM
-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.
			BTAM, QTAM MESSAGE CONTROL
-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
			PREFIX SECTION
			DIRECT-ACCESS STORAGE DEVICES
-16 (-10)	1	DEBWKARA	I/O Support work area.
-15 (-F)	. 7	DEBDSCBA	DSCB address (EBCCHHR) used by I/O support.
			ALL DEVICES
-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

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				DEB PROPER
				BASIC SECTION
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.	End of volume (EOV), or end of file (EOF).
			...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...	MFT,MVT: 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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BASIC SECTION (Continued)
14	(E)	. . 1	DEBFLGS1	A flag field.
			.1..	Set by EOV to inform CLOSE that an end-of-file has been encountered and, therefore, deferred user label processing is allowed.
			x.xx xxxx	(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	Protection key.
			 1111	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.
				ISAM DEPENDENT SECTION
				Present only if ISAM is used. Follows the basic section. Precedes the device dependent section.
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	DEBDISAD	Address of privileged module entered when a BISAM macro instruction is executed.

DATA EXTENT BLOCK -- ORDINARY

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				DEVICE DEPENDENT SECTION
				Follows the basic section, except in ISAM. In ISAM, follows the ISAM dependent section.
				UNIT RECORD AND MAGNETIC TAPE
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.
				TELECOMMUNICATIONS DEVICES
32	(20)	n times		List of addresses (n) of UCBs for lines (n).
		1		Reserved
		. 3	DEBUCBAD	Address of the UCB for the line.
				DIRECT-ACCESS STORAGE DEVICES
				EXTENT DESCRIPTION SEGMENTS: For each extent there is a 16-byte segment as follows.
+0		1	DEBDVMOD	Device modifier: file mask.
+1		. 3	DEBUCBAD	Address of UCB associated with this data extent.
+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.
				ACCESS METHOD DEPENDENT SECTION
				Follows the device dependent section, except for ISAM. The ISAM dependent section precedes the device 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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			BSAM, QSAM, EXCP Access Method (Continued)
+4	4	DEBUTSA	These four bytes replace the member name field if User Totaling (OPTCD=T) was specified in the DCB.
		Byte 1	Reserved.
		Bytes 2-4	Address of the User Totaling save area.
+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.
			BPAM
			Only one of the following fields is present:
+0	(m-1)x1	DEBEXTNM	For a partitioned data set opened for input, each one byte field 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.
			BDAM
			Only present for fixed-length records with the option of relative block addressing (but not track overflow)
			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.
			Only present for fixed-length records with the option of relative block addressing and track overflow
			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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			BTAM
			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.
			GAM
+0	1		Reserved.
+1	. 3	$DEBUCBAD_1$	Pointer to first UCB.
	1		Reserved
	. 3	$DEBUCBAD_n$	Pointer to last UCB.
			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 Word 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

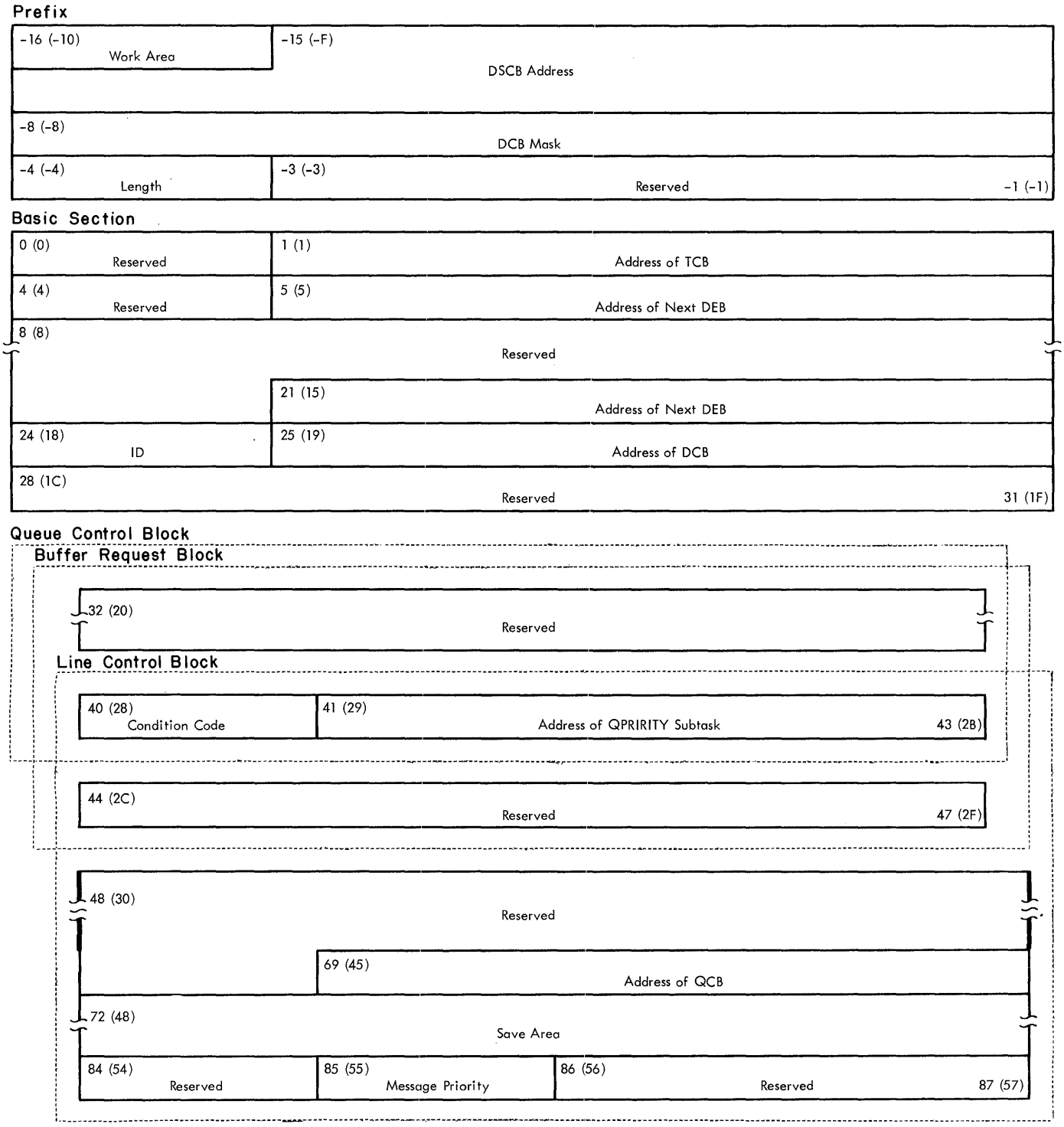


Figure 12B. Data Extent Block -- QTAM -- Destination Queue

DATA EXTENT BLOCK -- QTAM

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			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.

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			BUFFER REQUEST BLOCK
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 (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 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

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			BUFFER REQUEST BLOCK, QUEUE CONTROL BLOCK
32	(20)	8	Reserved
			LINE CONTROL BLOCK
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 Event Control Blocks

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

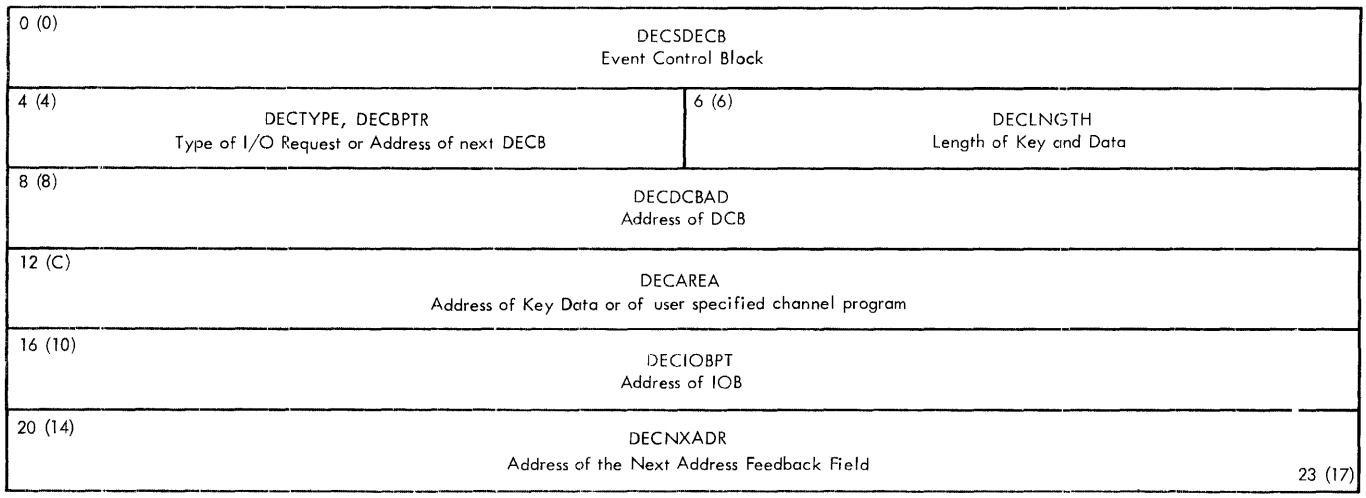
Separate diagrams and descriptions are presented for the following uses of DECBs:

- 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 13 shows the format of the DECB used in BSAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BSAM



• Figure 13. Data Event Control Block -- BSAM

DATA EVENT CONTROL BLOCK -- BSAM

Offset		Bytes and Alignment	Name Field	Field Description, Contents, Meaning
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...	S coded for length.
			.xxx xxxx	(Reserved bits)
			Byte 2	Type of operation:
5	(5)		1...	READ SF
			.1..	READ SB
			..1.	WRITE SF
			...1	WRITE SD
			.... x.x	(Reserved bits.)
			.... .1..	WRITE SZ
			..1. ...1	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

Offset		Bytes and Alignment	Name Field	Field Description, Contents, Meaning
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	DECNXADR	
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 14 shows the format of the DECB used in BISAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BISAM

0 (0) DECBECB 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) DECBDCBA Address of DCB		
12 (C) DECBAREA Storage Address for Record		
16 (10) DECBLOGR Address of Logical Record		
20 (14) DECBKEY Address of Key Portion of Record		
24 (18) DECBEXC1 Exceptional Condition Codes	25 (19) DECBEX2 Exceptional Condition Codes	

Figure 14. Data Event Control Block -- BISAM

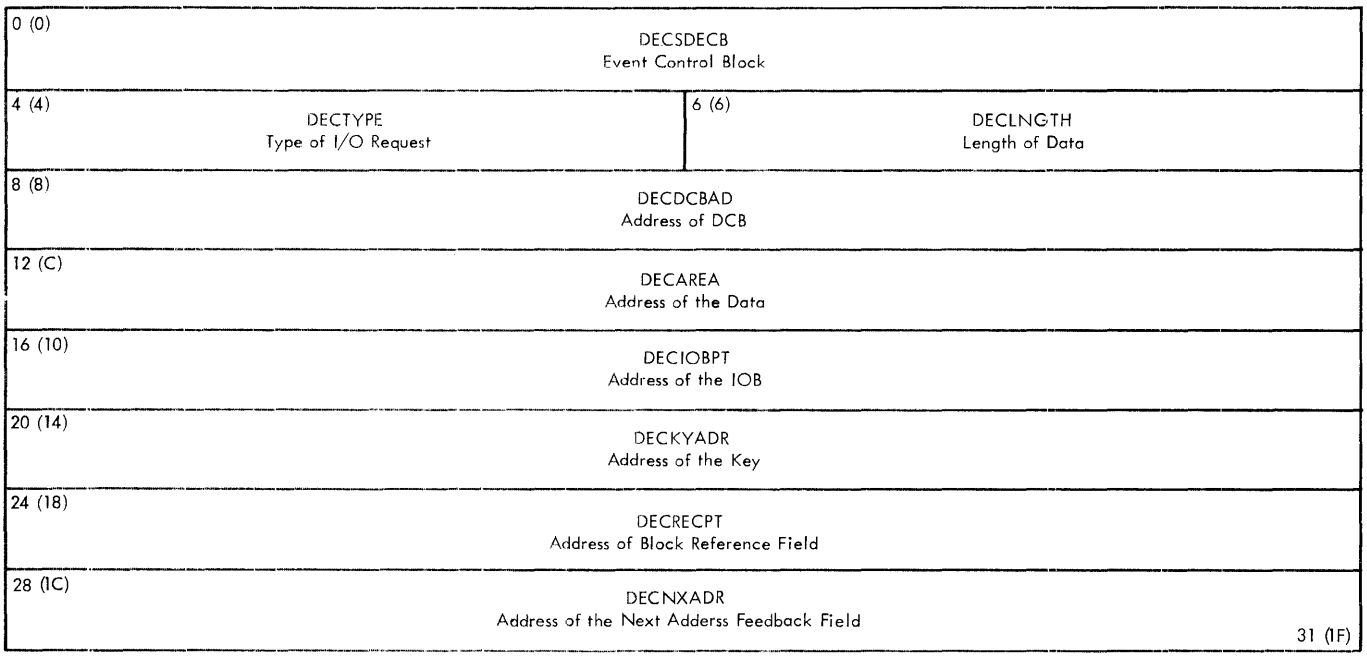
DATA EVENT CONTROL BLOCK -- BISAM

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	4	DECBECB	Event control block.
				Awaiting completion of the event.
0	(0)		Byte 1	Flag field.
			1...	Awaiting completion of the event.
			.xxx xxxx	(Reserved bits)
1	(1)		Byte 2-4	Address of the RE for the program awaiting the event.
				After completion of the event:
0	(0)		Byte 1	Flag field.
			x.xx xxxx	(Reserved bits)
			.1..	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	Options:
			xxxx xx..	(Reserved bits)
			.... ..1.	Length coded as 'S'.
			1	Area coded as 'S'.
5	(5)	. 1	DECBTYP2	Type of I/O request.
			1...	READ K
			.x.x ..xx	(Reserved)
			..1.	READ KU.
			.... 1...	WRITE K.
			.... .1..	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	Exceptional condition code.
			1...	Record not found.
			.1..	Record length check.
			..1.	Space not found in which to add a record.
			...1	Invalid request.
			.... 1...	Uncorrectable I/O error.
			.... .1..	Unreachable block.
			.... ..1.	Overflow record.
			1	Duplicate record presented for inclusion in the data set.
25	(19)	. 1	DECBEXC2	Exceptional condition code.
			.... ..1.	Execution of the last channel program was instituted by an asynchronous routine.
			1	Previous macro instruction was READ KU.
			xxxx xx..	(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 15 shows the format of the DECB used in BDAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BDAM



• Figure 15. Data Event Control Block -- BDAM

DATA EVENT CONTROL BLOCK -- BDAM

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

DATA EVENT CONTROL BLOCK -- BDAM

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
5	(5)	. 1	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	DECDCBAD	Address of the DCB to which this I/O request is related.
12	(C)	4	DECAREA	Address of the data.
16	(10)	4	DECIOBBT	Address of the IOB.
20	(14)	4	DECKYADR	Address of the key.
24	(18)	4	DECRECPT	Address of the Block Reference Field.
28	(1C)	4	DECNXADR	
28	(1C)	1		Reserved.
29	(1D)	. 3		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 16 shows the format of the DECB used in QTAM. Descriptions of the fields follow the illustration.

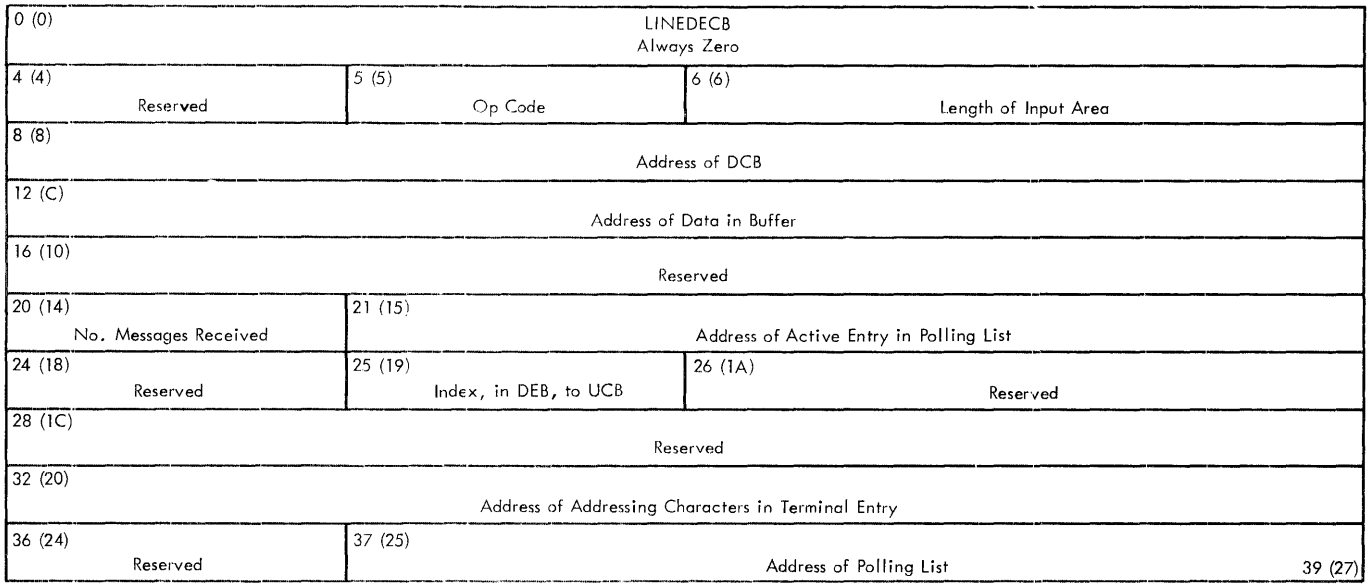


Figure 16. Data Event Control Block -- QTAM

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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 17 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) DECBLNGTH Buffer Length, Message Area Length
8 (8) DECBUFCT Buffer Count	9 (9) DECDCBAD DCB Address	
12 (C) DECAREA Buffer Address, Message Area Address		
16 (10) DECSENS0 Sense Byte	17 (11) DECSENS1 Reserved	18 (12) DECCOUNT CSW Residual Count
20 (14) DECCMCOD, 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 17. Data Event Control Block -- BTAM

DATA EVENT CONTROL BLOCK -- BTAM

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
0	(0)	4	DECSDECB		Event control block.
4	(4)	2	DECTYPE		Programming indicators.
			Byte 1		
4	(4)		1...		READ, using Autopoll
			.xxx x...		(Reserved bits)
			.... .1..		'S' coded for terminal entry.
			.... ..1.		'S' coded for area.
			1		'S' coded for length.
					Command Code
5	(5)		Byte 2	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.
				0A	TN Write negative acknowledgment.
					TN Write disconnect (TWX).
					TR Write reset (BSC).
				0B	TB Read buffer.
				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.
				12	TIX Write initial transparent.
					TVO Write conversational optical.
				13	TTL Read continue with leading graphics.
				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.
				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.
				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.

DATA EVENT CONTROL BLOCK -- BTAM

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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)
					Type 11 online test for 2760 Optical Image Unit.
				..xx xxxx	(Reserved bits)
9	(9)	. 3	DECDCBAD		Address of associated DCB.
12	(C)	4	DECAREA		Address of buffer or message area.
16	(10)	1	DECSENS0		Sense information.
17	(11)	. 1	DECSENS1		Reserved
18	(12)	. . 2	DECCOUNT		Residual count from CSW for last CCW executed.
20	(14)	1	DECCMCOD, DECENTRY		Command for which the error occurred.
21	(15)	. 3	DECENTRY		Address of the terminal list.
24	(18)	1	DECFLAGS		Operation status.
				xxx.	One of These:
					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	One of These:
					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.)

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
			DECFLAGS (Continued)		
			.... .1..		One of These:
					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.
25	(19)	. 1	DECRLN		Relative line number.
26	(1A)	. . 2	DECRESPN		Response indicators (One of these).
26	(1A)				Stop - Start Operations: Byte 1 Response from a terminal to addressing. Byte 2 Vertical redundancy character and longitudinal redundancy character (VRC/LRC) response.
26	(1A)				BSC Operations: Response from a terminal to addressing.
28	(1C)	1	DECTPCOD		Type of Terminal / Command
				00	Any command issued by on-line test routine.
				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)		

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning	
28 (1C)		(DECTPCOD Continued)	02	WTTA	Sense - WT telegraph terminals Write EOA EOT EOT EOT sequence before selection. Write EOT sequence before polling or addressing. Write response to text.
				2740, Basic	Write EOA and 15 idle characters.
				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	2740 SC	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	1030 1050 2740 1060 2260R	Write end-of-addressing character after addressing.
				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.
		(DECTPCOD Continues)	0C	BSC	Read response to inquiry.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
28	(1C)		(DECTPCOD Continued)	10	2260R — Write at line address.
				11	Read or write text.
					2760 — 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).
				.... 1...	Disable command issued to a switched line by error recovery routine because of permanent error on that line.
				xxx	(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.
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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
					BSC Extension
					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 18 shows the format of the device name table. Descriptions of the fields follow the illustration.

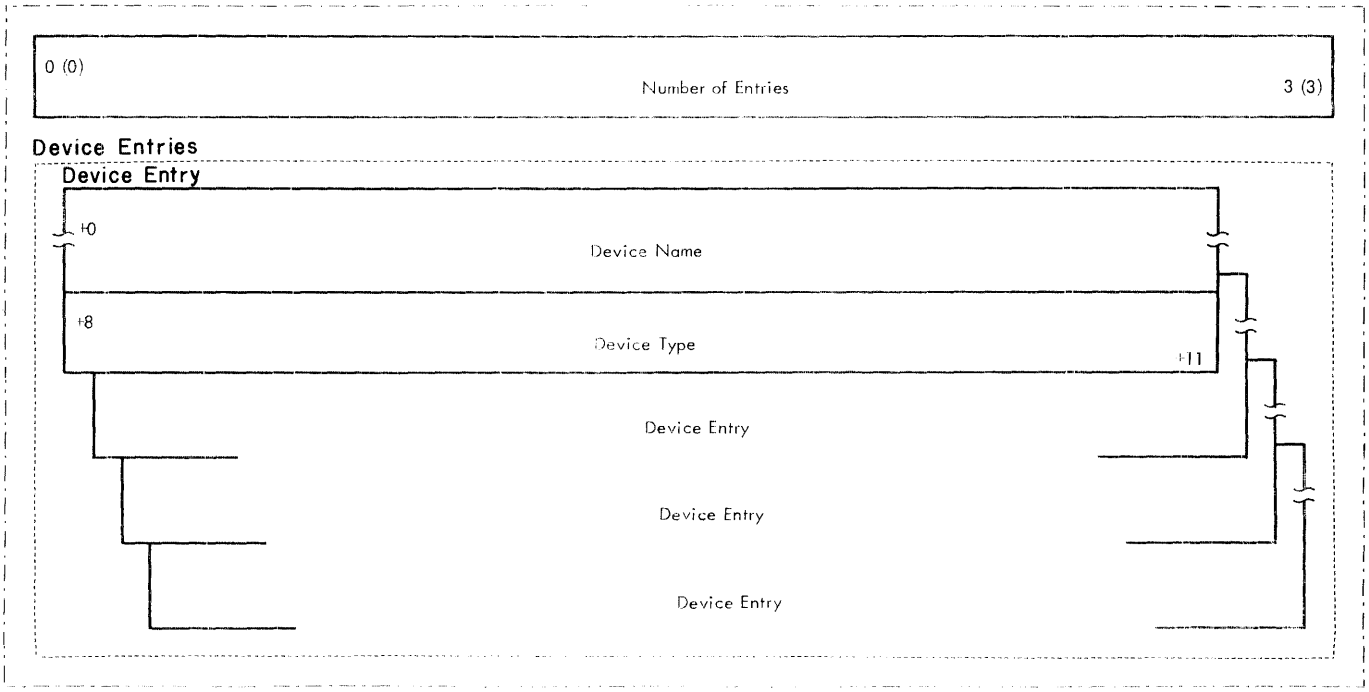


Figure 18. Device Name Table

DEVICE NAME TABLE

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0 (0)	4		Number of Entries. The number of 12 byte entries in the table. Each device name has one entry.
			THE FOLLOWING 12 BYTE FIELD IS REPEATED FOR EACH DEVICE
+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. Generic name: IBM generated name up to 8 characters in length. Examples: 2400 (2400 series 9-track Magnetic Tape Drive) 2311 (disk drive) User assigned name: User assigned name up to 8 characters in length. Examples: MAGTAPE
+8			Device type.
+8	4		Generic name: 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		User assigned name: 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:

- DSCB -- Format 1
- DSCB -- Format 2
- DSCB -- Format 3
- DSCB -- Format 4
- DSCB -- Format 5
- DSCB -- Format 6

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

Data Set Control Block–Format 1

This 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 a format 2 DSCB pointed to by the format 1 DSCB. Additional extents are described in a 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 19 shows the format of the format 1 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 1

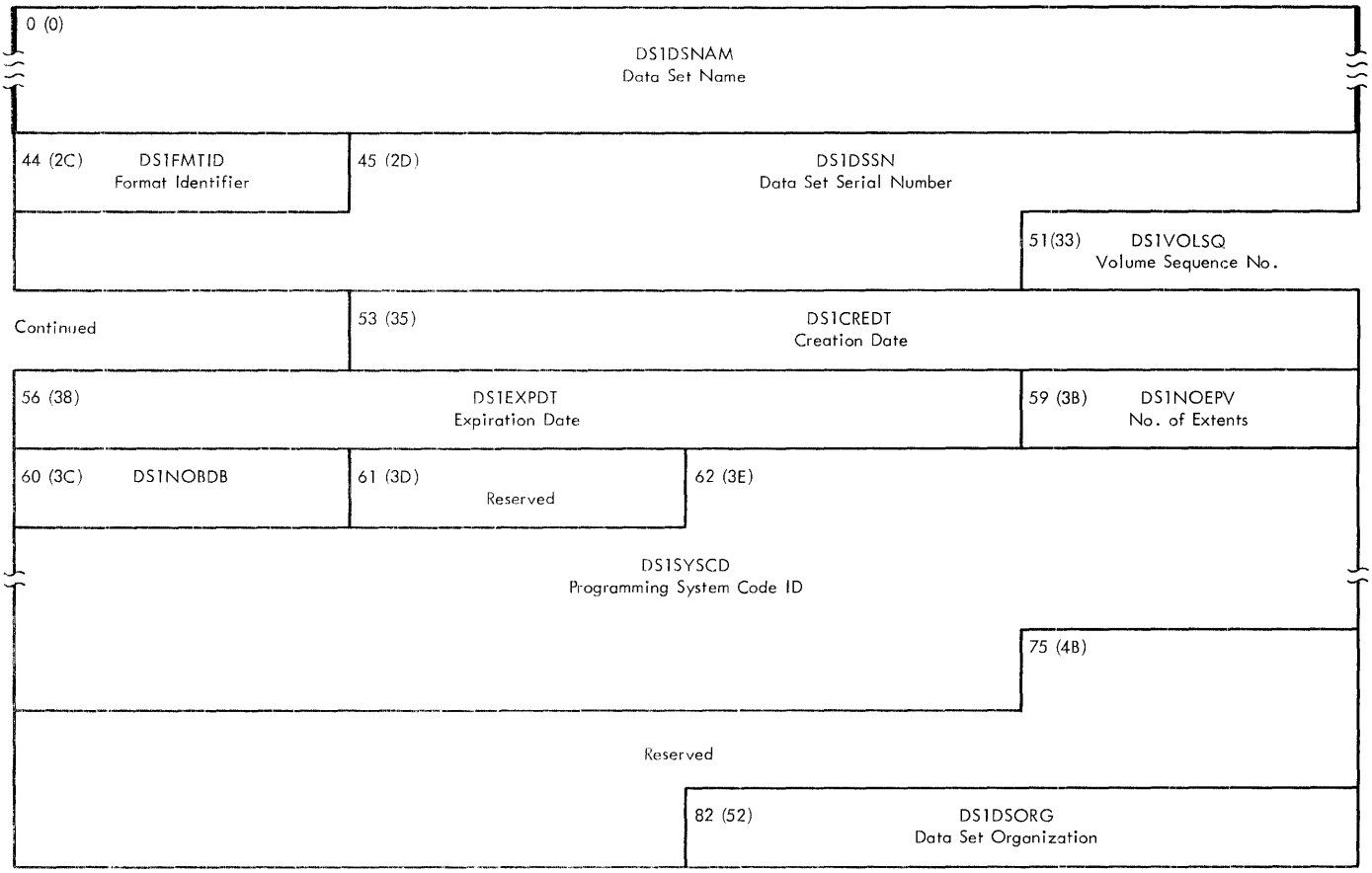


Figure 19. Data Set Control Block -- Format 1 (Part 1 of 2)

DATA SET CONTROL BLOCK -- FORMAT 1

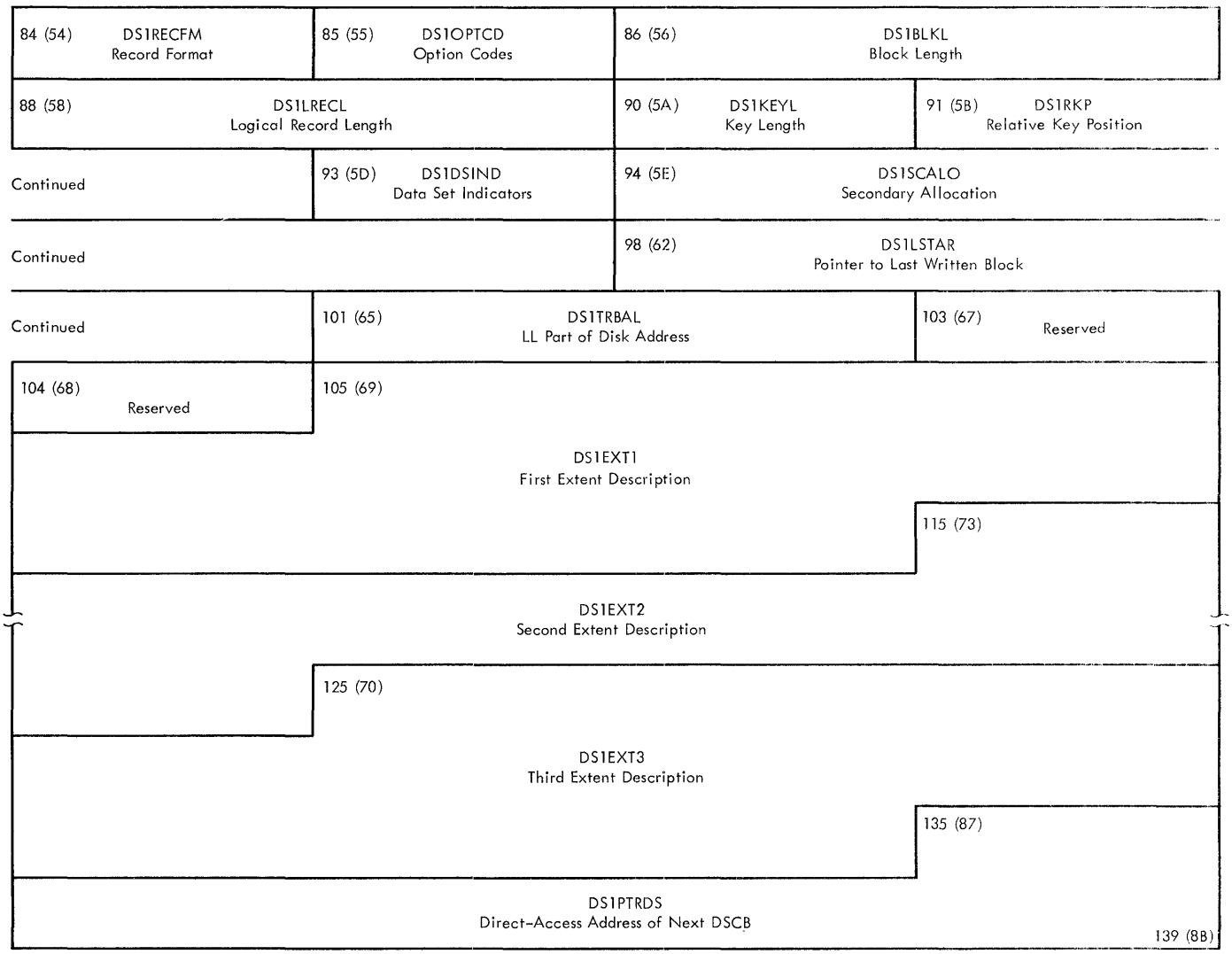


Figure 19. Data Set Control Block -- Format 1 (Part 2 of 2)

DATA SET CONTROL BLOCK -- FORMAT 1

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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 the form ydd. y - year: 00 - 99 dd - day: 1 - 366
56	(38)	3	DS1EXPDT		Expiration date, 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	DS1SYSCD		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.
			Byte 1		Code
			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.

DATA SET CONTROL BLOCK -- FORMAT 1

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
			Byte 2		
83	(53)		xxxx xxxx		Reserved
84	(54)	1	DS1RECFM		Record format. Code
			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 ASA contrcl character.
			.... .01.		M Machine ccntrol character.
			.... .00.		No control character.
			0		Always zero.
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.
			...1		Data set is security protected by a password.
			.x.. xxxx		(Reserved bits)
94	(5E)	. . 4	DS1SCALO		Allocatien parameters. Type of request issued for the initial allocation and to be used for subsequent extensions.
			Byte 1		Original request was:
94	(5E)		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.

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

DATA EVENT CONTROL BLOCK -- FORMAT 1

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

Data Set Control Block–Format 2

This data set control block (DSCB) describes characteristics of a data set having indexed sequential organization. It is pointed to by a format 1 DSCB which contains additional data set characteristics and up to three extent descriptions. Additional extents are described in a format 3 DSCB pointed to by the format 2 DSCB. Figure 20 shows the format of the format 2 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 2

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		
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) DS2HIRPD 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) DS2HIRTI Highest R of Track Index	58 (3A) DS2HIIOV 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 20. Data Set Control Block -- Format 2 (Part 1 of 2)

DATA SET CONTROL BLOCK -- FORMAT 2

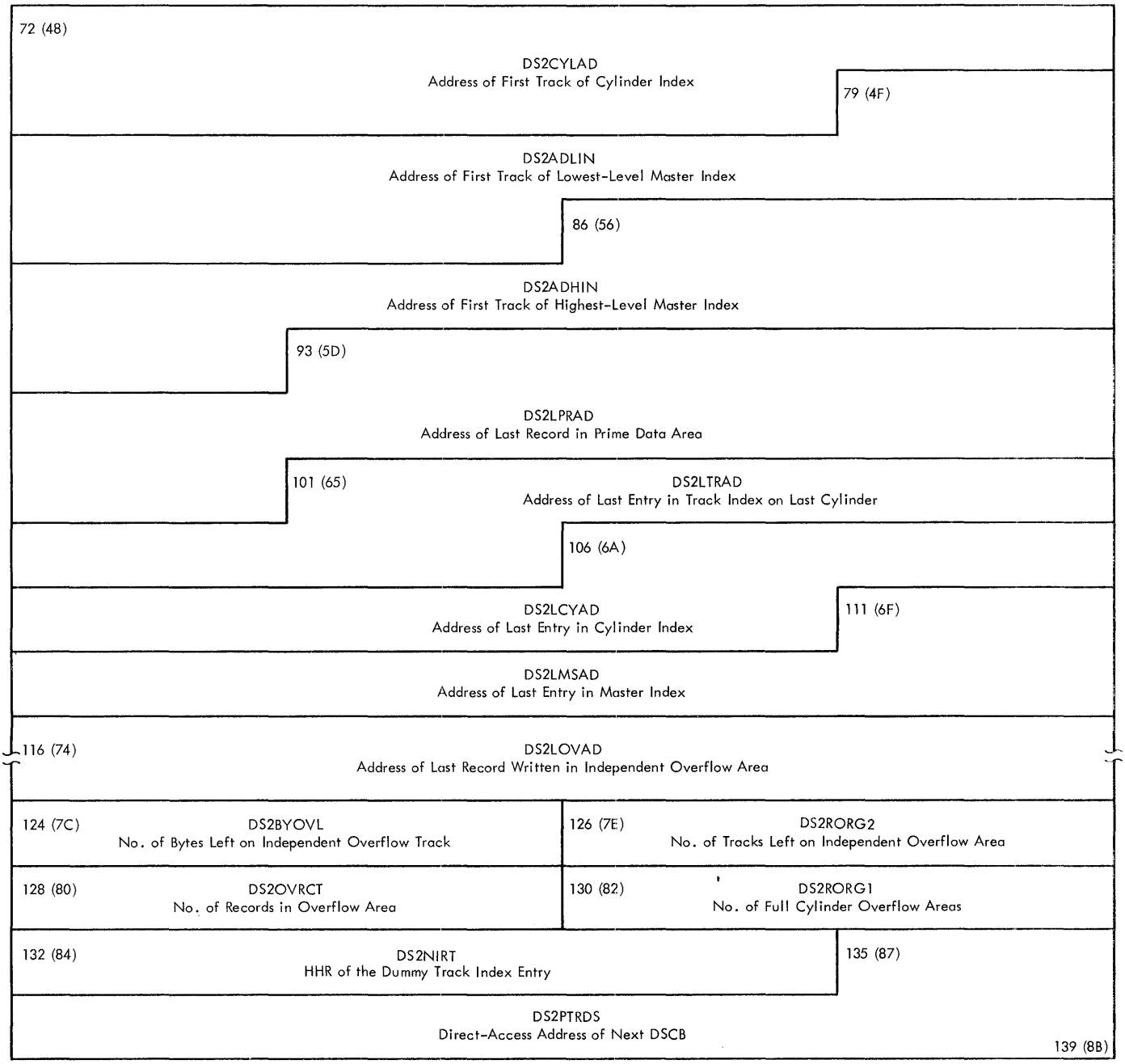


Figure 20. Data Set Control Block -- Format 2 (Part 2 of 2)

DATA SET CONTROL BLOCK -- FORMAT 2

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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)	. 19			Reserved
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	DS2HIRPD		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.

DATA SET CONTROL BLOCK -- FORMAT 2

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
64	(40)	2	DS2NCBYT	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
			.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.

Data Set Control Block–Format 3

This data set control block (DSCB) describes up to thirteen additional extents that cannot be described in a format 1 DSCB. It is pointed to by a format 1 or format 2 DSCB. Figure 21 shows the format of the format 3 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 3

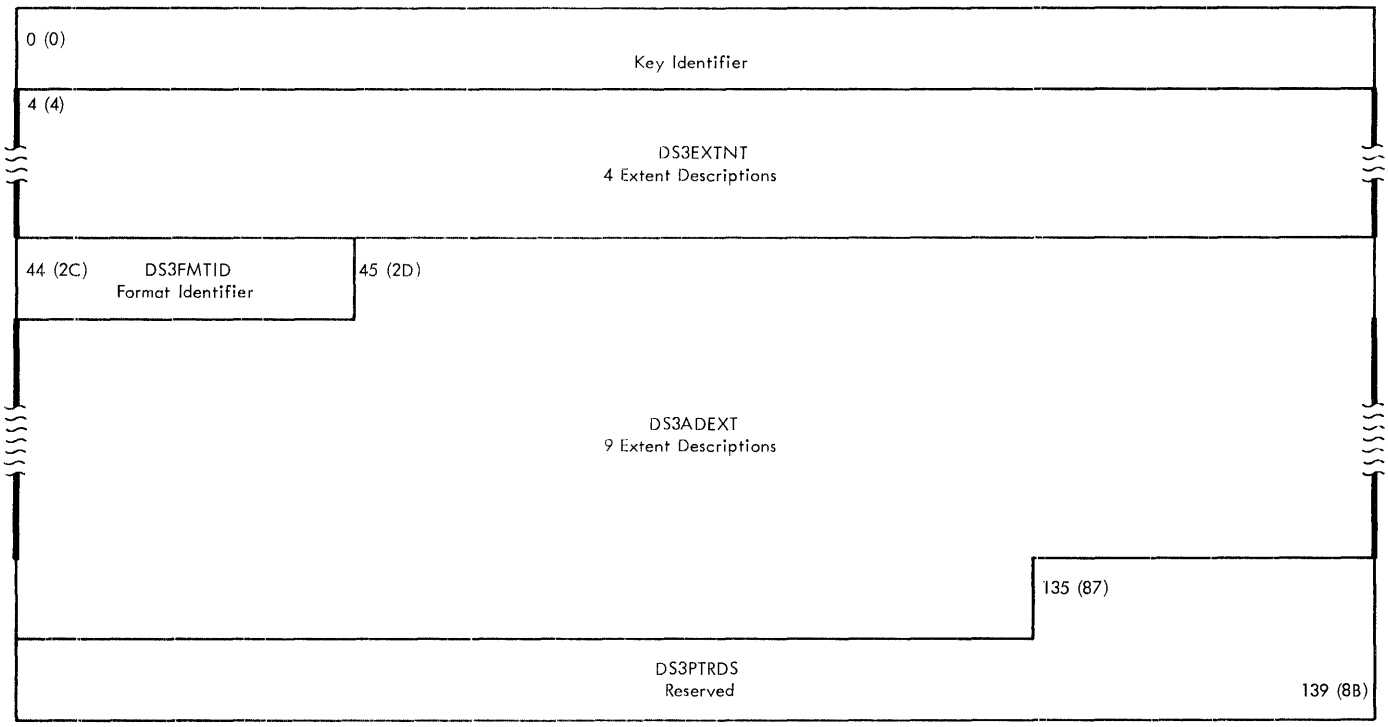


Figure 21. Data Set Control Block -- Format 3

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
0	(0)	4	(Key identifier)	03	A hexadecimal 03 in each byte.
4	(4)	40	DS3EXTNT		Extent (in key) - four ten-byte fields indentical 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.

Data Set Control Block–Format 4

This data set control block (DSCB) describes the volume table of contents (VTOC) data set. It is always the first DSCB in the VTOC. Figure 22 shows the format of a format 4 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 4

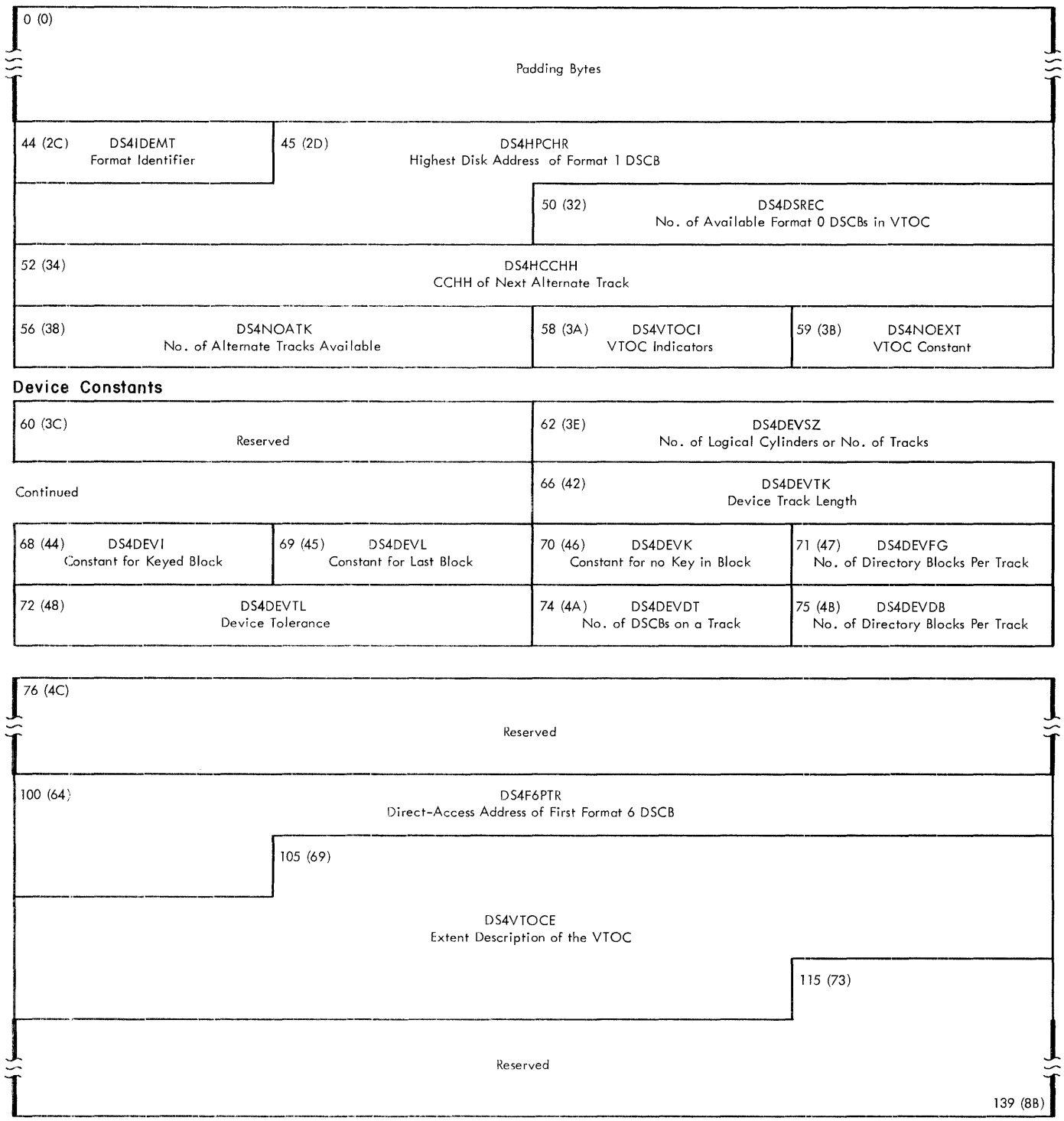


Figure 22. Data Set Control Block -- Format 4

DATA SET CONTROL BLOCK -- FORMAT 4

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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
					Device Constants (DS4DEVxx) 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.
68	(44)	1	DS4DEVI		Overhead bytes required for a keyed block that is not the last block on a track (see note). Note: Overhead bytes are the number of bytes required for gaps, check bits, and count field for each block.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
69	(45)	. 1	DS4DEVL	Overhead bytes required for a keyed block that is the last block on a track (see preceding note).
70	(46)	. . 1	DS4DEVK	Overhead bytes to be subtracted from DS4DEVI or DS4DEVL if block has no key field.
71	(47)	. . . 1	DS4DEVFG	Flag byte.
			xxxx xxx.	(Reserved bits)
			1	A tolerance factor must be applied to all but the last block of the track.
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

Data Set Control Block–Format 5

This 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 format 5 DSCB. Additional extents are described in other format 5 DSCBs. The first format 5 DSCB follows the format 4 DSCB. Figure 23 shows the format of the format 5 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 5

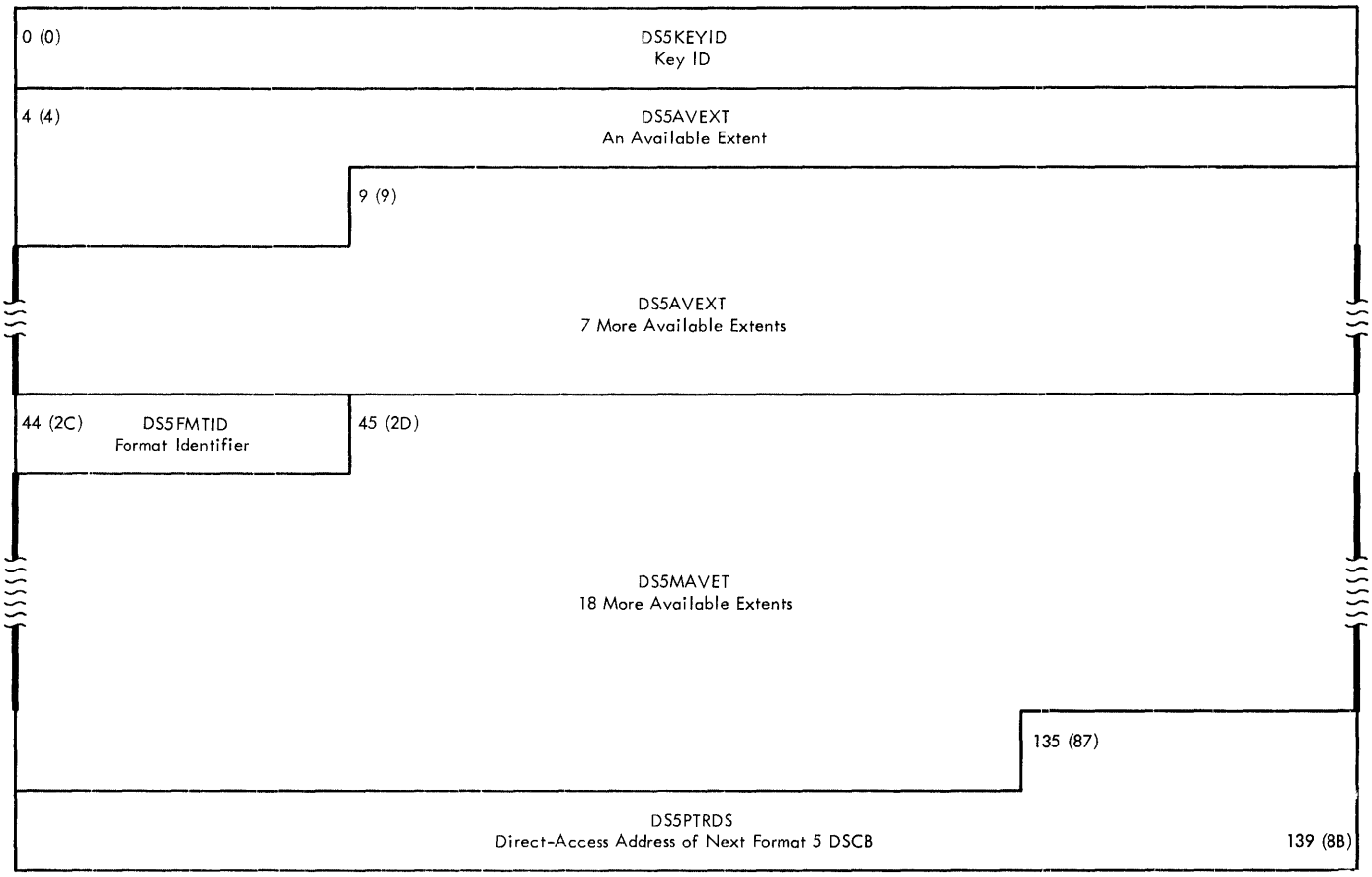


Figure 23. Data Set Control Block -- Format 5

DATA SET CONTROL BLOCK -- FORMAT 5

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

Data Set Control Block–Format 6

This 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 format 6 DSCB. Additional extents are described in other format 6 DSCBs. The format 6 DSCB is pointed to by the format 4 DSCB. Figure 24 shows the format of the format 6 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 6

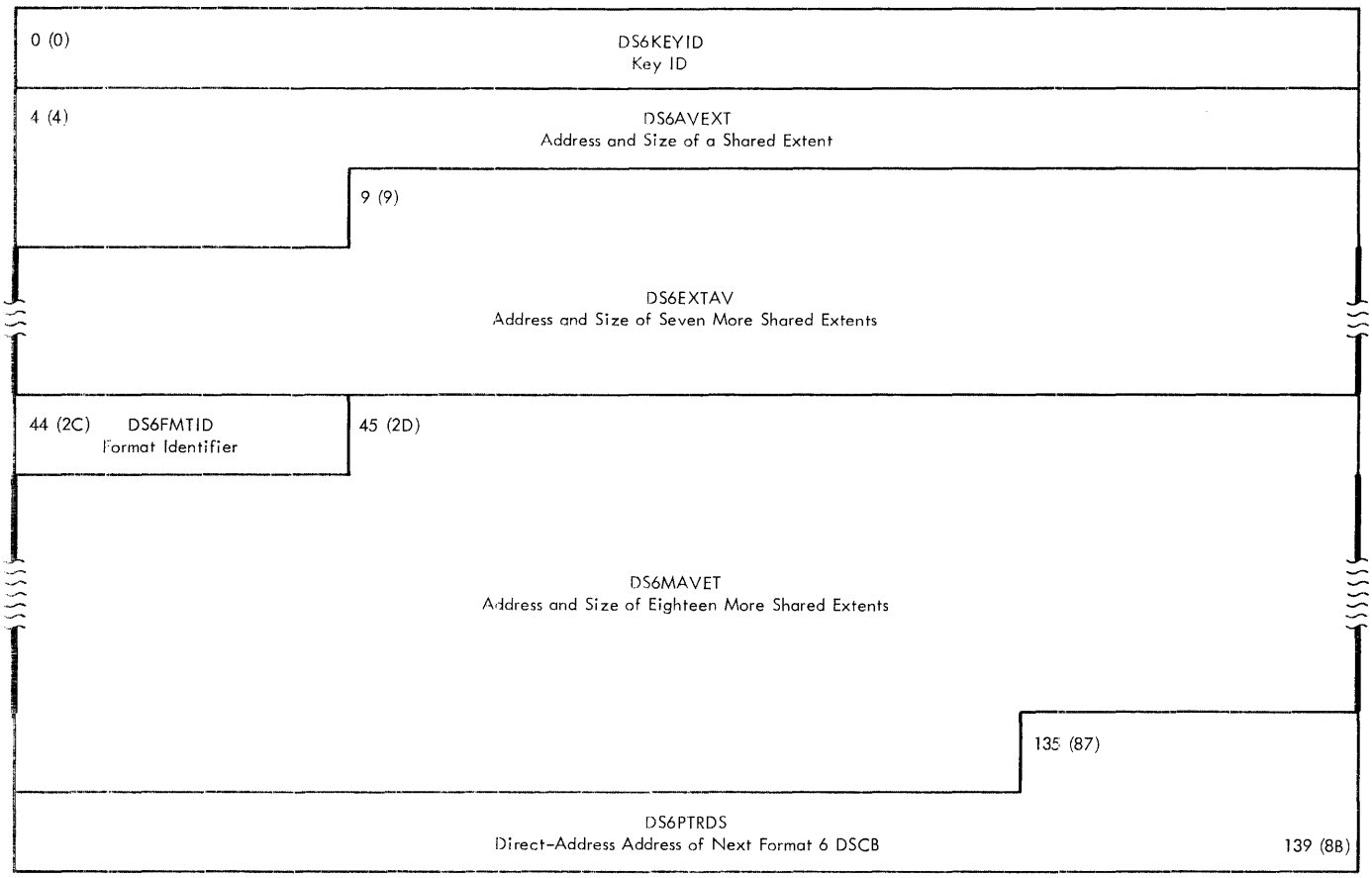


Figure 24. Data Set Control Block -- Format 6

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

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 header labels, end-of-volume trailer labels, and end-of-data set trailer labels must consist of both of these labels. In main storage these labels are recorded in EBCDIC. They are written in extended binary coded decimal interchange code (EBCDIC) on nine track tape units and in binary coded decimal (BCD) on seven track tape units. Figure 25 shows the format of data set label 1. Descriptions of the fields follow the illustration.

DATA SET LABEL 1 -- FL1

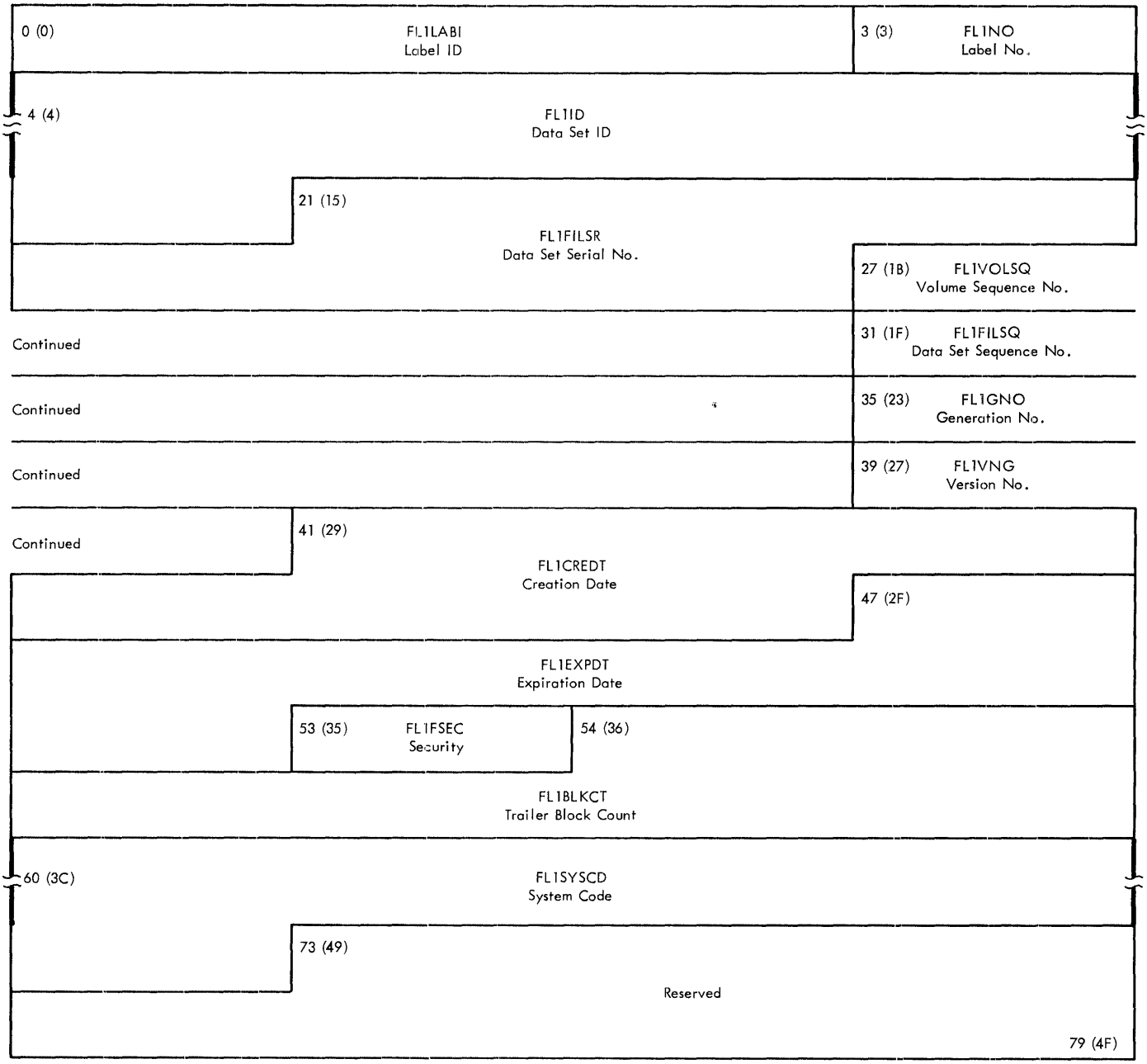


Figure 25. Data Set Label 1

DATA SET LABEL 1 -- FL1

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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 byyddd. 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.
				F1	Data set is security protected.
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.
6	(3C)	13	FL1SYSCD		System code identifying the programming system.
73	(49)	. 7			Reserved - must be recorded as blanks.

Data Set Label 2–FL2

Data Set label 2 immediately follows 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. Figure 26 shows the format of data set label 2. Descriptions of the fields follow the illustration.

DATA SET LABEL 2 -- FL2

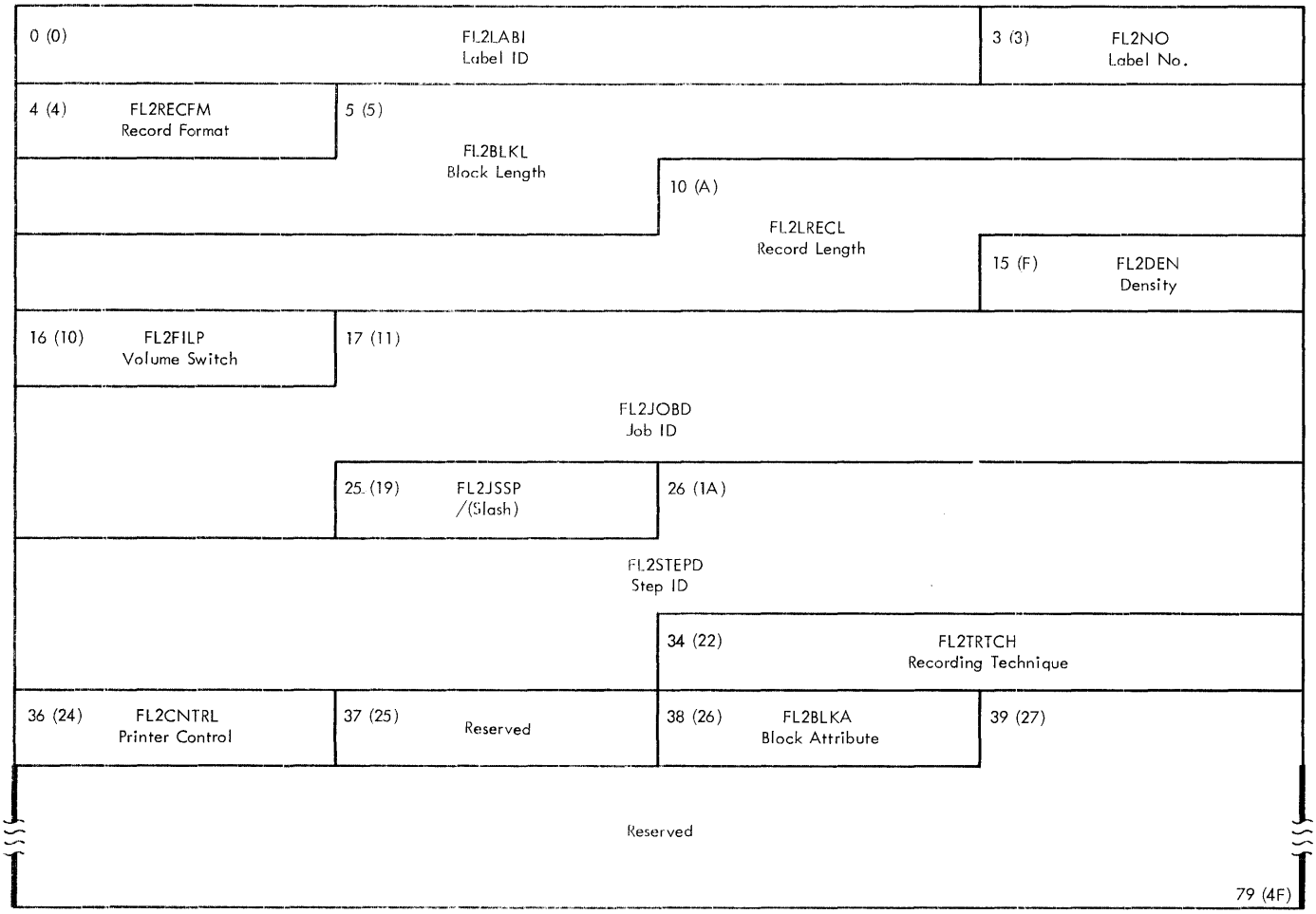


Figure 26. Data Set Label 2

DATA SET LABEL 2 -- FL2

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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.
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
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.
15	(F)	. . . 1	FL2DEN	Tape density. 2400 Series Magnetic Tape Devices. Field Value in EBCDIC 7-track 9-track 0 200 bpi - 1 556 bpi - 2 800 bpi 800 3 - 1600
16	(10)	1	FL2FILP	Data set position. Field Value in EBCDIC 1 Volume switch previously occurred 0 No volume switch has occurred
17	(11)	. 8	FL2JOBD	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

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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 - ASA 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		Reserved Must be recorded as blanks.

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 27 shows the format of the event control block. A description of its fields follows the illustration.

Figure 27. Event Control Block

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
+0	1			Awaiting completion of an event: W - Waiting for completion of an event. After completicn of an event: C - The event has completed. Completion code.
		1...		
		.1..		
		..xx xxxx		
				One of the follcwing completion codes will appear at the completion of a channel program:
				Access Methods Other Than BTAM
			7F	Channel program has terminated without error. (CSW contents useful.)
			41	Channel program has terminated with permanent error. (CSW contents useful.)
			42	Channel program has terminated because a direct access extent address has been violated. (CSW contents do not apply.)
			44	Channel program has been intercepted because of permanent error associated with device end for previous request. You may reissue the intercepted request. (CSW contents do not apply.)
			48	Request element for channel program has been made available after it has been purged. (CSW contents do not apply.)
			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.)
				BTAM
			7F	Completed normally
			41	Completed with an I/O error
			48	Enable command halted, or, I/O operation purged.
+1	. 3			Awaiting completion of an event: Request block address. After completicn 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 has been specified. The ICB is used by the access method routines and is always pointed to by an IOB. Figure 28 shows the format of the ICB. Descriptions of the fields follow the illustration.

INTERRUPTION CONTROL BLOCK

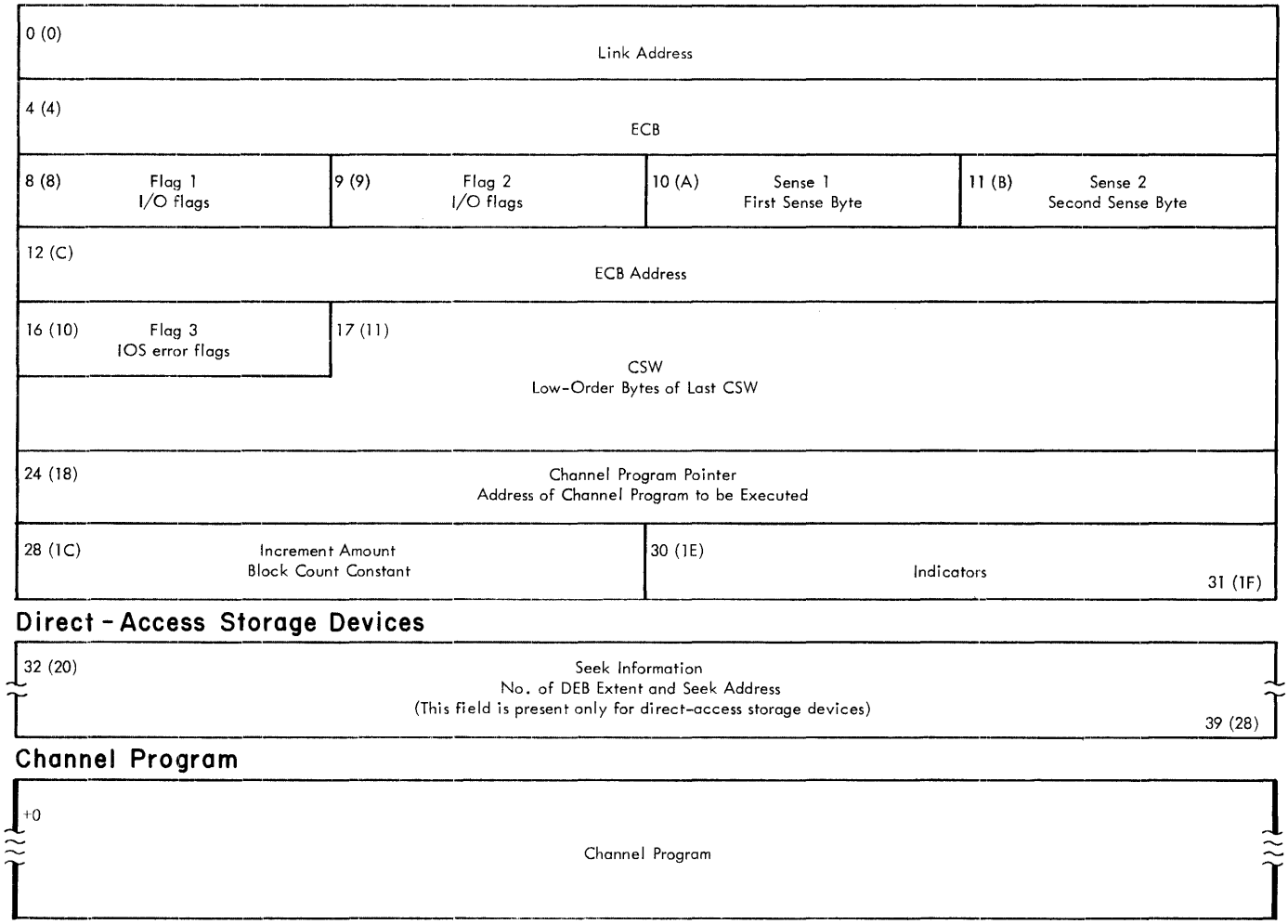


Figure 28. Interruption Control Block

INTERRUPTION CONTROL BLOCK

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				Link Address.
0	(0)	4		Address of the next ICB. The last ICB points to the first ICB.
4	(4)	4		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 unreleated flag (i.e., nonsequential).
			0	START.
			1	RESTART.
				Note: 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 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.

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

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 29 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

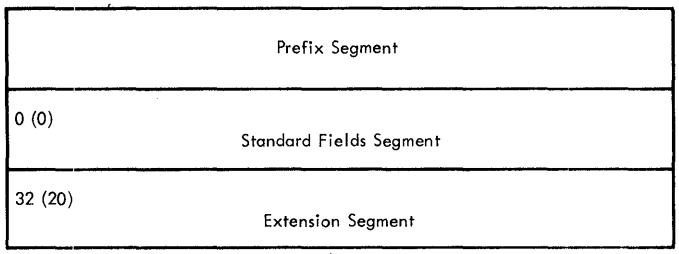
Standard Fields --

- 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) INNOP Offset to Last I/O for Input	-13 (-D) OUTNOP 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)			

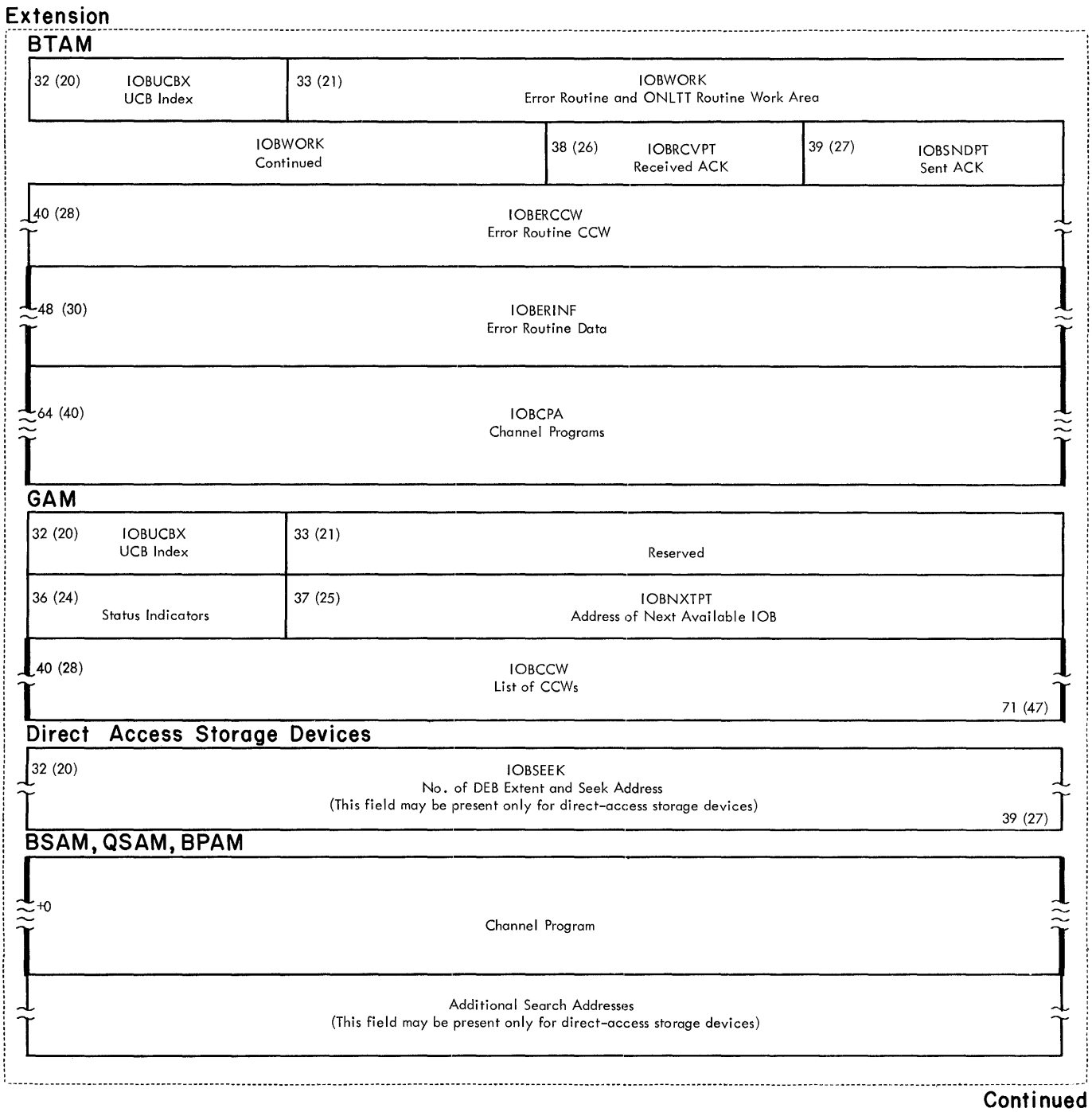
BDAM

-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 / IOBCRDCC	29(1D) IOBCRILC	30 (1E) IOBERRCT No. of Error Retries	31 (1F)

• Figure 29. Input/Output Block (Part 1 of 3)



• Figure 29. Input/Output Block (Part 2 of 3)

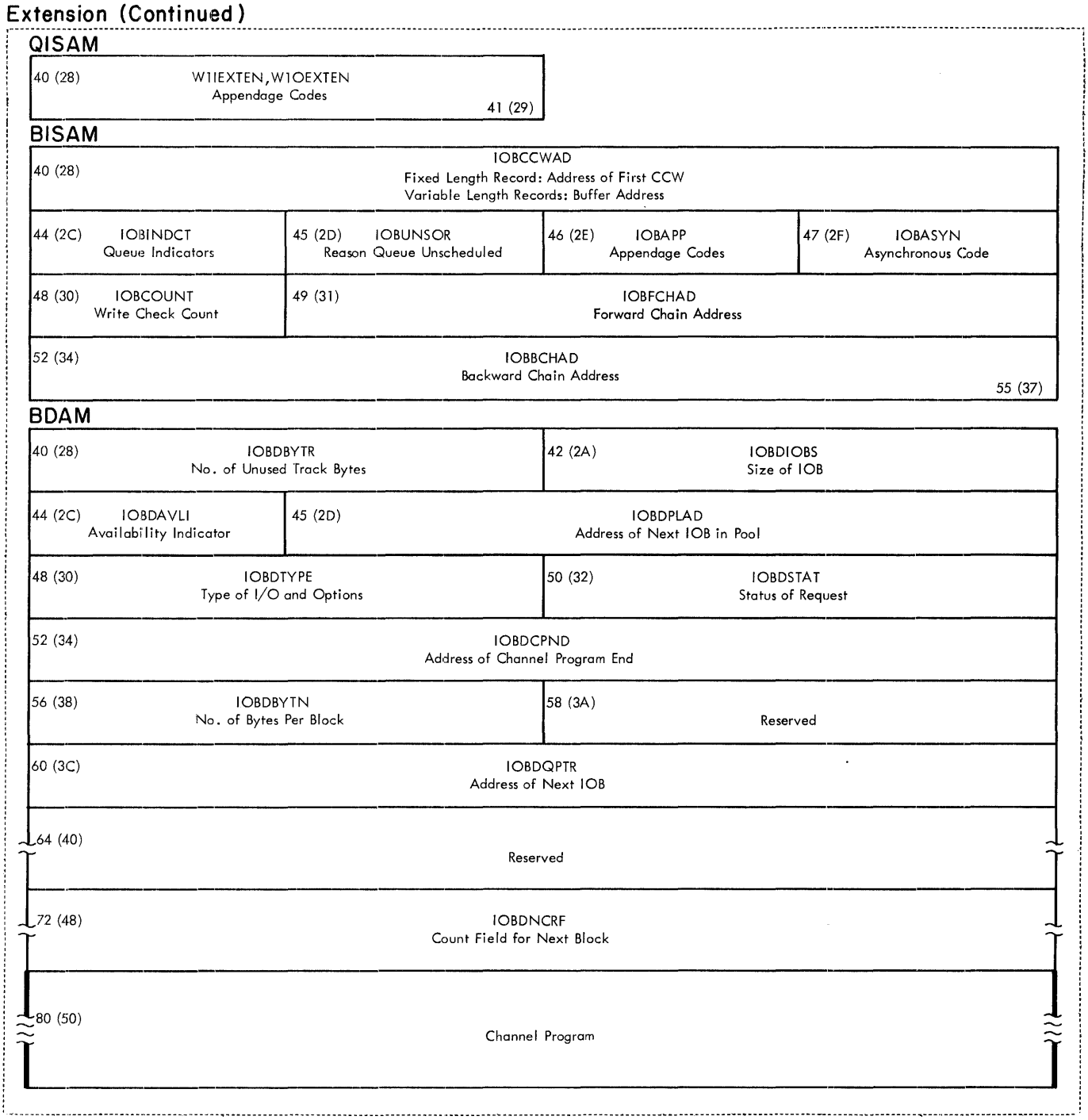


Figure 29. Input/Output Block (Part 3 of 3)

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			PREFIXES
			GAM, QISAM PREFIX
-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.
			BSAM, QSAM, BPAM -- NORMAL SCHEDULING PREFIX
-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.
			BSAM, QSAM, BPAM -- CHAINED SCHEDULING PREFIX
-16 (-10)	1	FLAG1	I/O Indicators.
		xxxx x...	(Reserved bits)
		.... .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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BDAM
-8	(-8)	1	DEQIND	Dequeue loop indicator.
			1...	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 dequeueing was interrupted by the need of this IOB for the current track.
			.xxx xxxx	(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.
				STANDARD FIELDS
0	(0)	1	IOBFLAG1	Flag byte 1
			00..	No chaining.
			01..	Command chaining.
			10..	Data chaining.
			11..	Both command and data chaining.
			..1.	Error routine in control.
			...1	Device is to be repositioned.
			.... 1...	Cyclic redundancy check (CRC) needed - tape only.
			.... .1..	Exceptional condition. After the error routine returns and this bit is on, the error is considered permanent.
			.... ..1.	IOB unrelated flag (i.e., nonsequential).
			0	START
			1	RESTART
1	(1)	. 1	IOBFLAG2	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 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 (device dependent).
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.)
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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				STANDARD FIELDS (Continued)
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)	2	IOBINCAM	QSAM, BSAM, EXCP Access Method -- Normal Scheduling: Value used to increment block count field in DCB for magnetic tape. Chained Scheduling: Zeros.
28	(1C)	1		BTAM
			1...	SAD or ENABLE issued by OPEN resulted in a permanent I/O error.
			.1..	This IOB is currently in use by an I/O operation.
			..1.	RVI was received.
			1	Line is under cn-line test operation.
			...x xxx.	(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	Used by I/O supervisor error routines to count temporary errors during retry.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				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	IOBRCVPT	Received ACK (ACK-0 or ACK-1)
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.
				GAM EXTENSION
32	(20)	1	IOBUCBX	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.
				DIRECT-ACCESS STORAGE DEVICES EXTENSION
				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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BSAM, QSAM, BPAM EXTENSION
80	(50)	n		Channel program.
		m	Additional Search Addresses	These addresses may be present for direct access storage devices only.
				QISAM -- SCAN MODE EXTENSION
40	(28)	2	W1IEXTEN, W10EXTEN	Appendage codes for both normal and abnormal channel end conditions. Code 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.
				BISAM EXTENSION
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. DCBMSWA + 8 points to overflow record key.
			.... xxx.	(Reserved bits)
			0	Normal channel end has occurred.
			1	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)

Offset	Bytes and Alignment	Field 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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			BISAM EXTENSION (Continued)
47 (2F)	. . . 1	IOBASYN	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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BDAM EXTENSION
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.
			Byte 1	
48	(30)		1...	Verify
			.1..	Overflow
			..1.	Extended search
			...1	Feedback
			.... 1...	Actual addressing.
			.... .1..	Dynamic buffering.
			.... ..1.	Read exclusive.
			1	Relative block addressing.
			Byte 2	
49	(31)		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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BDAM EXTENSION (Continued)
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 30 shows the format of the JFCB. Descriptions of the fields follow the illustration.

JOB FILE CONTROL BLOCK

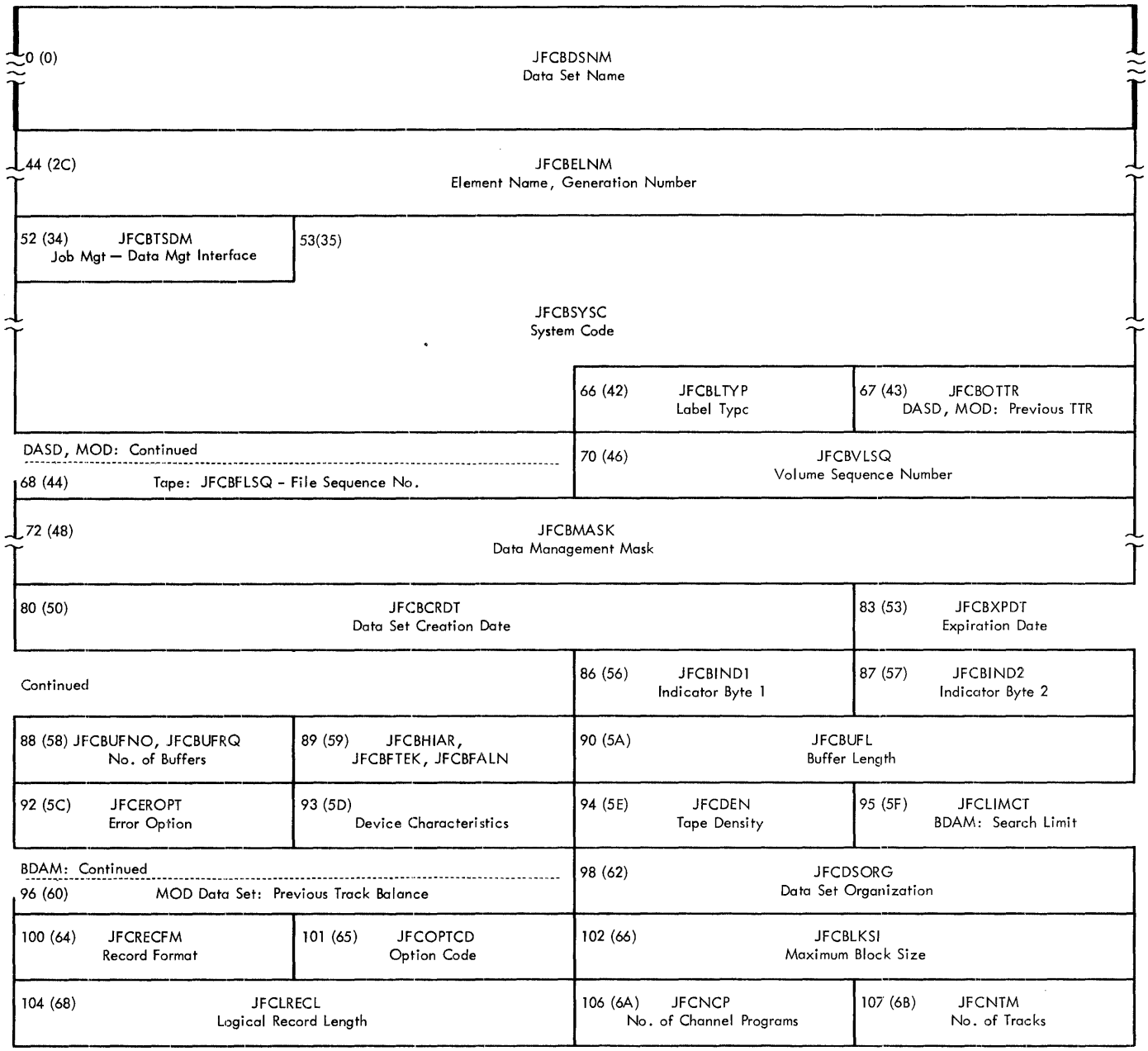


Figure 30. Job File Control Block (Part 1 of 2)

Segments

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		

UCS 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) PCP: Reserved JFCOUTLI MFT, MVT: 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) Reserved
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 30. Job File Control Block (Part 2 of 2)**

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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)	. 13	JFCBSYSC	System code.
66	(42)	. . 1	JFCBLTYP	Label type.
				Code
			xxx.	(Reserved bits)
			...1	BLP Bypass label processing
			.... 1.1.	SUL User label.
			.... .1..	NSL Nonstandard label
			.... ..1.	SL Standard label
			1	NL No label
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.
68	(44)	2	JFCBFLSQ	Magnetic Tape Devices: File sequence number.
70	(46)	. . 2	JFCBVLSQ	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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
78	(4E)		Byte 7	
			1...	Treat the INOUT option of Open as INPUT.
			.1..	Treat the OUTIN option of Open as OUTPUT.
			..1.	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.
			...1	Disposition of this data set has been changed from MOD to NEW. Disposition (in JFCBIND2) will be restored to MOD after Open.
			 xxxx	(Reserved bits)
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.
			..01	Data set security.
			.... 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. Access methods other than QTAM:
			JFCBUFNO	Number of buffers required for this data set. QTAM:
			JFCBUFRQ	Number of buffers required for each line.
89	(59)			(One of these)
89	(59)	. 1	JFCBFTEK	GAM 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).

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
89 (59)	. 1	JFCBHIAR, JFCBFTEK, JFCBFALN	
			Code
		x... .x..	Access methods other than QTAM Buffer pool location, coded in the DD statement
		0... .0..	0, Hierarchy 0 main storage.
		0... .1..	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)

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			Device Characteristics Field
93 (5D)			The content of this one-byte field depends upon the device in use.
			MAGNETIC TAPE
93 (5D)	. 1	JFCTRTCH	Tape recording technique for seven track tape.
			Code
		0010 0011	E Even parity.
		0011 1011	T BCD/EBCDIC translation.
		0001 0011	C Data conversion.
		0010 1011	ET Even parity and translation.
			DIRECT-ACCESS STORAGE
93 (5D)	. 1	JFCKEYLE	Direct access key length.
			CARD READER, CARD PUNCH
93 (5D)	. 1	JFCMODE	Mode of operation.
			Code
		1000	C Column binary mode.
		0100	E EBCDIC mode.
		JFCSTACK	Stacker Selection.
			Code
		 0001	1 Stacker 1
		 0010	2 Stacker 2
			PRINTER
93 (5D)	. 1	JFCPRTSP	Normal printer spacing.
			Code
		0000 0001	0 No spacing.
		0000 1001	1 Space one line.
		0001 0001	2 Space two lines.
		0001 1001	3 Space three lines.
			PAPER TAPE
93 (5D)	. 1	JFCCODE	Conversion code.
			Code
		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 series magnetic tape units.
			Code 7-track 9-track
		0000 0011	0 200 bpi -
		0100 0011	1 556 bpi -
		1000 0011	2 800 bpi 800 bpi
		1100 0011	3 - 1600 bpi

Offset		Bytes and Alignment		Field Name	Field Description, Contents, Meaning
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.
98	(62)			JFCDSORG	Data set organization being used.
98	(62)	. . 1			Code
			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.
99	(63)	. . . 1	0...		GS Graphics organization.
			.xxx xxxx		(Reserved bits)
100	(64)	1		JFCRECFM	Record format. Code
			10..		F Fixed.
			01..		V Variable.
			11..		U Undefined.
			..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 ASA contrcl character.
			.... .01.		M Machine code control character.
			.... .00.		No contrcl character.
			0		Always zero.
101	(65)	. 1		JFCOPTCD	Option codes.
					QSAM, BSAM, BPAM Code
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.
			...1		O 1285/1287 Optical Reader using QSAM: On-line correction.
			.... .1..		Z Magnetic Tape Devices: Used reduced error recovery procedure. (EXCP also)
			.... ..1.		T BSAM, QSAM only: User Totaling.
			.... x..x		(Reserved bits)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				BISAM, QISAM
				Code
101	(65)	. 1	1...	W Write validity check.
			.x.. .x..	(Reserved bits)
			..1.	M Master Indexes.
			...1	I Independent overflow area.
			.... 1...	Y Cylinder overflow area.
			.... ..1.	L Delete option.
			1	R Reorganization criteria.
				BDAM
101	(65)	. 1	1...	W Write validity check.
			.1..	Track overflow.
			..1.	E Extended search.
			...1	F Feedback.
			.... 1...	A Actual addressing.
			.... .xx.	(Reserved bits)
			1	R Relative block addressing.
102	(66)	. . 2	JFCBLKSI	Maximum block size.
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.
				NORMAL 108 SEGMENT
				(Present unless the UCS 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
				UCS SEGMENT
				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.
			x.x. xxxx	(Reserved bits)
			.1..	UCS image is to be loaded in the FOLD mode.
			...1	UCS image is to be verified.
				END OF UCS SEGMENT

Offset		Alignment	Name	Field Description, Contents, Meaning
113	(71)	. 1	JFCCPRI	QTAM: Priority between send and receive operations. Code 1... .... S Send priority. .1.. .... E Equal priority. ..1. .... R Receive priority. ...x xxxx (Reserved bits)
114	(72)	. . 2	JFCSOWA	QTAM: Length, in bytes, of the user provided work area.
113	(71)	. 3	JFCOUTLI	SMF - SYSOUT Limit: PCP: Reserved. MFT,MVT: Binary representation of the OUTLIM= parameter on the SYSOUT DD statement. The maximum number of logical records specified for this output data set.
116	(74)	1		Reserved.
117	(75)	. 1	JFCBNVOL	Number of volume serial numbers.
118	(76)	. . 30	JFCBVOLS	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	Space parameters. 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.
156	(9C)	3	JFCBSQTY	Secondary quantity of direct access storage required.
159	(9F)	. . . 1		Reserved
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 31 shows its format; a description of its fields follows the illustration.

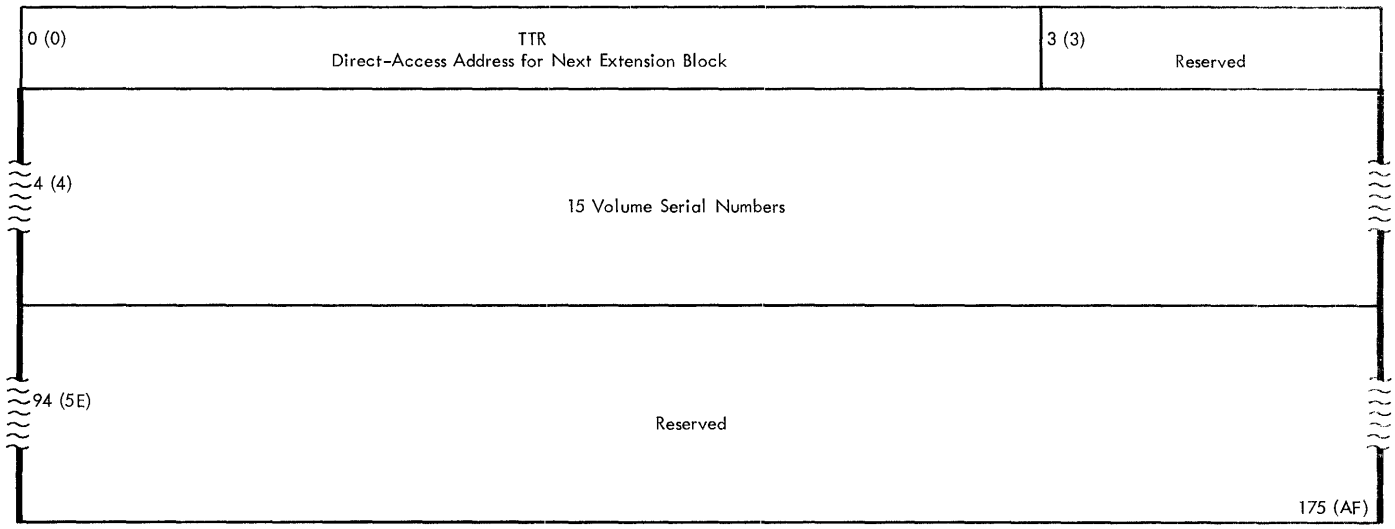


Figure 31. JFCB Extension Block

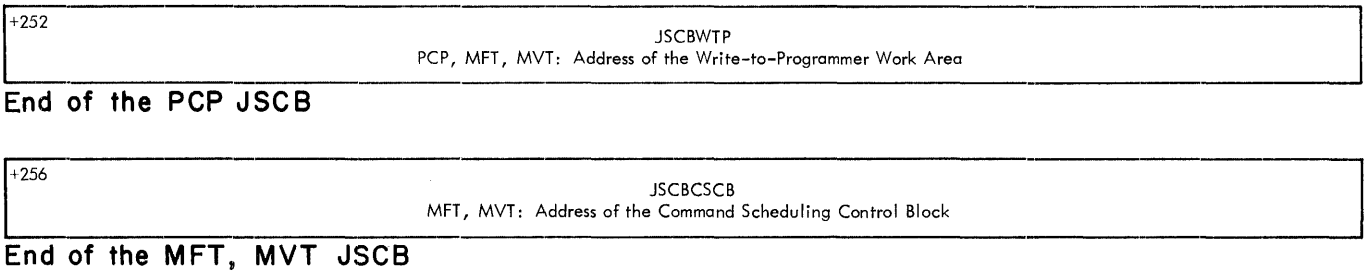
Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	3		TRR of the next extension block.
3	(3)	. . . 1		Reserved
4	(4)	90		Up to fifteen 6 byte volume serial numbers specified in the same format as JFCBVOLS.
94	(5E)	. . 82		Reserved

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 32 shows the format of the Job Step Control Block. Descriptions of the fields follow the illustration.



• Figure 32. Job Step Control Block

Offset	Bytes and Alignment	Field Name	Field Description	Contents	Meaning
+252	4	JSCBWTP	PCP,MFT,MVT:		
	1		Reserved.		
	. 3		The address of the Write-to-Programmer work area used to write messages to this job step's system output data set.		
			End of the PCP JSCB		
+256	4	JSCBCSCB	MFT,MVT:		
	1		Reserved.		
	. 3		The address of the Command Scheduling Control Block used to process commands received for this job step.		
			End of the MFT, MVT JSCB		

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 33 shows the format of the LCB. Descriptions of the fields follow the illustration.

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) LCBBRKCT Last Status, Time of Interruption
44 (2C) LCBTTIWD Address of Terminal Table Entry	46 (2E) LCBDLPTR Address of Next Entry in Distriblist

Continued

Figure 33. Line Control Block (Part 1 of 2)

Line Control Block - Continued

Input/Output Block

48 (30) LCBFLAG2, IOBFLAG1 Status Bits		49 (31) LCBFLAG2, ICBFLAG2 Delay Bits		LCBSENSE 50 (32) IOBSENS0 SENSE Status	51 (33) IOBSENS1 SENSE Status
52 (34) LCBECBPT, IOBECBPT Not Used by QTAM					
56 (38) LCBCSW, IOBCSW Channel Status					
64 (40) LCBIOCC, 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					95 (5F)
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 33. Line Control Block (Part 2 of 2)

LINE CONTROL BLOCK

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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.
					RECEIVE SCHEDULER STCB (Sub Task Control Block)
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.
					END OF RECEIVE SCHEDULER STCB
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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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	LCBBRKCT		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.
					INPUT/OUTPUT BLOCK FORMAT
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,		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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
72	(48)	4	LCBRESTR, IOBRESTR		Address of the CCW for SIO command for first message data transfer.
76	(4C)	2	LCBINCAM, IOBINCAM		
76	(4C)		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.
77	(4D)		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. Threshold Counters for Number of:
		. . 1	LERTHTR		transmissions.
		. . . 1	LERTHDC		data checks.
		1	LERTHIR		interventions required.
		. 1	LERTHTO		timeouts.
		. . 2			Reserved
					END OF LINE CONTROL BLOCK

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 34A 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

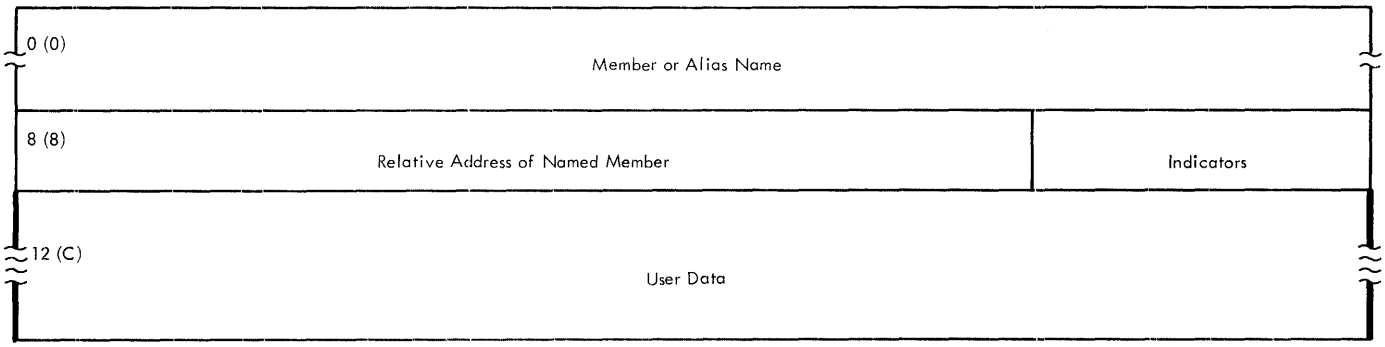


Figure 34A. PDS Directory Entry -- General Format

PDS DIRECTORY ENTRY

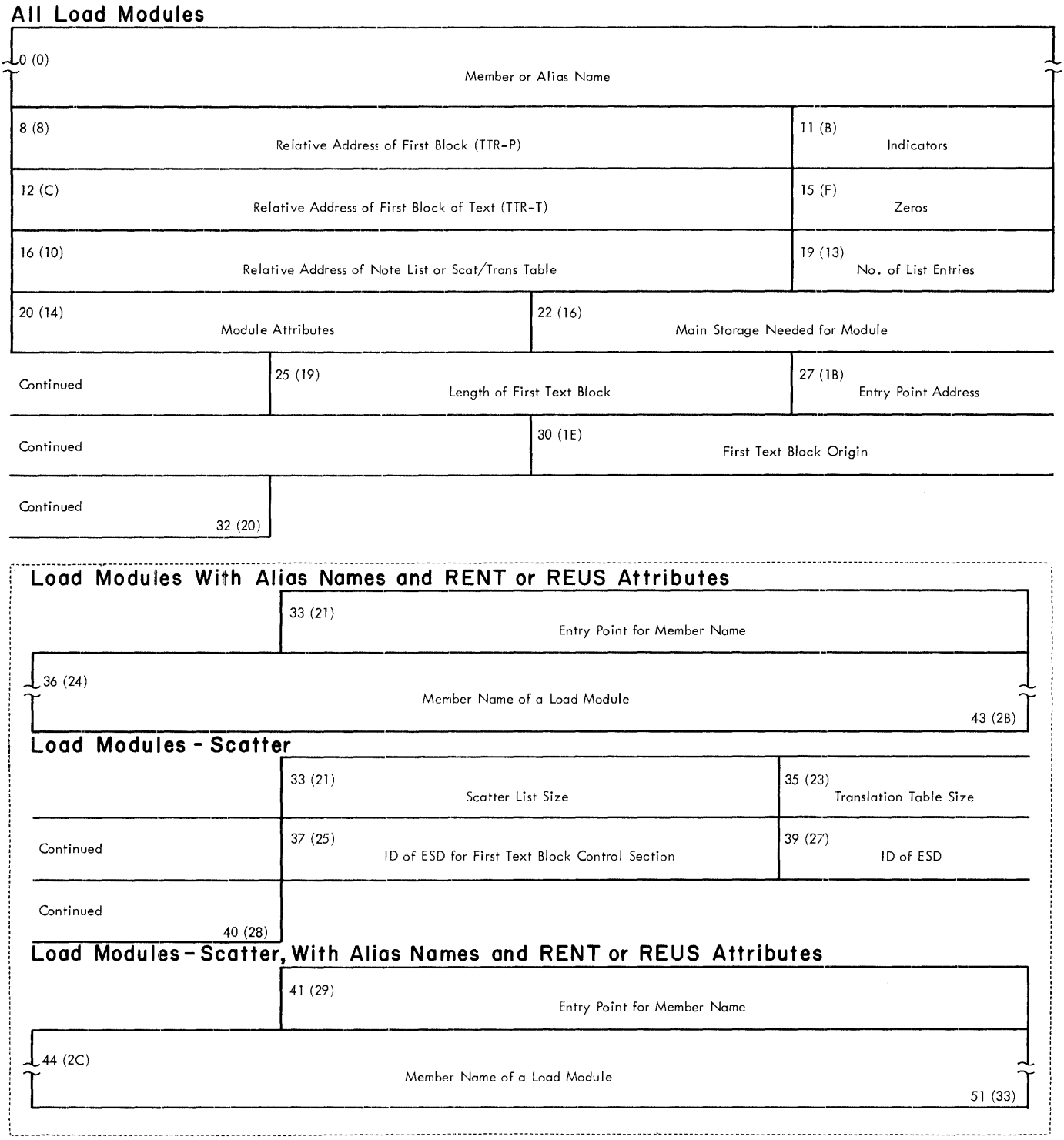
Offset		Bytes and Alignment	Field Description, Contents, Meaning
			Name
0	(0)	8	Member name of alias name.
			TTR
8	(8)	3	TTR of the first block of the named member.
			C
11	(B)	. . . 1	Indicators.
			1... .... Name is an alias.
			.xx. .... Number of TTR's in the user data field. A maximum of three is allowed.
			...x xxxx Length of the user data field in half words.
			User Data
12	(C)	n	Variable user data as provided as input to the STOW macro instruction. Up to three pointers to locaticns 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 zercs.
			The remaining bytes in the user data area are optional in their format and use.

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 34B 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 BLDL routine when it places the entry into a BLDL list.

PDS DIRECTORY ENTRY



• Figure 34B. PDS Directory Entry -- Format 1

PDS DIRECTORY ENTRY

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			Standard Field
			Name
0	(0)	8	Load module member name or alias name.
			TTR-P
8	(8)	3	TTR of the first block of the named member (load module).
			Indicators
11	(B)	. . . 1	Bit State Meaning 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.
			User Data Field
			TTR-T
12	(C)	3	TTR of the first block of text.
15	(F)	. . . 1	Zeros.
			TTR-N/S
16	(10)	3	TTR of the Note List or Scatter/Translation Table. Used for modules in scatter load format or overlay structure only.
			NL
19	(13)	. . . 1	The number of entries in the note list for modules in overlay structure; otherwise zero.
20	(14)	2	**Attributes**

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

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			User Data Field (Continued)
			Main Storage
22	(16)	. . 3	Total contiguous main storage requirement of module.
			First Text Block Length
25	(19)	. 2	Length of the first block of text.
			EP Address
27	(1B)	. . . 3	Entry point address associated with member name or with alias name if the alias indicator is on.
			First Text Block Origin
30	(1E)	. . 3	Linkage editor assigned origin of the first block of text.
			LOAD MODULE -- ALIAS NAME AND RENT OR REUS ATTRIBUTE
			EP-Member Name
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.
			Member Name
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.
			LOAD MODULE -- SCATTER
			Scatter List Size
33	(21)	. 2	Number of bytes in the scatter list.
			Transl-Table Size
35	(23)	. . . 2	Number of bytes in the translation table.
			ESDID-T
37	(25)	. 2	Identification of the ESD item (ESDID) of the control section to which the first block of text belongs.
			ESDID-CSECT
39	(27)	. . . 2	Identification of the ESD item (ESDID) of the control section containing the entry point.
			LOAD MODULE -- SCATTER, WITH ALIAS NAME AND RENT OR REUS ATTRIBUTE
			EP-Member Name
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.
			Member Name
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 34C 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).

All Load Modules

PDS DIRECTORY ENTRY

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	43(2B)	
Load Module Member Name 53(35)		

• Figure 34C. PDS Directory Entry -- Format 2

PDS DIRECTORY ENTRY

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			Standard Field
0	(0)	8	**Name** Load module member name or alias name.
8	(8)	3	**TTR-P** TTR of the first block of the named member (load module).
11	(B)	. . . 1	Concatenation number of the data set.
12	(C)	1	**Library** 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	**Indicators** **Bit Setting** **Meaning** 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.
			User Data Field
			TTR-T
14	(E)	. . 3	TTR of the first block of text.
17	(11)	. 1	Zeros.
			TTR-N/S
18	(12)	. . 3	TTR of the Note List or Scatter/Translation Table. Used for modules in scatter load format or overlay structure only.
			NL
21	(15)	. 1	The number of entries in the note list for modules in overlay structure.
22	(16)	. . 2	**Attributes**

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 symbcl cards.
.... ..1. Module created by linkage editor F.
....1 Refreshable module.

PDS DIRECTORY ENTRY

Offset		Bytes and Alignment	Field Description, Contents, Meaning
			User Data Field (Continued)
			Main Storage
25	(19)	. 2	Total contiguous main storage requirement of module.
			First Text Block Length
27	(1B)	. . . 2	Length of the first block of text.
			EP Address
29	(1D)	. 3	Entry point address associated with member name or with alias name if the alias indicator is on.
			First Text Block Origin
32	(20)	3	Linkage editor assigned origin of the first block of text.
			LOAD MODULE -- ALIAS NAME AND RENT OR REUS ATTRIBUTE
			EP-Member Name
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	Member Name
			The member name of the load module when the first field is an alias name and the load module has reenterable or reusable attributes.
			LOAD MODULE -- SCATTER
			Scatter List Size
35	(23)	. . . 2	Number of bytes in the scatter list.
			Transl-Table Size
37	(25)	. 2	Number of bytes in the translation table.
			ESDID-T
39	(27)	. . . 2	Identification of the ESD item (ESDID) of the control section to which the first block of text belongs.
			ESDID-CSECT
41	(29)	. 2	Identification of the ESD item (ESDID) of the control section containing the entry point.
			LOAD MODULE -- SCATTER, WITH ALIAS NAME AND RENT OF REUS ATTRIBUTE
			EP-Member Name
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.
			Member Name
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:

- PCP, MFT Configuration --

  LPRB,LRB,PRB,FRB,IRB,SIRB,SVRB:
  Figure 35A and following text

- MVT Configuration --

  IRB: Figure 35B and following text

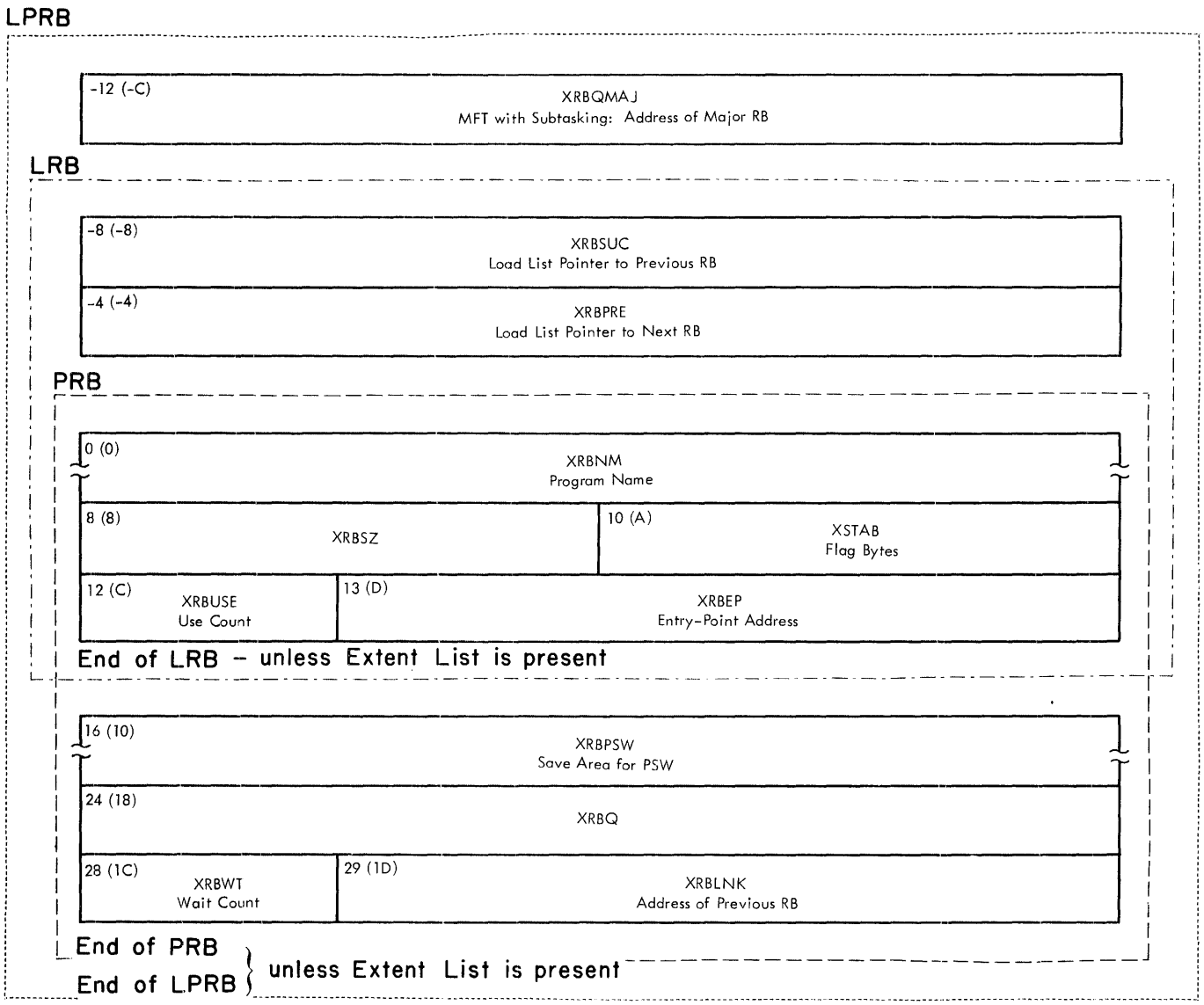
  PRB: Figure 35C and following text

  SIRB: Figure 35D and following text

  SVRB --
  Resident SVC Routines:
  Figure 35E and following text
  Transient SVC Routines:
  Figure 35F and following text

Request Blocks— PCP, MFT Configurations

Request blocks used by the PCP and MFT configurations of System/360 Operating System are described and illustrated here. Figure 35A shows the different formats; field descriptions follow the illustration.



Program Extent List (LRB, LPRB, PRB)

+0 (+0)	XLISTLH0 Length of Program Extent in Hierarchy 0
+4 (+4)	XLISTLH1 Length of Program Extent in Hierarchy 1
+8 (+8)	XLISTAH0 Address of Program Extent in Hierarchy 0
+12 (C)	XLISTAH1 Address of Program Extent in Hierarchy 1 +15 (F)

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 35A. Request Blocks -- PCP, MFT (part 1 of 2)

REQUEST BLOCK -- PCP, MFT

FRB

-8 (-8)	XRBSUC Pointer to RB of Previously Loaded Program
-4 (-4)	XRBPRE Pointer to RB of Program Loaded Imediately After This One
0 (0)	XRBNM Program Name
8 (8) XRBSZ	10(A) XRBSTAB Flags
12 (C)	XRWTL Address of Most Recent Wait List Element
16 (10)	XRREQ Pointer to the TCB of the Requesting Task
20 (14)	XRTLPRB Pointer to the LPRB Built by FINCH

IRB, SIRB, SVRB

0 (0)	XRBNM Program Name
8 (8) XRBSZ	10 (A) XSTAB Flag Bytes
12 (C) XRBUSE Use Count	13 (D) XRBEP Entry Point Address
16 (10)	XRBPSW Save Area for PSW
24 (18)	XRBQ
28 (1C) XRBWT Wait Count	29 (1D) XRBLNK Address of Previous RB
32 (20)	XRBREG Save Area for 16 General Registers

End of IRB, SIRB

96 (60)	Extended Save Area (up to 6 doublewords)

End of SVRB

• Figure 35A. Request Blocks -- PCP, MFT (Part 2 of 2)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
-12	(-C)	4	XRBQMAJ	LPRB: MFT 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	XRBPRE	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). LPRB, LRB, PRB, FRB Program name. IRB For timer, 1st byte contains flags; for all other uses, contains no meaningful information. SIRB 8 character name of the error routine currently occupying the 400 byte I/O supervisor transient area. SVRB 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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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	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..	MFT only: 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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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.
				End of LRB
				(unless the program was hierarchy block loaded - XSTAB byte 1 bit 6 on.)
				Program Extent List
				(If the program was hierarchy block loaded, the following fields exist)
16	(10)	4	XLISTLH0	The length in bytes of the program extent contained in hierarchy 0. This does not include the RB length.
20	(14)	4	XLISTLH1	The length in bytes of the program extent contained in hierarchy 1.
24	(18)	4	XLISTAH0	The address of the program extent contained in hierarchy 0. It is not the address of the RB.
28	(1C)	4	XLISTAH1	The address of the program extent contained in hierarchy 1.
				End of the LRB Program Extent List
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.
				End of the FRB
24	(18)	4	XRBQ	IRB: Address of a 12 byte or 16 byte request element.
				LPRB: Address of an LPRB describing an entry identified via the IDENTIFY macro instruction.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				PRB: Address of an LPRB describing an entry identified via the IDENTIFY macro instruction. SIRB: Address of a 12 byte or 16 byte request element. SVRB: 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. End of LPRB and PRB (unless the program was hierarchy block loaded - XSTAB byte 1 bit 6 on.) Program Extent List (If the program was hierarchy block loaded, the following fields exist.)
32	(20)	4	XLISTLH0	The length in bytes of the program extent contained in hierarchy 0. This does not include the RB length.
36	(24)	4	XLISTLH1	The length in bytes of the program extent contained in hierarchy 1.
40	(28)	4	XLISTAH0	The address of the program extent contained in hierarchy 0. It is not the address of the RB.
44	(2C)	4	XLISTAH1	The address of the program extent contained in hierarchy 1. End of LPRB, PRB Program Extent List.
32	(20)	64	XRBREG	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.

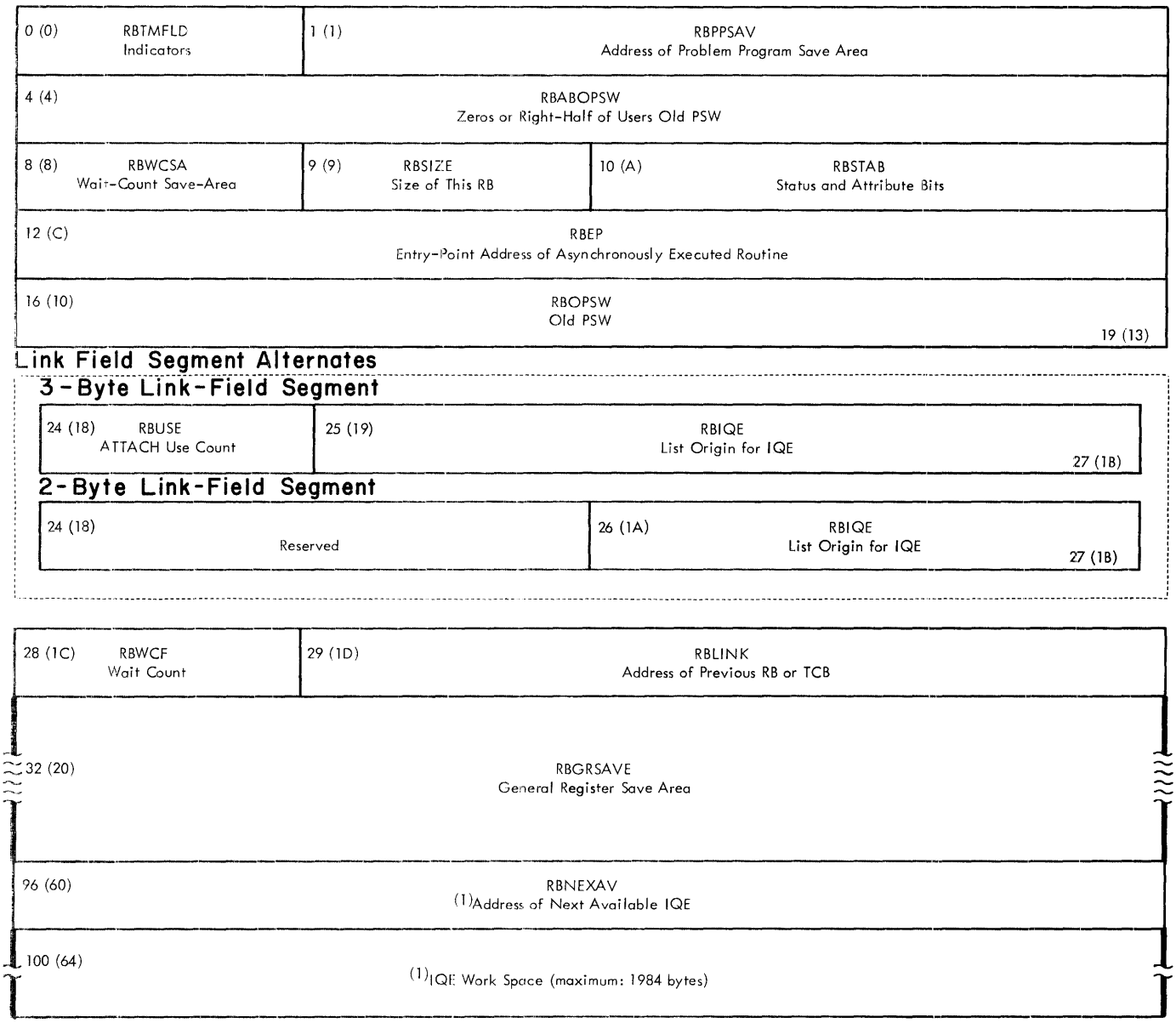
Separate diagrams and descriptions are presented for the following uses of RBs in the MVT configuration:

- 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 35B shows the format of an IRB used in MVT. Descriptions of the fields follow the illustration.

INTERRUPTION REQUEST BLOCK -- MVT



(1) These 2 fields are present only if requested

Figure 35B. Interruption Request Block -- MVT

INTERRUPTION REQUEST BLOCK -- MVT

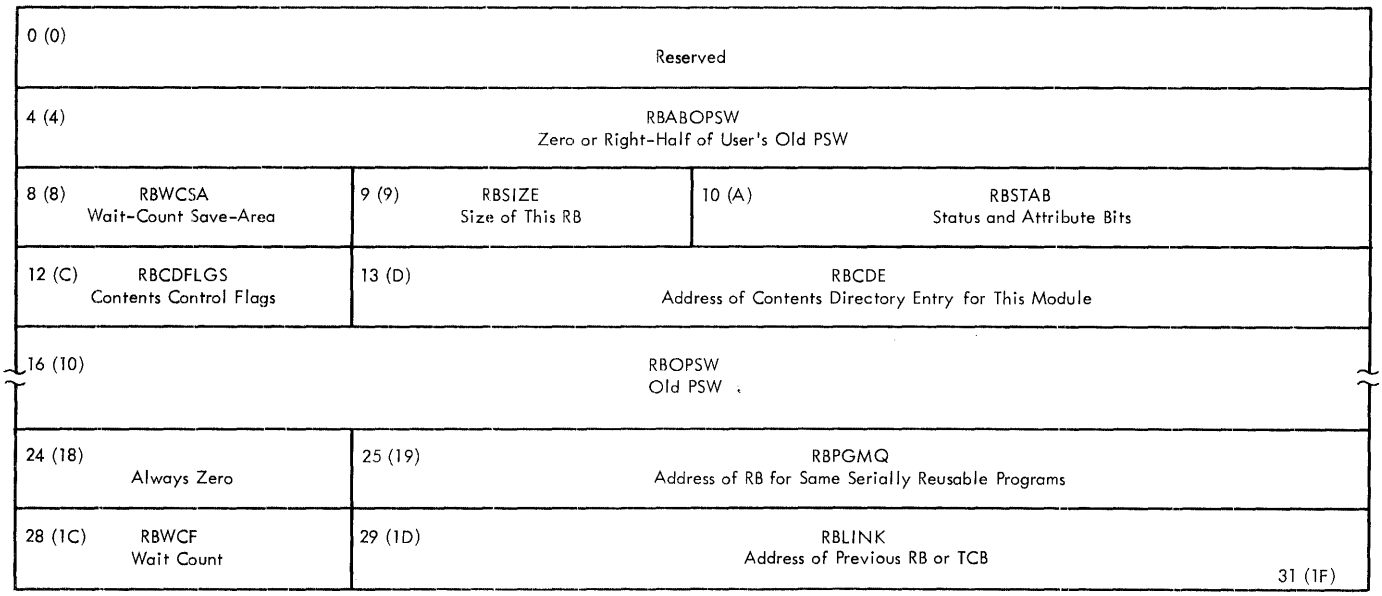
Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	1	RBTMFLD	Indicators for the timer routines. When there are no timer routines, this field is zero.
			1...	Timer element not on queue.
			.1..	Local time-of-day option is used.
			..00	Time interval requested in timer units.
			..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.
			..x.	Reserved
			...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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				LINK-FIELD SEGMENT ALTERNATES
				THREE-BYTE LINK-FIELD SEGMENT
24	(18)	1	RBUSE	Use count used by ATTACH.
25	(19)	. 3	RBIQE	List origin for interruption queue elements (IQE).
				TWO-BYTE LINK-FIELD SEGMENT
24	(18)	2		Reserved
26	(1A)	. . 2	RBIQE	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	Either address of previous request block on 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; in the sequence 0 to 15.
				THE FOLLOWING FIELDS ARE PRESENT IF THE SPACE WAS REQUESTED
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 Blocks–MVT

The program request block (PRB) is used by the supervisor for maintaining information concerning a program needed to perform a task. Figure 35C shows the format of a PRB used in MVT. Descriptions of the fields follow the illustration.

PROGRAM REQUEST BLOCK -- MVT



• Figure 35C. Program Request Block -- MVT

PROGRAM REQUEST BLOCK MVT

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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..	Interruption 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).
			..xx	(Reserved bits)
			.... 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	Either address of previous request block (RB) on RB queue or address of the TCB if this is the first request block cn 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 35D shows the format of an SIRB used in MVT. Descriptions of the fields follow the illustration.

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

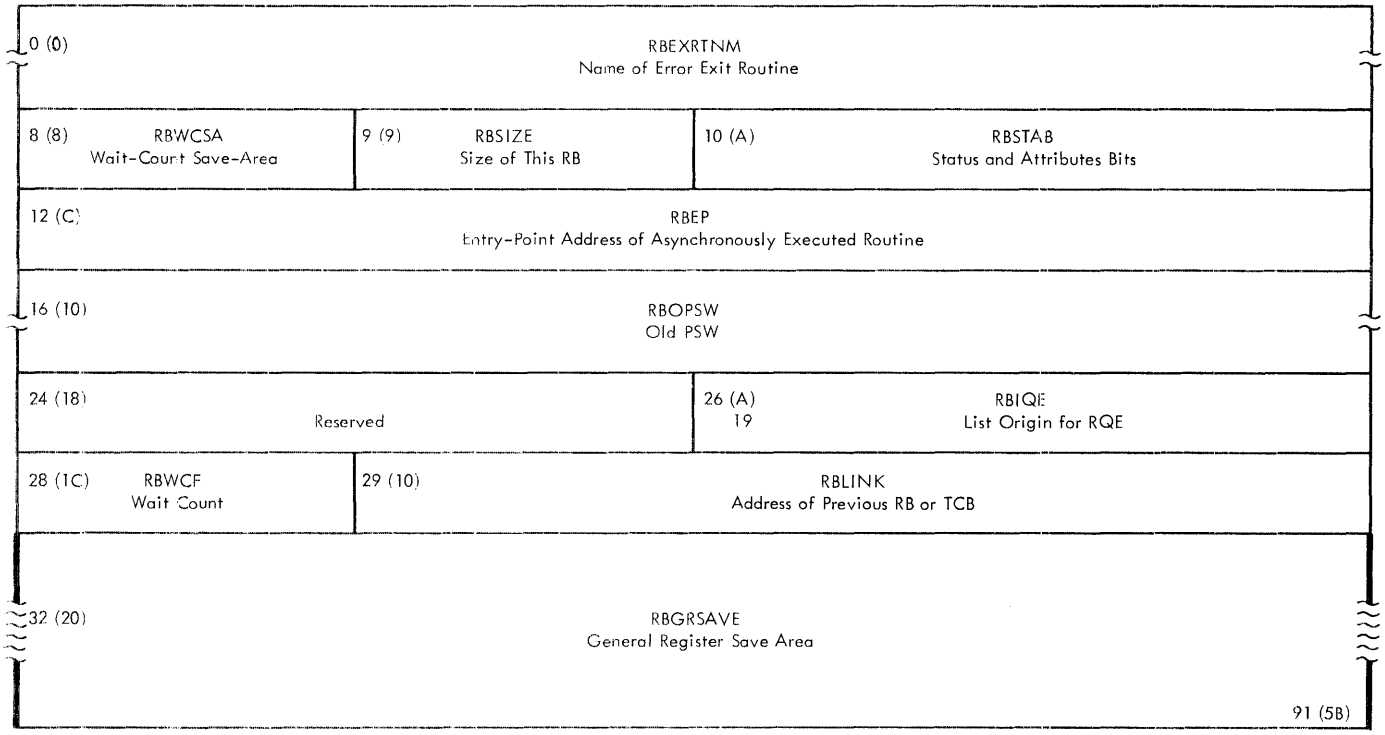


Figure 35D. System Interruption Request Block -- MVT

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	8	RBEXRTNM	One to eight characters of the name of the error exit routine. First four characters are IGE0 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	Either address of the previous request block (RB) 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.

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.

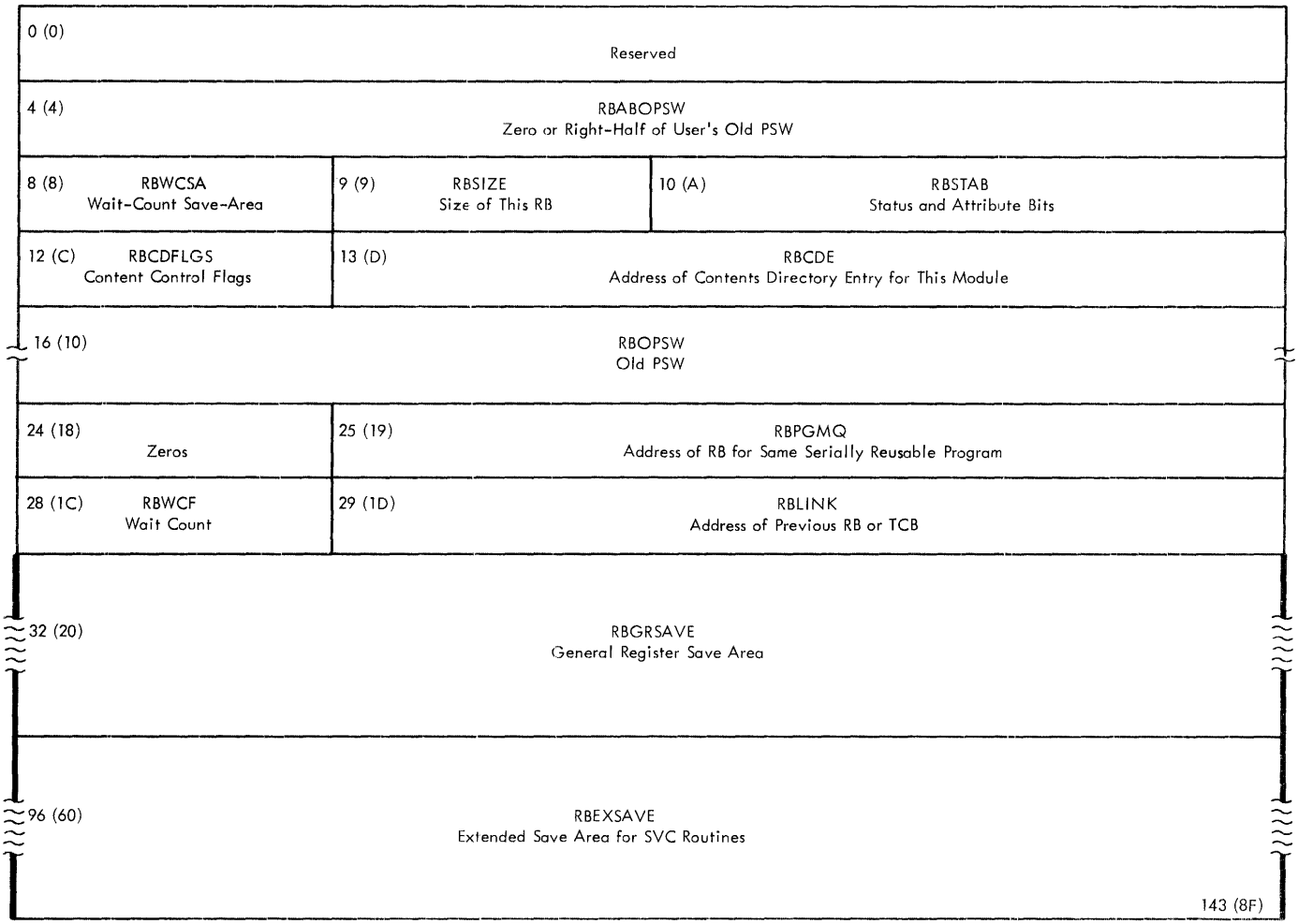
Separate diagrams and descriptions are presented for the following uses of SVRBs in MVT:

- 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 35E shows its format used in MVT; field descriptions follow the illustration.

SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES



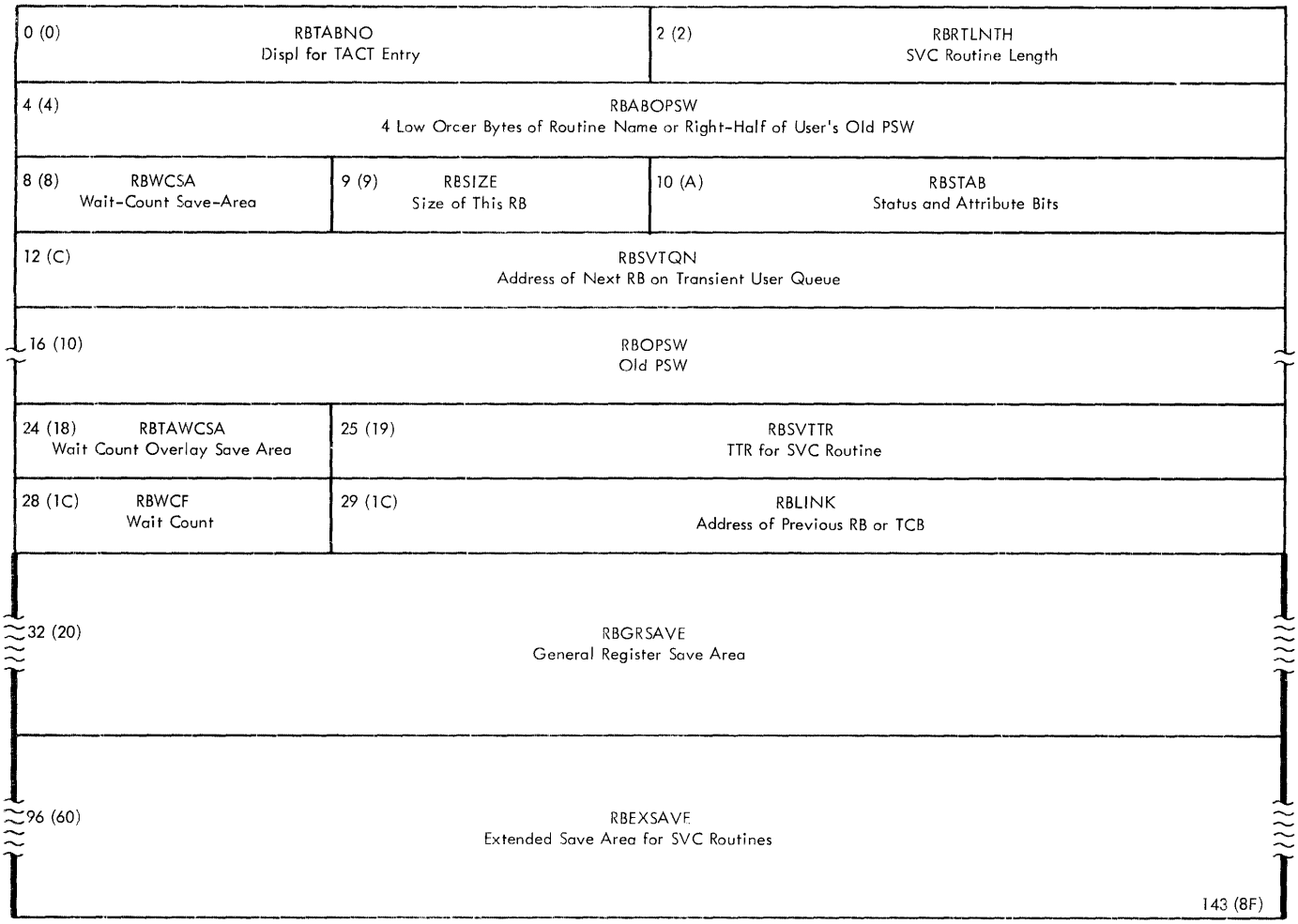
• Figure 35E. Supervisor Request Block -- Resident SVC Routines

SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	4		Reserved
4	(4)	4	RBABOPSW	After excecution of the ABTERM routine, contains right-half of user's old PSW; else 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	Address of 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)	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 35F shows its format used in MVT; field descriptions follow the illustration.



• Figure 35F. Supervisor Request Block -- MVT -- Transient SVC Routines

SUPERVISOR REQUEST BLOCK -- MVT TRANSIENT SVC ROUTINE

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
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 SMFDEFLT 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 36 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 Primary SMF Data Set			
		30 (1E) SMCAPSTA Primary Device Status	31 (1F) SMCAPDAR Primary Device Address
Continued		34 (22) SMCAPLBL Primary Label Status	35 (23) SMCAXORY Contains an X or Y
36 (24) SMCAPDCB Address of Primary DCB			
40 (28) SMCAADEV Volume Serial Number of Alternate SMF Data Set			
		46 (2E) SMCASTA Alternate Device Status	Alternate Device Address
Continued		50 (32) Alternate Label Status	51 (33) Contains an X or Y
62 (34) SMCAADCB Address of Alternate 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) SMCAEND1 Data Set Was/Was Not Found	81 (51) SMCAENOP SMF Open Data Set Switch	82 (52) Reserved	83 (53) Reserved

Continued

Figure 36. System Management Control Area (Part 1 of 2)

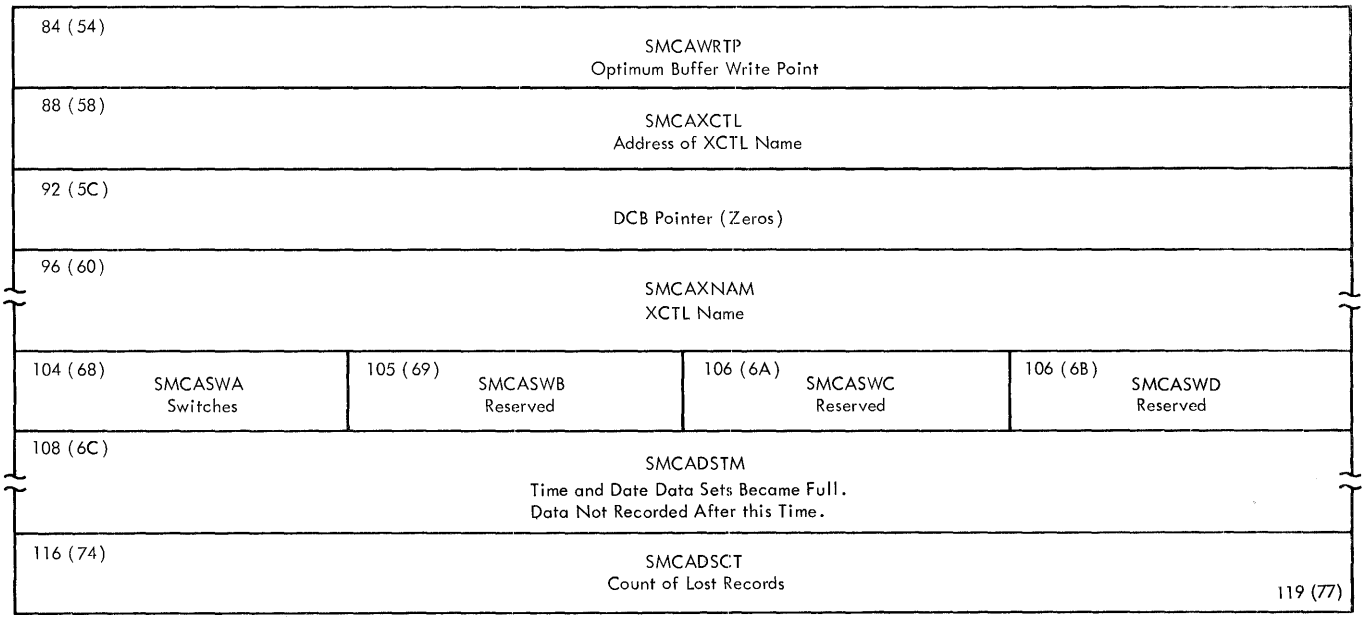


Figure 36. System Management Control Area (Part 2 of 2)

SYSTEM MANAGEMENT CONTROL AREA

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	1	SMCAOPT	Contains the SMFDEFLT options selected at initialization time.
			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).
			x	Reserved.
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).
			...1	SMF data set to be opened.
			.... ..0.	Left half of buffer in use.
			.... ..1.	Right half of buffer in use.
			..x. 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.
				Primary SMF Data Set Descriptive Fields
24	(18)	6	SMCAPDEV	Volume serial number of the SMF prime data set.
30	(1E)	. . 1	SMCAPSTA	Primary SMF data set device status.
			1...	Data set is not available for recording.
			..1.	This is a direct access device.
			...1	The data set is empty.
			.... ..1.	Device address is defined.
			1	Volume serial number is defined.
			.x.. xx..	(Reserved bits)
31	(1F)	. . . 3	SMCAPDAR	Primary SMF data set device address.
34	(22)	. . 1	SMCAPLBL	Label status of the primary SMF data set.
			xxxx x...	(Reserved bits)
			.... .1..	Nonstandard label (NSL).
			.... ..1.	Standard label (SL).
			1	No label (NL).

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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 SMF primary data set DCB.
					Alternate SMF Data Set Descriptive Fields
40	(28)	6	SMCAADEV		Volume serial number of the SMF alternate data set.
46	(2E)	. . 1	SMCASTA		Alternate SMF data set device status.
				1...	Data set is not available for recording.
				..1.	This is a direct access device.
				...1	The data set is empty.
				.... ..1.	Device address is defined.
				1	Volume serial number is defined.
				.x.. xx..	(Reserved bits)
47	(2F)	. . . 1			Alternate SMF data set device address.
50	(32)	. . 1			Label status of the alternate 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 SMF alternate data set DCB.
					End of Alternate Data Set Fields
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			Reserved
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.

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

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 (PCP, 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 -- PCP

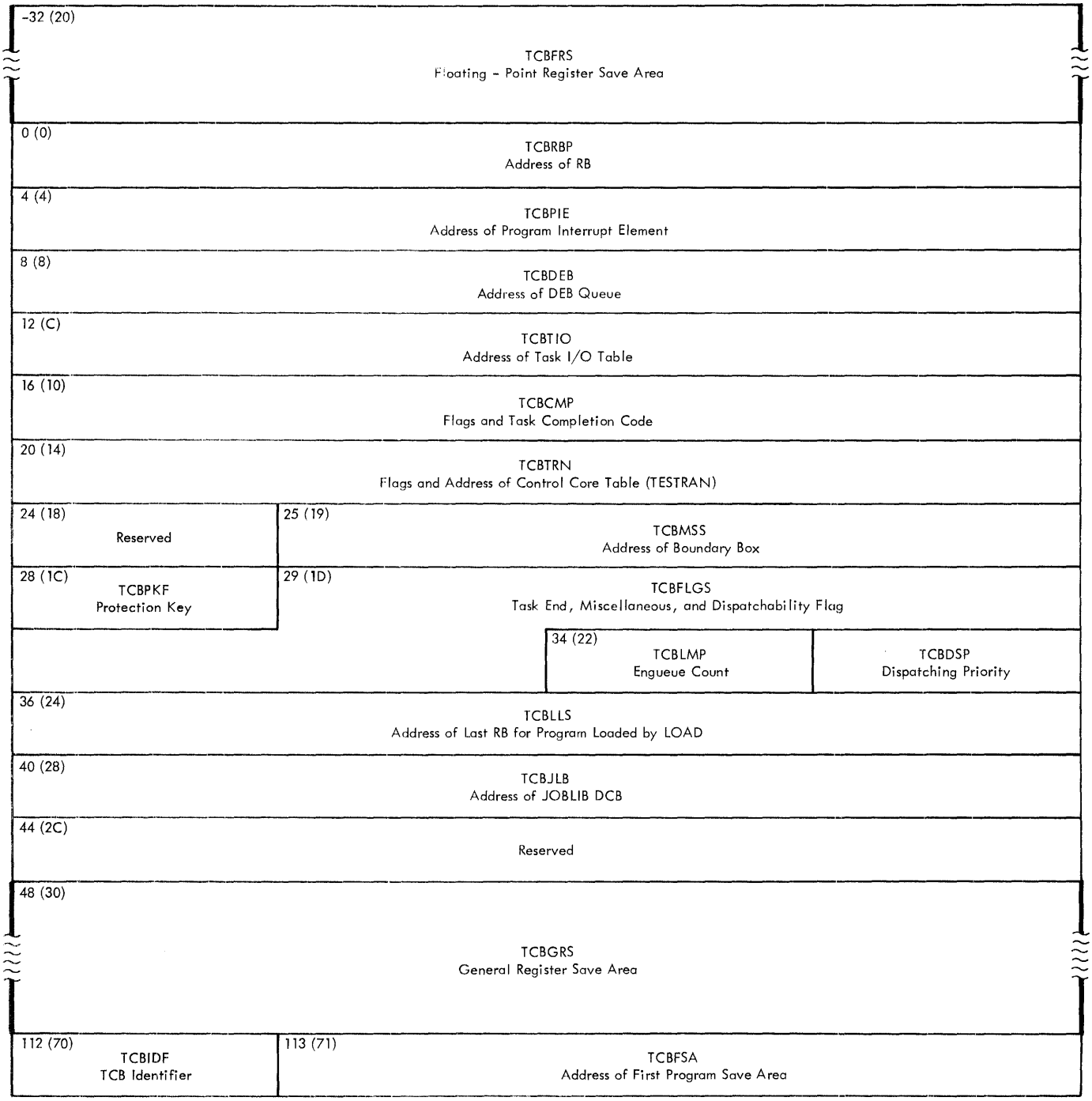
Task Control Block -- MFT

Task Control Block -- MVT

Task Control Block--PCP

Figure 37A shows the format of the PCP Task Control Block. Descriptions of the fields follow the illustration.

TASK CONTROL BLOCK -- PCP



• **Figure 37A. Task Control Block -- PCP (Part 1 of 2)**

116 (74)	TCBTCB Zeros
120 (78)	TCBTME Address of the Timer Element
124 (7C)	Reserved
128 (80)	Reserved
132 (84)	Reserved
136 (88)	Reserved
140 (8C)	Reserved
144 (90)	Reserved
148 (94)	Reserved
152 (98)	Reserved
156 (9C)	Reserved
160 (A0)	TCBNSTAE STAE Flags and Address of Current STAE Control Block
164 (A4)	Reserved
168 (A8)	TCBUSER
172 (AC) TCBDAR DAR Flags	173 (AD) Reserved
176(B0)	Reserved
180 (B4) Reserved	181(B5) TCBJSCB Address of the JSCB 183(B7)

• Figure 37A. Task Control Block -- PCP (Part 2 of 2)

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
-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 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..	Presently reserved, but set to indicate step ABEND for MVT compatability. (See MVT use of this bit)
			..1.	Some problem storage was overlaid by the second load of ABEND. A first load overlay is indicated in TCBFLGS 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, IBM System/360 Operating System Messages and Codes, GC28-6631, under the heading "System Completion Codes."
20 (14)	4	TCBTRN		
20 (14)	1	TCBFLTRN		A byte used for flags as described:
			...x xxxx	Reserved.
			1...	Both TESTRAN and decimal simulator programs being used on a Mod 91 machine.
			.1..	Suppress taking checkpoints for this step.
21 (15)	. 3			TESTRAN: Address of control core table.
24 (18)	1			Reserved.
25 (19)	. 3	TCBMSS		Address of the boundary box.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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.
					This field is used differently in PCP, MFT and MVT.
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	Recursion through ABEND is permitted.
				.... .1..	CLOSE initiated by ABEND.
				.... ..1.	Problem program storage has been overlaid to process ABEND.
				1	Prohibit queueing of asynchronous exits for this task.
				.... x...	Reserved.
30	(1E)		Byte 2		
				1...	System Task: ABEND prohibited for this task.
				.xxx x.xx	(Reserved bits)
				.... .1..	Dump processing has been initiated in ABEND.
31	(1F)		Byte 3		
				xx.x ...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.
32	(20)		Byte 4		Reserved.
33	(21)		Byte 5		Reserved.

(Continues)

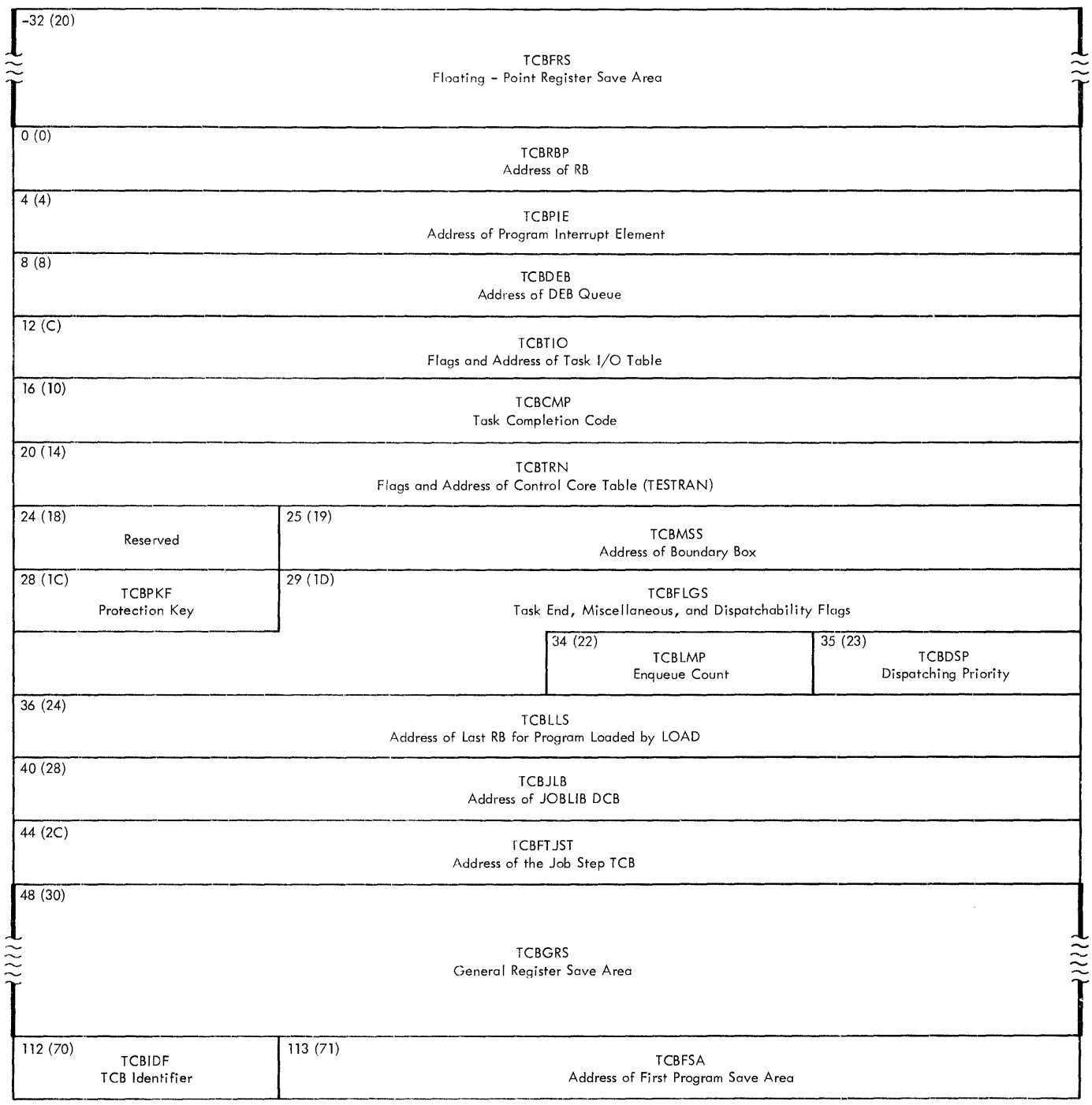
Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
34	(22)	. . 1	TCBLMP		Number of resources for which this task is enqueued.
35	(23)	. . . 1	TCBDSP		Dispatching priority for this task.
36	(24)	4	TCBLLS		Address of the most recently added RB on the list of programs loaded via the LOAD macro instruction.
40	(28)	4	TCBJLB		Address of a JOBLIB DCB.
44	(2C)	4			Reserved.
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		Zeros.
120	(78)	4	TCBTME		Address of the timer element.
124	(7C)	36			Reserved.
160	(A0)	1	TCBNSTAE		Flags internal to STAE routine.
		. 3			Address of the current STAE control block.
164	(A4)	4			Reserved.
168	(A8)	4	TCBUSER		A field available to the user.
172	(AC)	1	TCBDAR		Damage Assessment Routine (DAR) flags.
				1...	Primary DAR recursion - DAR failure while writing core image dump.
				.1..	Secondary DAR recursion - DAR failure while attempting to reinstate failing code.
				...1	A recursion is permitted in CLOSE after DAR processing is completed.
				.... 1...	System error task is failing. DAR dump should not request any ERP processing.
				..x. .xxx	(Reserved bits)
173	(AD)	. 8			Reserved.
181	(B4)	. 3	TCBJSCB		Address of the Job Step Control Block.

End of the Task Control Block - PCP

Task Control Block--MFT

Figure 37B shows the format of the MFT Task Control Block. Descriptions of the fields follow the illustration.

TASK CONTROL BLOCK -- MFT



• Figure 37B. Task Control Block -- MFT (Part 1 of 2)

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) Reserved	181 (B5) TCBJSCB Address of the JSCB 183(B7)

• Figure 37B. Task Control Block -- MFT (Part 2 of 2)

TASK CONTROL BLOCK - - MFT

Offset	Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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..	MFT with subtasking: A step ABEND has been requested. MFT 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 TCBFLGS 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, IBM System/360 Operating System: Messages and Codes, GC28-6631, under the heading "System Completion Codes."
20 (14)	4	TCBTRN		
20 (14)	1	TCBFLTRN		A byte used for flags as described:
			 xxxx	Reserved.
			1...	Both TESTRAN and decimal simulator programs being used on a Mod 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.
21 (15)	. 3			TESTRAN: Address of control core table.
24 (18)	1			Reserved.
25 (19)	. 3	TCBMSS		Address of the boundary box.
				MFT 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.

Offset		Bytes and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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. This field is used differently in PCP, MFT, and MVT.
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	Recursion through ABEND is permitted.
				.... 1...	Graphics Abnormal Termination routine has been entered for this task.
				.... .1..	CLOSE initiated by ABEND.
				.... ..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.
				.xx. ..x.	(Reserved bits)
				...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 has been initiated in ABEND.
				1	This task is a member of a time-sliced group.
31	(1F)		Byte 3		
				xx.x ...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.
32	(20)		Byte 4		Reserved
33	(21)		Byte 5		(If any bit in this byte is 1, the task is non-dispatchable.)
				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.
				xxxx xxx.	Reserved bits.
34	(22)	. . 1	TCBLMP		Number of resources for which this task is enqueued.
35	(23)	. . . 1	TCBDSP		Dispatching priority for this task.

Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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		MFT without subtasking: Reserved. MFT 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.
					(Partition type.)
124	(7C)	1	00..		System task partition.
			01..		Reader partition.
			10..		Writer partition.
			11..		Processing program partition.
			..1.		Large partition.
			..0.		Small partition.
			...1		CPU timing stopped by FINCH until transient is loaded.
			.... ..1.		Writer partition, used by ABEND. Required by transient writer, but used also by resident writer.
			1		Scheduler in control. Bit turned off when TIOT written on SYSJOBQE. Used by ABEND.
			.... xx..		(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.

Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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..		Top task in tree of abnormally terminating tasks.
			.... ..1.		Abnormal termination dump has been completed.
			1		Task is enqueued on dump data set.
			xxxx x...		(Reserved bits)
154	(9A)		Byte 2		
			1...		OPEN in process for the dump data set.
			.... .1..		Dump data set is open for job step.
			.... ..1.		SYSABEND data set.
			.... ..0.		SYSUDUMP data set.
			.xxx x..x		(Reserved bits)
155	(9B)		Byte 3		
			...1		A valid message recursion has occurred in ABEND.
			.... .1..		No abnormal termination dumps can be provided within this job step.
			xxx. x.xx		(Reserved bits)
156	(9C)	4			Reserved.
160	(A0)	4	TCBNSTAE		
			Byte 1		Flags internal to STAE routine.
			Bytes 2-4		Address of the current STAE control block.

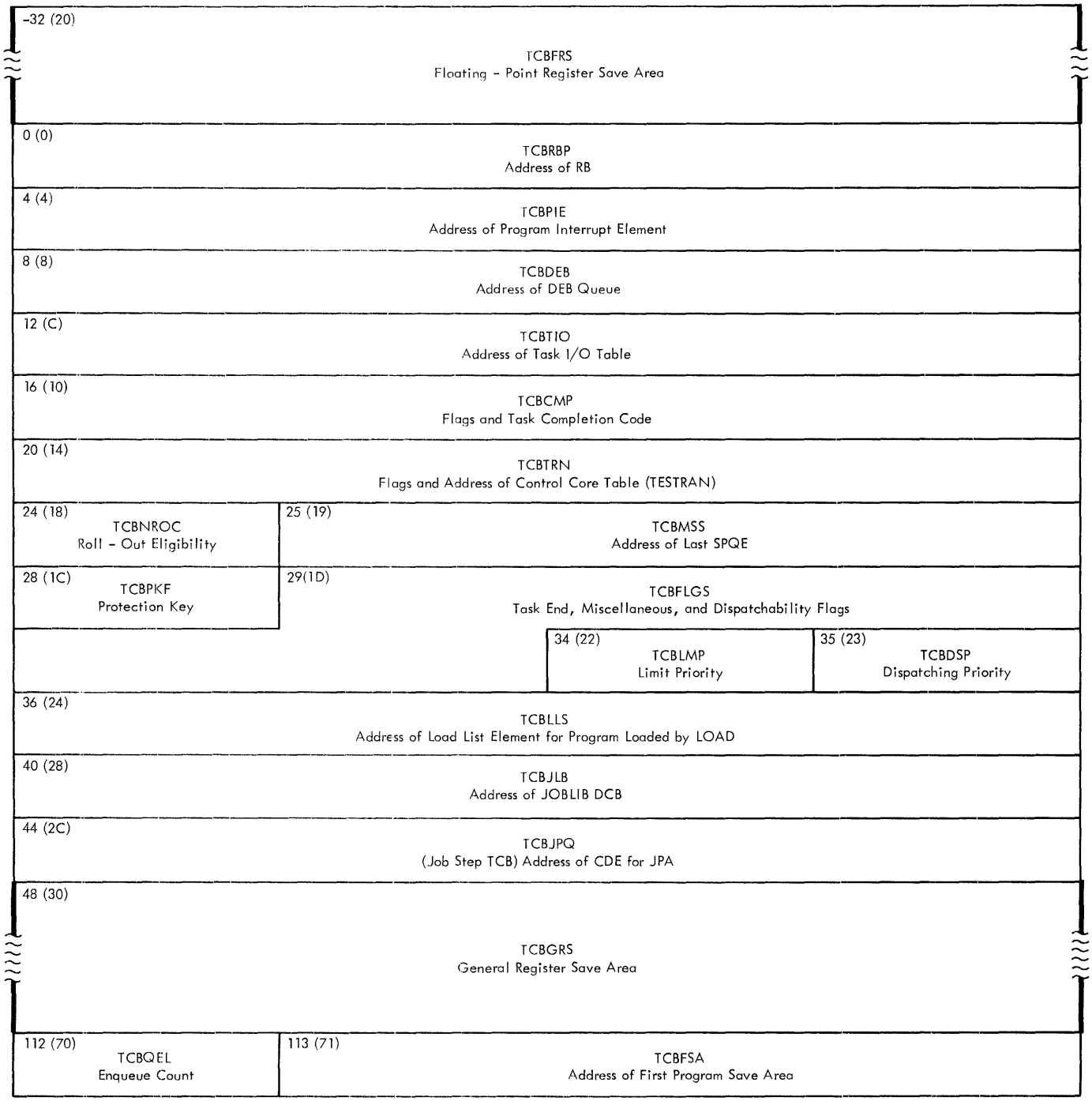
Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
164	(A4)	4	TCBTCT		
			Byte 1		Reserved.
			Bytes 2-4		Address of the Timing Control Table (TCT) if the System Management Facilities (SMF) option is present in the system. Zeros if SMF is not in the system.
168	(A8)	4	TCBUSER		A field available to the user.
172	(AC)	1	TCBDAR		Damage Assessment Routine (DAR) flags.
				1...	Primary DAR recursion - DAR failure while writing core image dump.
				.1..	Secondary DAR recursion - DAR failure while attempting to reinstate failing Partition.
				..1.	A dump has been requested for a writer or scheduler ABEND and the user has provided no SYSABEND DD card.
				.... 1...	System error task is failing DAR dump should not request any ERP processing.
				...x .xxx	(Reserved bits)
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..	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.
				xxx	(Reserved bits)
174	(AE)	. . 1	TCBNDSP2		
				1...	ABDUMP is processing. (MFT with subtasking)
				1	The dump data set is being opened. (MFT with subtasking)
				.xxx xxx.	(Reserved bits)
175	(AF)	. . . 1	TCBNDSP3		
				1...	Task has been terminated. (MFT with subtasking)
				.1..	Task to be terminated by ABEND. (MFT with subtasking)
				..xx xxxx	(Reserved bits)
176	(B0)	4			Reserved.
180	(B4)	1			Reserved.
181	(B5)	. 3	TCBJSCB		Address of the Job Step Control Block.

End of the MFT Task Control Block

Task Control Block--MVT

Figure 37C shows the format of the MVT Task Control Block. Descriptions of the fields follow the illustration.

TASK CONTROL BLOCK -- MVT



• Figure 37C. Task Control Block -- MVT (Part 1 of 2)

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)	Reserved	
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) TCBDAR DAR Flags	173 (AD) TCBNDSP Secondary Non - dispatchability Bits	
176(B0)	Reserved	
180(B4) Reserved	181 (B5) TCBJSCB Address of the JSCB 183(B7)	

• Figure 37C. Task Control Block -- MVT (Part 2 of 2)

Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
-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 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, IBM System/360 Operating System: Messages and Codes, GC28-6631, under the heading "System Completion Codes."
20	(14)	4	TCBTRN		
20	(14)	1	TCBFLTRN		A byte used for flags as described:
			1...		Both TESTRAN and decimal simulator programs being used on a Mod 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.
			 xxxx		(Reserved bits)
21	(15)	. 3			TESTRAN: Address of control core table.
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.

Offset	Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
29 (1D)	. 5	TCBFLGS		Flag byte fields. This field is used differently in PCP, MFT, and MVT.
29 (1D)		Byte 1		
			1...	Abnormal termination in progress.
			.1..	Normal termination in progress.
			..1.	Enter Erase routine in ABEND when ABEND in control again.
			...1	Enter Purge routine in ABEND when ABEND in control again.
			.... 1...	Graphics Abnormal Termination routine is in control of this task. (Bit 7 of byte 31 must also be on.)
			.... .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...	Operands of ABEND macro instruction have been saved in TCBCMP field.
			.1..	Initiator TCB: Second job step interval has expired.
			..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: SYSABEND already open.
			.... ..1.	ETXR exit requested by attaching task.
			1	Task is a member of a time-sliced group.
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 ABEND.
			...1 ...x	OPEN issued for SYSABEND. (See also bit 7.)
			.... 1..x	ABDUMP in process for this task. (See also bit 7.)
			.... .1..	Job step TCB: No abnormal termination dumps can be provided within this job step.
			.... ..1x	CLOSE has been issued during ABEND processing. (See also bit 7.)
			...x x.x1	Valid reentry to ABEND indicated if bits 3, 4, or 6 of this byte or bit 4 of byte 29 is also on.
32 (20)		Byte 4		(If any bit in this byte is 1, the task is non-dispatchable.)
			1...	Set by ABDUMP.
			..1.	Supply of I/O request queue elements exhausted.
			.x.x xx..	(Reserved bits)
			.... ..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 was being opened for another task.

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

Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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.
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)	4	TCBSTAE		Reserved
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		
			Byte 1		Flags internal to STAE routine.
			Bytes 2-4		Address of the current STAE control block.
164	(A4)	4	TCBTCT		
			Byte 1		Reserved.
			Bytes 2-4		Address of the Timing Control Table if the system management facilities option is present in the system.
168	(A8)	4	TCBUSER		A field available to the user.
172	(AC)	1	TCBDAR		Damage Assessment Routine (DAR) flags.
				1...	Primary DAR recursion - DAR failure while writing core image dump.
				.1..	Secondary DAR recursion - DAR failure while attempting to reinstate failing Region.
				.... 1...	System error task is failing. DAR dump should not request any ERP processing.
				..xx .xxx	(Reserved bits)

Offset		Byte and Alignment	Field Name	Hex. Dig.	Field Description, Contents, Meaning
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.
				xxx	(Reserved bits)
174	(AE)	. . 1	TCBNDSP2		Reserved
175	(AF)	. . . 1	TCBNDSP3		Reserved
176	(B0)	5			Reserved.
181	(B5)	. 3	TCBJSCB		Address of the Job Step Control Block.

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 38 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)

• **Figure 38. Timing Control Table (Part 1 of 3)**

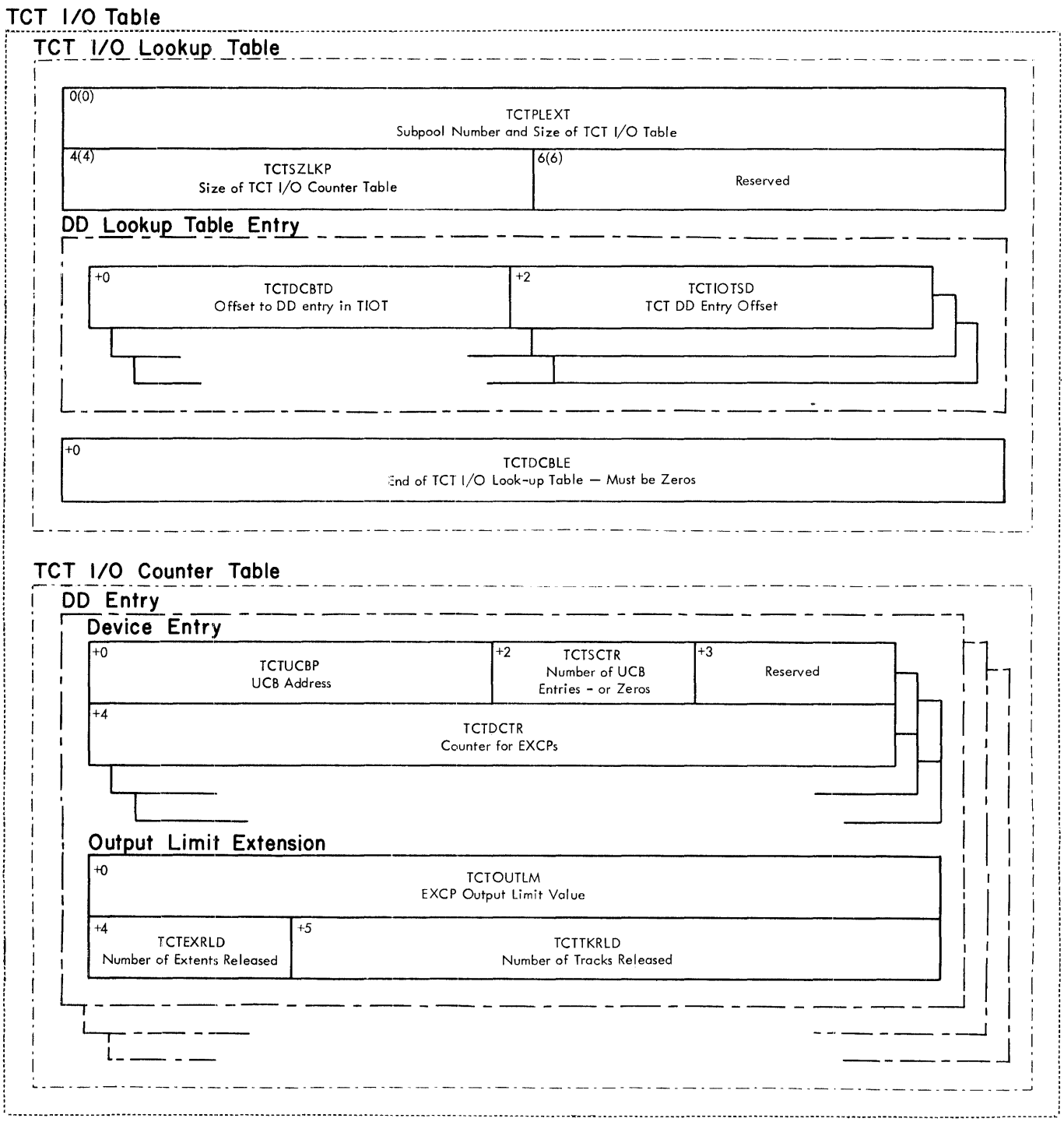
Processor Storage Table

48 (30) TCTLWM Highest Address Allocated From Bottom of Region	
52 (34) TCTHWM Lowest Address Allocated From Top of Region	
56 (38) TCTMINC Minimum Difference Between TCTHWM and TCTLWM in 2K Blocks	58 (3A) TCTRSZ Region Request in 2K Blocks
60 (3C) TCTRBC Accumulated Rollout Obtained Storage	62 (3E) TCTMBC Total Rollout Obtained Storage

Hierarchy Support Storage Table

64 (40) TCTLWM Highest Address Allocated From Bottom of Region	
68 (44) TCTHWM Lowest Address Allocated From Top of Region	
72 (48) TCTMINC Minimum Difference Between TCTHWM and TCTLWM in 2K Blocks	74 (4A) TCTRSZ Region Request in 2K Blocks
76 (4C) TCTRBC Accumulated Rollout Obtained Storage	78 (4E) TCTMBC Total Rollout Obtained Storage 79 (4F)

Figure 38. Timing Control Table (Part 2 of 3)



• Figure 38. Timing Control Table (Part 3 of 3)

TIMING CONTROL TABLE

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	3	TCTQA	Reserved
3	(3)	. . . 1	TCTSW	Timing Control Table switches.
			0...	TQE contains step time.
			1...	TQE contains job time.
			.xxx xxxx	(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	TCTPOOL	Subpool in which the TCT resides.
		. 3		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 nc 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.

TIMING CONTROL TABLE

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				Processor Storage Table
48	(30)	4	TCTLWM	The current highest address allocated from the bottom of the region.
52	(34)	4	TCTHWM	The current lowest address allocated from the top of the region.
56	(38)	2	TCTMINC	The minimum difference (in 2K blocks) between TCTLWM and TCTHWM. This figure represents the unused portion of the user's region.
58	(3A)	. . 2	TCTRSZ	The original region request expressed in 2K blocks.
60	(3C)	2	TCTRBC	A running total of storage obtained through Rollout, expressed in 2K blocks.
62	(3E)	. . 2	TCTMBC	The maximum storage obtained through Rollout, expressed in 2K blocks.
				Hierarchy Support Storage Table
64	(40)	4	TCTLWM	The current highest address allocated from the bottom of the region.
68	(44)	4	TCTHWM	The current lowest address allocated from the top of the region.
72	(48)	2	TCTMINC	The minimum difference (in 2K blocks) between TCTLWM and TCTHWM. This figure represents the unused portion of the user's region.
74	(4A)	. . 2	TCTRSZ	The original region request expressed in 2K blocks.
76	(4C)	2	TCTRBC	A running total of storage obtained through Rollout, expressed in 2K blocks.
78	(4E)	. . 2	TCTMBC	The maximum storage obtained through Rollout, expressed in 2K blocks.

Note: One of the above tables exists for each type of storage obtained.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				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 lockup 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 Bytes 2-4	Subpool in which the TCT I/O Table resides. Size in bytes of the TCT I/O Table .
4	(4)	2	TCTSZLKP	Size in bytes of the TCT I/O counter table.
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 TIOEINGH 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.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			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 39 shows the format of a TIOT. Descriptions of the fields follow the illustration.

TASK INPUT/OUTPUT TABLE

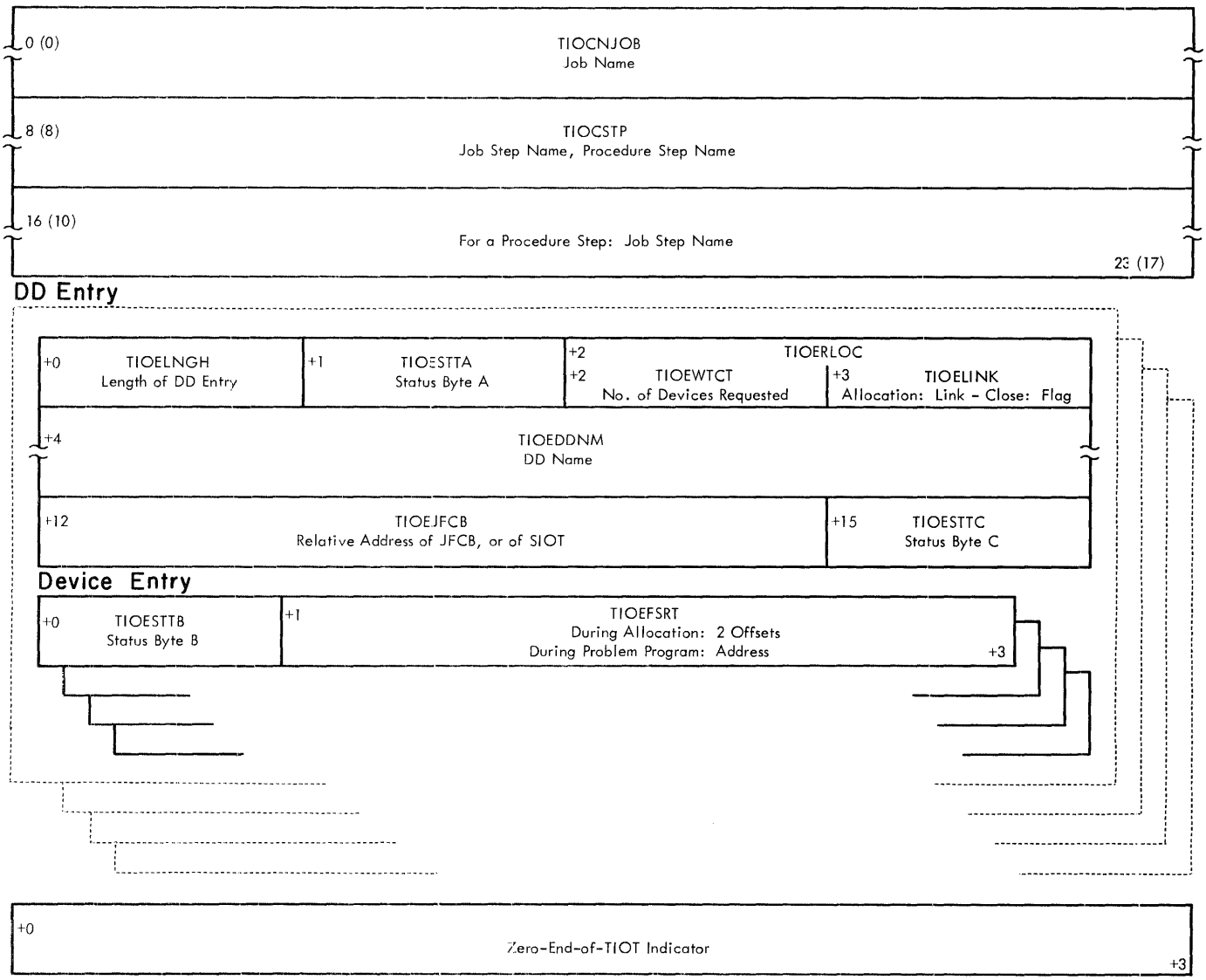


Figure 39. Task Input/Output Table

TASK INPUT/OUTPUT TABLE

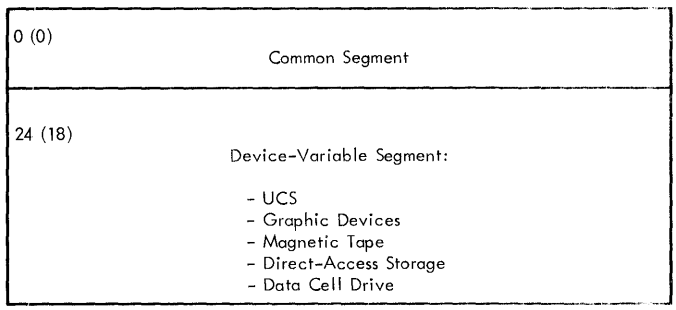
Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	8	TIOCNJOB	Job name.
8	(8)		TIOCSTEP	
8	(8)	8		For a job step that is not a procedure step: Job step name. For a job step that is a procedure step: Procedure step name.
16	(10)	8		For a job step that is not a procedure 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.
			x... .x..	Tape label processing to be performed: 0... .0.. NL, BLP. 0... .1.. SL, SUL. 1... .0.. NSL.
			.1..	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	JOBLIB 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.
+3		. . . 1	TIOELINK	During allocation: Link to the appropriate prime split, unit affinity, volume affinity or suballocate TIOT entry. After CLOSE:
			1...	This is a SYSOUT data set that contains data.
			.xxx xxxx	(Reserved bits)

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			DD Entry (Continued)
+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.
			DEVICE ENTRIES
	During allocation:		1 device entry for each device required, or for each public device eligible.
	During problem program:		1 device entry for each allocated device.
+0	1	TIOESTTB	Status byte B - During allocation and during problem program:
		1...	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.
+1	. 3	TIOEFSRT	Bits 0 - 11:
	During allocation		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.
	During problem program:		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.)
			END-OF-TIOT INDICATOR
	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 40 shows the format of the UCB. Descriptions of the fields follow the illustrations.

The unit control block consists of two segments: a segment common to all devices (common segment) and a segment that varies with different devices (device-variable segment). The following illustrates the relationship of these segments.



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

Figure 40A. 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 beginning on page 331.

UNIT CONTROL BLOCK

M65MP Prefix

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

Common Segment

0 (0) SRTEJBNR Internal Job No.	1 (1) SRTECHAN 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	

Device - Variable Segment

UCS

24 (18) UCBUCSID UCS Image Name	
28 (1C) UCBUCSOP UCS Image Format	29 (1D) Reserved 31 (1F)

2495 TAPE CARTRIDGE READER

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

OPTICAL READER (1285,1287, 1288)

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

Graphic Device

24 (18) Additional Sense Information	26 (1A) Use Count	27 (1B) (GCB) Control Byte
28 (1C) Task Entry Address		
32 (20) Restart Address		
36 (24) Device Index	37 (25) Buffer Table Address 39 (27)	

• Figure 40. Unit Control Block (Part 1 of 3)

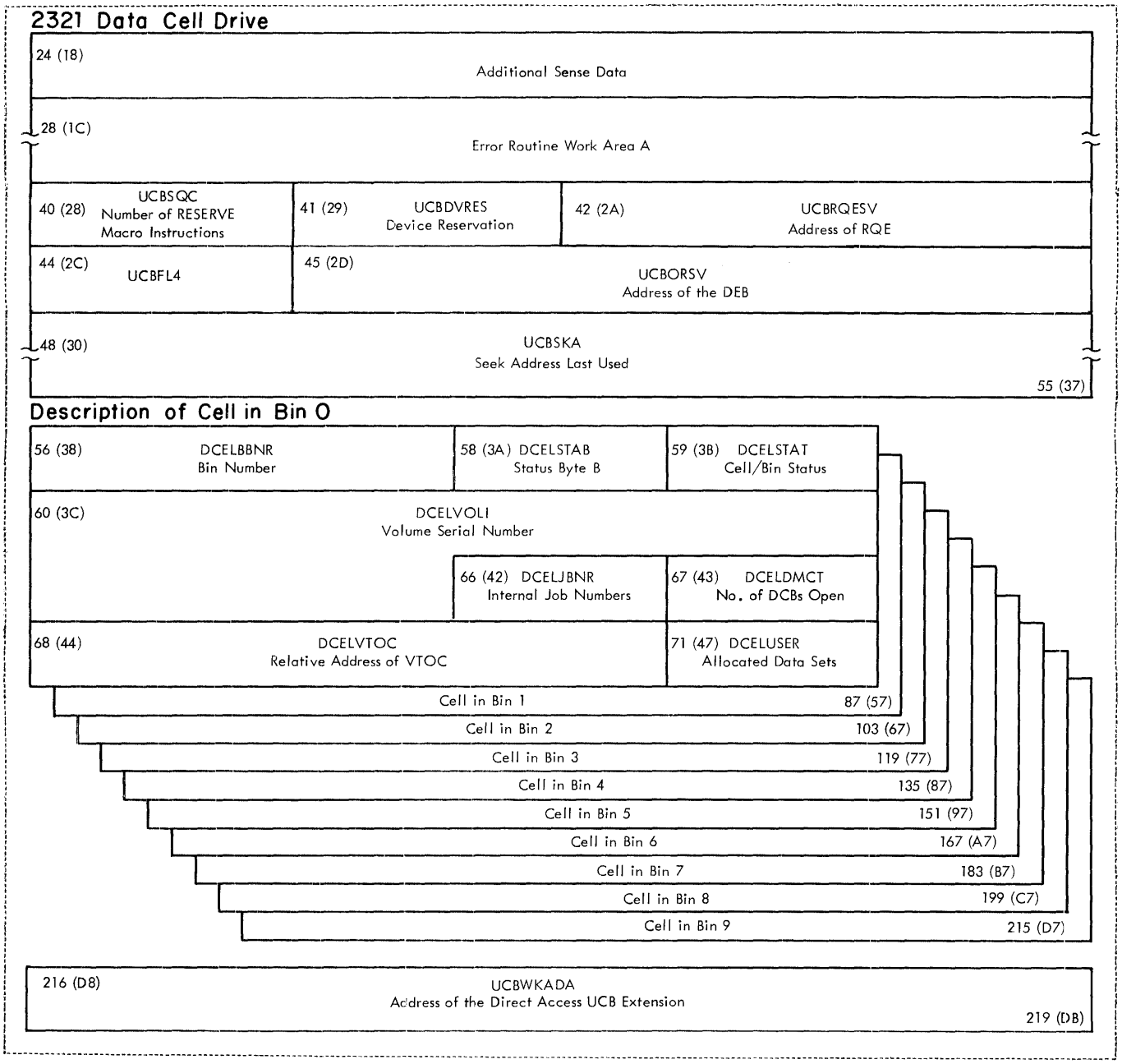
Magnetic Tape

24 (18) Additional Sense Information		
28 (1C) SRTEVOLI Volume Serial No.		
	34 (22) SRTESTAB Status Byte B	35 (23) 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 DCB Extension 51 (33)	

Direct Access Storage Device (Except Data Cell Drive)

24 (18) Additional Sense Information			
28 (1C) SRTEVOLI Volume Serial No.			
		34 (22) SRTESTAB Status Byte B	35 (23) SRTEDMCT No. of DCBs Open
36 (24) SRTEFSCT Relative Address of VTOC			
40 (28) UCBSQC RESERVE Count	41 (29) UCBDVRES Device Reservation Indicator	42 (2A) 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 40. Unit Control Block (Part 2 of 3)



• Figure 40. Unit Control Block (Part 3 of 3)

2495 Tape Cartridge Reader UCB Extension

0 (0)
Retry Channel Program
24 (18)
CSW Save Area
31 (1F)

Optical Reader UCB Extension (1285, 1287, 1288)

0 (0) Data Check Counter	1 (1) Incorrect Length Counter	2 (2) Equipment Check Counter	3 (3) Reserved
4 (4) Reserved			7 (7)

Magnetic Tape UCB Extension

0 (0) UCBROR CCW for Read-Opposite Recovery			
8 (8) UCBSUM Volume Statistics Update Mask		10 (A) UCBTRT Read Threshold	11 (B) UCBTWT Write Threshold
12 (C) UCBTR Temporary Read Errors	13 (D) UCBTW Temporary Write Errors	14 (E) UCBSIO Number of Start I/O Operations	
16 (10) UCBPR Permanent Read Errors	17 (11) UCBPW Permanent Write Errors	18 (12) UCBNB Number of Noise Blocks	19 (13) Reserved
20 (14) UCBERG Number of Erase Gaps		22 (16) UCBCLN Number of Cleaner Actions	23 (17)

Direct Access UCB Extension

+104 (68)
Error Recovery Work Area
+144 (90)
Overflow Work Area (Present When Overflow Specified)
+183 (B7)

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

• Figure 40A. Unit Control Block Extension Blocks

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			PREFIX SEGMENT
			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		M65MP Flags.
		..11 .1..	Three one-bit switches used by extended VARY commands, (always 0 on exit).
		.... ..1.	One-bit switch used by processing modules, (always 0 on exit).
		0	Device online at IPL.
		1	Device offline at IPL.
			SEGMENT COMMON TO ALL DEVICES
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 is retained or contains a passed data set. 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	SRTECHAN	Allocation channel mask.
2 (2)	. . 1	UCBID	UCB identification - Hex FF.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			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 enqueued 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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				SEGMENT COMMON TO ALL DEVICES (Continued)
4	(4)	1	UCBCHA	Channel address.
			1...	Halt I/O.
			.1..	Status modifier.
			..xx x...	(Reserved bits)
			xxx	Channel address - binary number.
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.)
				Telecommunications devices:
			.... .01.	Inhibit HIO instruction because the line is in receive status.
			1	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.
			1...	SYSIN.
			.1..	SYSOUT.
			..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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				SEGMENT COMMON TO ALL DEVICES (Continued)
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	Sense information for all devices.
				DEVICE-VARIABLE SEGMENT
				1403 UCS SEGMENT This segment is present if the system generation process specifies the universal character set (UCS) feature.
24	(18)	4	UCBUCSID	Name of the UCS image in the buffer.
28	(1C)	1	UCBUCSOP	Format of the UCS image in the buffer.
			1...	UCS image is the default image.
			.1..	UCS image is in the FOLD mode.
			..xx xxxx	(Reserved bits)
29	(1D)	. 3		Reserved (zeros).
				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.
				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)	2		Sense: Additicnal Sense information.
26	(1A)	. . 1		Use Count: Number of DCBs that are currently open for this device.
27	(1B)	. . . 1		GCB: Graphic control byte used for attention handling.
28	(1C)	4		Task Entry Address: Address of task entry (TE) block.
32	(20)	4		Restart Address: Last start address.
36	(24)	1		Device Index: Device or devices on a control unit to which buffer sections are assigned.

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
			GRAPHIC DEVICES SEGMENT (Continued)
37 (25)	. 3		Buffer Table Address: Address of buffer table.
			Note: The "Graphic Devices" section is not expanded for the IBM Model 85 operator console with CRT display.
			MAGNETIC TAPE DEVICES SEGMENT
24 (18)	4		Additional Sense information.
28 (1C)	6	SRTEVOLI	Volume serial number.
34 (22)	. . 1	SRTESTAB	Status byte B - Volume status.
		x...	Volume sharability:
		0...	Sharable.
		1...	Not sharable.
		..1.	Additional volume label processing.
		...1	Private - Volume use status.
		.... 1...	Public - Volume use status.
		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.. .xx.	(Reserved bits)
35 (23)	. . . 1	SRTEDMCT	Volume mount switch. This switch shows whether a volume has been mounted and whether the volume label found on the vclume has been verified to be the type specified by the DD statement parameter.
			DD Stat.
			Parm.
			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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				MAGNETIC TAPE DEVICES SEGMENT (Continued)
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 for future use.
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 EOV condition.
49	(31)	. 3	UCBXTN	Address of the Magnetic Tape UCB Extension.
				DIRECT ACCESS STORAGE DEVICE (EXCEPT DATA CELL DRIVE) SEGMENT
24	(18)	4		Additional Sense information.
28	(1C)	6	SRTEVOLI	Volume serial number.
34	(22)	. . 1	SRTESTAB	Status byte B - Volume status.
			x...	Volume sharability:
			0...	Sharable.
			1...	Not sharable.
			.xx.	(Reserved bits)
			...1	Private - Volume use status.
			.... 1...	Public - Volume use 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.
35	(23)	. . . 1	SRTEDMCT	Volume mount switch and number of DCBs open for this volume.
			1...	A mount request has been issued.
			0...	A mount verification has been performed.
			.xxx xxxx	Number of DCBs open for this volume.
36	(24)	4	SRTEFSCT	Relative address of VTOC for this volume, in form TTR0.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				DIRECT ACCESS STORAGE DEVICE (EXCEPT DATA CELL DRIVE) SEGMENT (Continued)
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	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.
				2321 DATA CELL DRIVE SEGMENT
24	(18)	4		Additional Sense information.
				Error Routine Work Area
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).

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				2321 DATA CELL DRIVE SEGMENT (Continued)
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.
				Description of Cell in Bin 0
56	(38)	2	DCELBBNR	Bin number.
+2		. . 1	DCELSTAB	Status byte B - volume status.
			x...	Volume sharability:
			0...	Sharable.
			1...	Not sharable.
			.xx.	(Reserved bits)
			...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.
			.1..	(Reserved bits)
			..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.)
				Note A: If the mount status is neither reserved nor permanently resident, then it is removable.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				2321 DATA CELL DRIVE SEGMENT (Continued)
+4		. 6	DCEVOLI	Volume serial number.
+10		. . 1	DCELJBNR	Internal job number.
+11		. . . 1	DCELDMCT	Number of data sets opened for this cell.
+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		Description of Cell in Bin 1 (Same format as description of cell in bin 0).
88	(58)	16		Description of Cell in Bin 2 (Same format as description of cell in bin 0).
104	(68)	16		Description of Cell in Bin 3 (Same format as description of cell in bin 0).
120	(78)	16		Description of Cell in Bin 4 (Same format as description of cell in bin 0).
136	(88)	16		Description of Cell in Bin 5 (Same format as description of cell in bin 0).
152	(98)	16		Description of Cell in Bin 6 (Same format as description of cell in bin 0).
168	(A8)	16		Description of Cell in Bin 7 (Same format as description of cell in bin 0).
184	(B8)	16		Description of Cell in Bin 8 (Same format as description of cell in bin 0).
200	(C8)	16		Description of Cell in Bin 9 (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.

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				2495 Tape Cartridge Reader UCB 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 UCB Extension
				1285/1287/1288 Optical Reader UCB 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 UCB Extension
				Magnetic Tape UCB 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	Volume statistics update mask.
			Byte 1	
			1...	Update temporary read errors.
			.1..	Update temporary write errors.
			..00	Start I/O counter position.
			.... 1...	Update permanent read errors.
			.... .1..	Update permanent write errors.
			.... ..1.	Update noise blccks counter.
			x	Reserved
			Byte 2	
			00..	Erase gap counter position.
			..00	Cleaner action counter position.
			 xxxx	(Reserved bits)

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
				Magnetic Tape UCB Extension (Continued)
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		Reserved.
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 UCB Extension
				Direct Access UCB 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 UCB Extension

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 41 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.

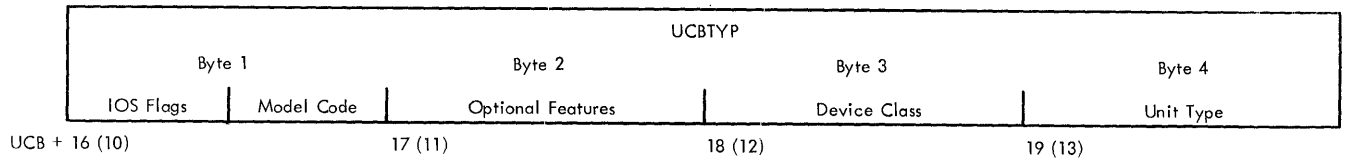
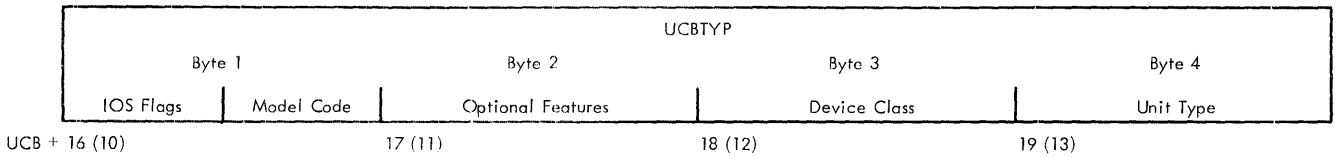


Figure 41. The UCBTYP Field

Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
				ENTRY Devices Other Than Graphic Devices
		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.
				Graphic Devices
		xxxx		Device class.
		0001	1-	1053, 2260
		0011	3-	2250
		 xxxx		Model code. See following description of UCBTYP field by device class.
17 (11)	. 1	Byte 2		Optional features. See following description of UCBTYP field by device class.
18 (12)	. . 1	Byte 3		Device class.
			08	Unit Record.
			10	Graphics.
			20	Direct Access Storage.
			40	Communication Equipment.
			80	Magnetic Tape.
19 (13)	. . . 1	Byte 4		Unit type. See following description of UCBTYP field by device class.

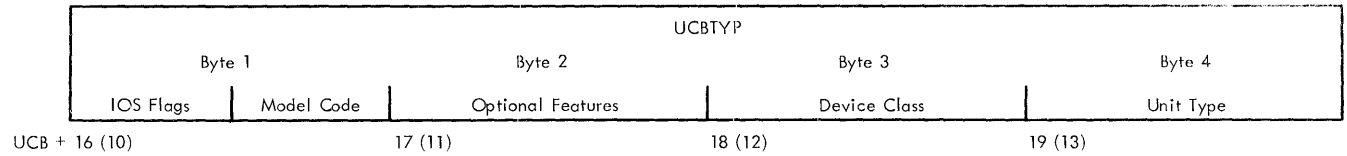
DESCRIPTION OF THE UCBTYP FIELD BY DEVICE CLASS:

UNIT RECORD DEVICE CLASS



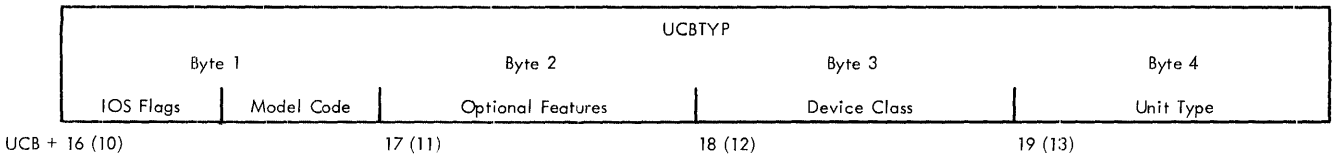
Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
16 (10)	1	Byte 1		
		xxxx		I/O Supervisor flags.
		x...		(Reserved bit)
		.1..		Overrunable device.
		..1.		Burst mode.
		..0.		Byte mode.
		...1		Data chaining.
		 xxxx		Model Code.
				With 1442, 2520
		 0000		Read Punch.
		 0001	-1	Punch only.
17 (11)	. 1	Byte 2		Optional Features.
		1...		Universal character set (UCS).
		.xxx xxx.		(Reserved bits)
		1		Card image (binary mode).
18 (12)	. . 1	Byte 3		Device Class.
			08	Unit record.
19 (13)	. . . 1	Byte 4		Unit Type.
			01	2540 Card Reader.
			02	2540 Card Punch.
			03	1442 Card Read Punch.
			04	2501 Card Reader.
			05	2520 Card Read Punch.
			08	1403 Printer (models N1,2,3,7) and 1404 Printer (continuous form support only).
			0A	1443 Printer (model N1 only).
			10	2671 Paper Tape Reader.
			18	2495 Tape Cartridge Reader
			1A	1285 Optical Reader.
			1B	1287 Optical Reader.
			1C	1288 Optical Reader.
			1D	1419 Primary Control Unit.
			1E	1419 or 1275 Secondary Control Unit.
			1F	1275 Primary Control Unit.
			20	1052 Printer-Keyboard.
			21	2150 Console.

MAGNETIC TAPE DEVICE CLASS



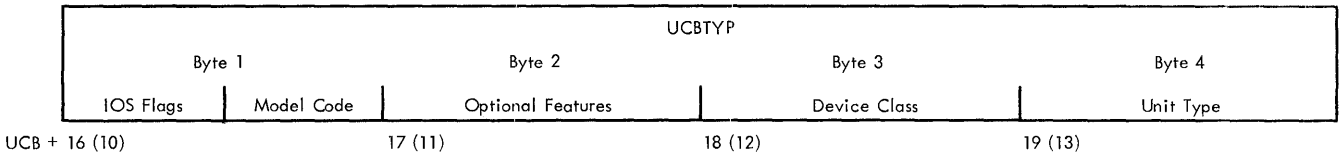
Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
		Byte 1		
16 (10)	1	xxxx		I/O Supervisor flags.
		0...		(Reserved bit)
		.1..		Overrunable device.
		..1.		Burst mode.
		..0.		Byte mode.
		...1		Data chaining.
		 xxxx		Model Code.
		.... x.xx		(Reserved bits)
		.... .1..		Phase-encode code (Models 4, 5, 6, 7)
11 (11)	. 1	Byte 2		Optional Features.
		1...		7-track compatibility (2400)
		.1..		Data conversion (2400)
		..1.		Dual-density (2400)
		...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.

DIRECT ACCESS STORAGE DEVICE CLASS



Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
		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...		Scan feature.
		.1..		Track overflow.
		..1.		This device can be shared between two or more CPUs.
		...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.
			08	2314 Disk Storage Facility.

GRAPHIC DEVICE CLASS - MODEL 2250 DISPLAY UNIT



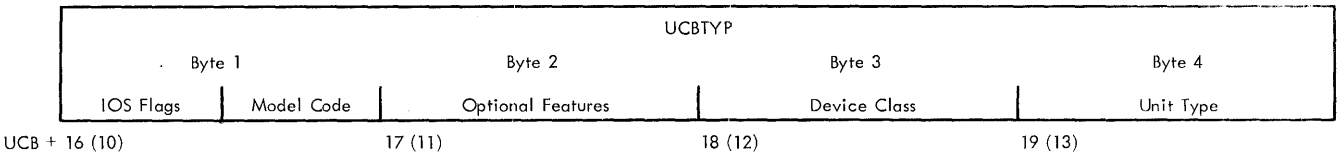
Offset	Bytes and Alignment		Hex. Dig.	Field Description, Contents, Meaning
16 (10)	1	Byte 1		
			J-	Device Class
			1-	1053,2260
			3-	2250
			-K	Model Code
			-1	Model 1.
			-2	Model 2.
			-3	Model 3.
17 (11)	. 1	Byte 2		Optional Features

	Model	Optional Features
0-	1,2,3	Nc opticnal features.
1-	1,2,3	Programmed Function Keyboard only.
2-	1,2	Light Pen only.
3-	1,2	Programmed Function Keyboard, 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.

GRAPHIC DEVICE CLASS - MODEL 2250 DISPLAY UNIT

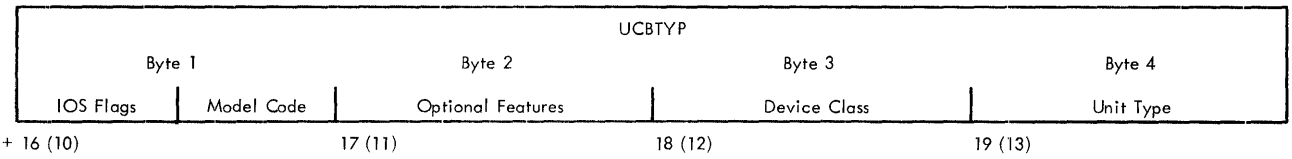
Offset		Bytes and Alignment		Hex. Dig.	Field Description, Contents, Meaning	
					Model	Optional Features
17	(11)	(cont)	Byte 2	-0	1	Nc opticnal features.
				-1	1	4K Buffer only.
				-2	1	8K Buffer only.
				-3	1	Character Generator only.
				-4	1	4K Buffer and Character Generator.
				-5	1	8K Buffer and Character Generator.
				-6	1	Graphic Design Feature only.
				-7	1	Graphic Design Feature and 4K Buffer.
				-8	1	Graphic Design Feature and 8K Buffer.
				-9	1	Graphic Design Feature and Character Generator.
				-A	1	Graphic Design Feature, 4K Buffer, and Character Generator.
				-B	1	Graphic Design Feature, 8K Buffer, and Character Generator.
18	(12)	. . 1	Byte 3		Device Class	
				10	Graphics	
19	(13)	. . . 1	Byte 4		Unit Type	
				02	2250 Graphic Display Unit.	

GRAPHICS DEVICE CLASS
2260 Display Station



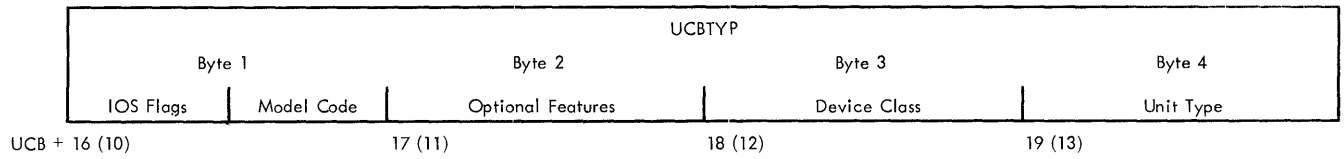
Offset	Bytes and Alignment		Hex. Dig.	Field Description, Contents, Meaning
16 (10)	1	Byte 1	J-	Device Class.
			1-	1053, 2260
			3-	2250
			-K	Model Code
			-1	Model 1.
			-2	Model 2.
17 (11)	. 1	Byte 2		Optional Features
				Optional Features
			0-	No opticnal features.
			1-	Line Addressing only.
			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.
				Optional Features
17 (11)	(Cont)		9-	Line Addressing, Numeric Keyboard and Non-destructive cursor.
			A-	Alphameric Keyboard and Non-destructive Cursor.
			B-	Line Addressing, Alphameric Keyboard and Non-destructive cursor.
			C-	Data Entry Keyboard only.
			D-	Data Entry Keyboard and Line Addressing.
			E-	Data Entry Keyboard and Non-destructive Cursor.
			F-	Data Entry Keyboard, Line Addressing, and Non-destructive Cursor.
				2848 Display Control, Model 1 with 240 character display capability.
			-B	2848 Display Control, Model 2 with 480 character display capability.
			-C	2848 Display Control, Model 3 with 960 character display capability.
			-D	2848 Display Control, Model 21 with 240 character display capability.
			-E	2848 Display Control, Model 22 with 480 character display capability.
18 (12)	. . 1	Byte 3		Device Class
			10	Graphics
19 (13)	. . . 1	Byte 4		Unit Type
			03	2260 Graphic Display Unit.

GRAPHICS DEVICE CLASS
Other Than 2250 or 2260



Offset	Bytes and Alignment		Hex. Dig.	Field Description, Contents, Meaning
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
				Device
			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		Device Class
			10	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.

COMMUNICATION EQUIPMENT DEVICE CLASS



Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
		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.
		 xxxx		Model Code The value in this field and the value in the adapter type field (byte 4, bits 0-3) together identify the model. Adapter Type Model
		 0001	-1	1- 1050
				2- 1030
				3- 1050
				4- 83B3
				5- TWX
				6- WTTA
				8- 2260
				9- S/360
		 0010	-2	1- 1060
				4- 115A
				9- 1130
		 0011	-3	9- 2780
		 0100	-4	1- 2740
		 0101	-5	1- 2741C (Correspondence code).
		 0110	-6	1- 2741P (PTTC/BCD or PTTC/EBCD code).
17 (11)	. 1	Byte 2		Optional features.
		1...		Automatic calling.
		.1..		Automatic polling.
		..1.		Checking.
		...1		Automatic answering.
		.... 10..		Station control.
		.... 01..		Transmit contrcl.
		.... 11..		Optical Image Unit.
		xx		Binary Value 0 SADZER 1 SADONE 2 SADTWO 3 SADTHREE

COMMUNICATION EQUIPMENT DEVICE CLASS

Offset	Bytes and Alignment	Bit and State	Hex. Dig.	Field Description, Contents, Meaning
18 (12)	. . 1	Byte 3		Device Class.
			40	Communication equipment.
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

Volume Label

A volume label is 80 characters long and identifies the volume and its owner. Figure 42 shows the volume label format. Description of the fields follow 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

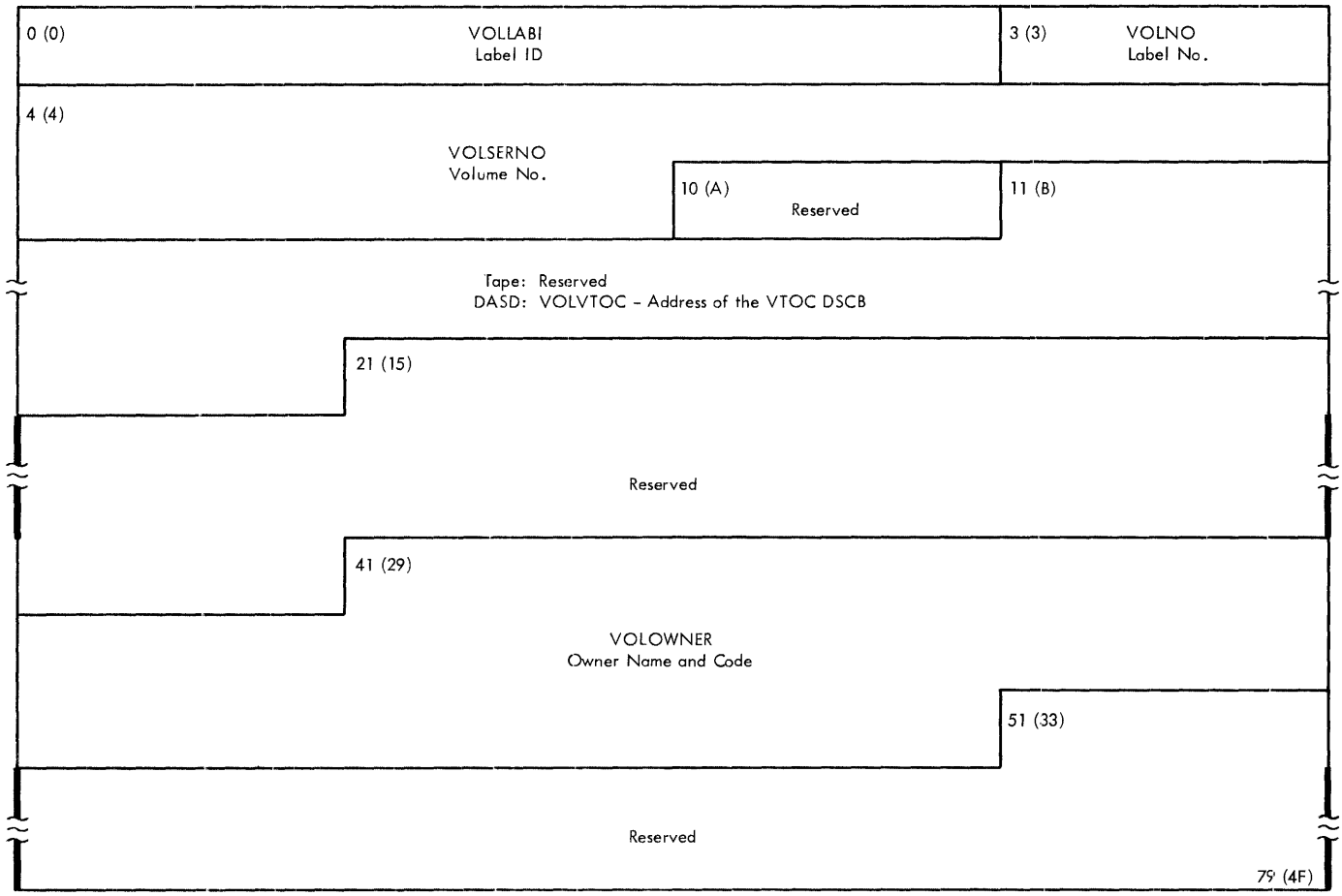
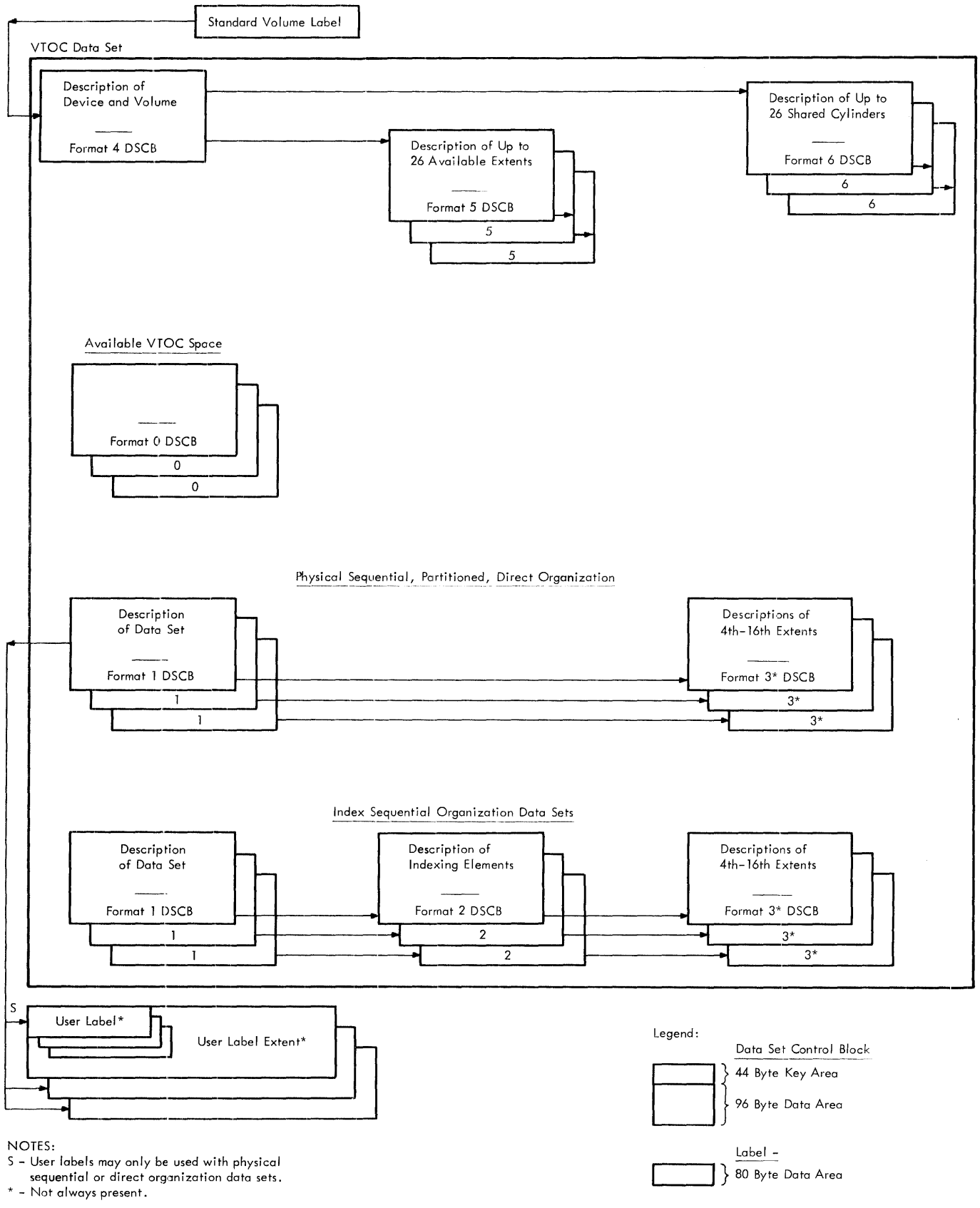


Figure 42. Volume Label

Offset		Bytes and Alignment	Field Name	Field Description, Contents, Meaning
0	(0)	3	VOLLABI	Label identifier - VOL.
3	(3)	. . . 1	VOLNO	Volume label sequence number.
4	(4)	6	VOLSERNO	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.

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 43. A description follows the illustration. (The DSCBs are describes separately, under that heading, in this publication.)



NOTES:
S - User labels may only be used with physical sequential or direct organization data sets.
* - Not always present.

Figure 43. 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).

To accomodate various categories of information about the volume and the data sets on it, the 140 byte blocks are formatted in different ways. DSCB formats 1, 2, 3, and 4 are designed for data set information; DSCB formats 5 and 6 describe the available or shared space. Space in the VTOC not occupied by one of these DSCBs is filled with format 0 DSCBs, which contain binary zeros. (For a detailed description of each 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 alsc 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.

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