

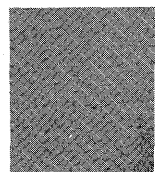
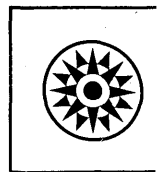
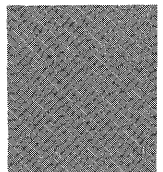
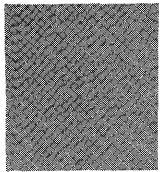
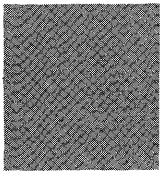
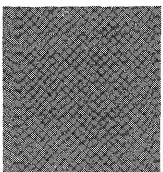
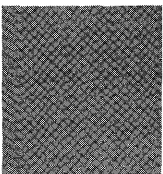
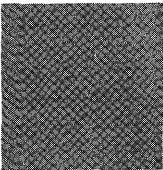
## Systems Reference Library

# 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.

The pointer diagram previously shown in this publication has been superseded by a similar one now shown in the IBM publication IBM System/360 Operating System: Programmer's Guide to Debugging, Form C28-6670.

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

IBM System/360: Principles of Operation, Form A22-6821

IBM System/360 Operating System: Introduction, Form C28-6534

IBM System/360 Operating System: Concepts and Facilities, Form C28-6535

IBM System/360 Operating System: Supervisor and Data Management Services, Form C28-6646

Fourth Edition (November, 1968)

This is a major revision of, and obsoletes, C28-6628-2 and Technical Newsletter N28-2360. 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 17 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 specifications herein; before using this publication in connection with the operation of IBM systems, consult the latest IBM System/360 SRL Newsletter, Form N20-0360, 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

# Contents

SUMMARY OF REVISIONS . . . . .	6
SYSTEM CONTROL BLOCKS . . . . .	7
MBBCHHR - Actual Address Format . . . . .	7
Revised Page Format . . . . .	8
Communication Vector Table . . . . .	11
Data Control Blocks . . . . .	21
Data Control Block -- QSAM, BSAM, BPAM, EXCP Access Method . . . . .	23
Data Control Block -- ISAM . . . . .	39
Data Control Block -- BDAM . . . . .	53
Data Control Block -- QTAM . . . . .	61
Data Control Block -- BTAM . . . . .	69
Data Control Block -- GAM . . . . .	77
Data Extent Blocks . . . . .	81
Data Extent Block -- Ordinary . . . . .	83
Data Extent Block -- QTAM Message Processing Program . . . . .	93
Data Event Control Blocks . . . . .	99
Data Event Control Block -- BSAM . . . . .	101
Data Event Control Block -- ISAM . . . . .	103
Data Event Control Block -- BDAM . . . . .	107
Data Event Control Block -- QTAM . . . . .	111
Data Event Control Block -- BTAM . . . . .	113
Data Set Control Blocks . . . . .	121
Data Set Control Block -- Format 1 . . . . .	123
Data Set Control Block -- Format 2 . . . . .	129
Data Set Control Block -- Format 3 . . . . .	135
Data Set Control Block -- Format 4 . . . . .	137
Data Set Control Block -- Format 5 . . . . .	141
Data Set Control Block -- Format 6 . . . . .	143
Data Set Labels -- Magnetic Tape . . . . .	145
Data Set Label 1 -- FL1 . . . . .	147
Data Set Label 2 -- FL2 . . . . .	151
DEVICE NAME TABLE . . . . .	155
Event Control Block . . . . .	159
Interruption Control Block . . . . .	161
Input/Output Block . . . . .	165
Job File Control Block . . . . .	177
Line Control Block . . . . .	189
Partitioned Data Set Directory Entries . . . . .	195
Partitioned Data Set Directory Entry -- General Format . . . . .	197
Partitioned Data Set Directory Entry -- Format 1 . . . . .	199
Partitioned Data Set Directory Entry -- Format 2 . . . . .	203
REQUEST BLOCKS . . . . .	207
Request Block -- PCP, MFT Configurations . . . . .	209
Request Blocks -- MVT Configuration . . . . .	215
Interruption Request Block -- MVT . . . . .	217
Program Request Block -- MVT . . . . .	221
System Interruption Request Block . . . . .	225
Supervisor Request Blocks -- MVT . . . . .	229
Supervisor Request Block -- MVT -- Resident SVC Routines . . . . .	231
Supervisor Request Block -- MVT -- Transient SVC Routines . . . . .	235
Task Control Block . . . . .	239
Task Input/Output Table . . . . .	249
Unit Control Block . . . . .	253
Volume Label . . . . .	275
Volume Table of Contents . . . . .	277
Volume Table of Contents . . . . .	279

# Illustrations

## Figures

Figure 1.	Communication Vector Table (Part 1 of 4)	12
Figure 2A.	Data Control Block - QSAM, BSAM, BPAM, EXCP - Device Type Segments	24
Figure 2B.	Data Control Block - QSAM, BSAM, BPAM, EXCP - Foundation Segments	25
Figure 2C.	Data Control Block - QSAM, BSAM, BPAM, EXCP - Access Method Segments	26
Figure 3.	Data Control Block - ISAM (Part 1 of 4)	40
Figure 4.	Data Control Block - BDAM (Part 1 of 2)	54
Figure 5.	Data Control Block - QTAM (Part 1 of 2)	62
Figure 6.	Data Control Block - BTAM (Part 1 of 2)	70
Figure 7.	Data Control Block - GAM	78
Figure 8.	Data Extent Block -- Ordinary (Part 1 of 4)	84
Figure 9A.	Data Extent Block -- QTAM -- Message Process Queue	94
Figure 9B.	Data Extent Block -- QTAM -- Destination Queue	95
Figure 10.	Data Event Control Block -- BSAM	102
Figure 11.	Data Event Control Block -- ISAM	104
Figure 12.	Data Event Control Block -- BDAM	108
Figure 13.	Data Event Control Block -- QTAM	112
Figure 14.	Data Event Control Block -- BTAM	114
Figure 15.	Data Set Control Block -- Format 1 (Part 1 of 2)	124
Figure 16.	Data Set Control Block -- Format 2 (Part 1 of 2)	130
Figure 17.	Data Set Control Block -- Format 3	136
Figure 18.	Data Set Control Block -- Format 4	138
Figure 19.	Data Set Control Block -- Format 5	142
Figure 20.	Data Set Control Block -- Format 6	144
Figure 21.	Data Set Label 1	148
Figure 22.	Data Set Label 2	152
Figure 23.	Device Name Table	156
Figure 24.	Event Control Block	159
Figure 25.	Interruption Control Block	162
Figure 26.	Input/Output Block (Part 1 of 3)	166
Figure 27.	Job File Control Block (Part 1 of 2)	178
Figure 28.	JFCB Extension Block	187
Figure 29.	Line Control Block (Part 1 of 2)	190
Figure 30A.	PDS Directory Entry -- General Format	198
Figure 30B.	PDS Directory Entry -- Format 1	200
Figure 30C.	PDS Directory Entry -- Format 2	204
Figure 31A.	Request Blocks -- PCP, MFT	210
Figure 31B.	Interruption Request Block -- MVT	218
Figure 31C.	Program Request Block -- MVT	222
Figure 31D.	System Interruption Request Block -- MVT	226
Figure 31E.	Supervisor Request Block -- Resident SVC Routines	232
Figure 31F.	Supervisor Request Block -- MVT -- Transient SVC Routines	236
Figure 32.	Task Control Block (Part 1 of 2)	240
Figure 33.	Task Input/Output Table	250
Figure 34.	Unit Control Block (Part 1 of 3)	254
Figure 35.	The UCBTYP Field	265
Figure 36.	Volume Label	276
Figure 37.	Volume Table of Contents	278

## Tables

Table 1.	Relation of BBCCHH Number to Devices	7
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# Summary of Revisions

<u>Subject</u>	<u>Blocks or Fields Affected</u>
2361 Core Storage	DCBHIARC, JFCBHIAR, XSTAB, RBSTAB, XLIST, TCBMSS, TCBPQE
World Trade Telegraph	DCB-WTT Interface, DCBCPOLL, DECB-QTAM, BTAM, LCBINCAM, UCBTYP-Communications
Advanced Checkpoint-Restart	CVTCRTTR, CVTSTUSA, CVTSCTRK, JFCBTSDM, JFCBOTTR, JFCBMASK, JFCBIND2, JFCB + 96, XSTAB, TCBTRN
Model 65 Multiprocessing	CVTDCB, CVTMPCVT, TCBFLGS, UCBFL3
Variable Length Record Format Extension	DCBRECFM, DCBLRECL, DCBPRECL, DS1RECFM, DS1RECL, FL2RECL, FL2BLKA
2420 Model 7 Magnetic Tape Unit	UCBTYP-Magnetic Tape
SGJP, 1130-360 Data Transmission	DCB-BTAM
User Label in OS	DS1EXT1, JFCBLTYP, VTOC
Flush Data after DD DATA	CVTSTUSA
Punch Check Recovery	DCBIND1
FORTTRAN Use of IN-OUT	JFCBMASK
Reduced Tape Error Recovery	DCBOPTCD, DEBOFLGS, JFCOPTCD
Read Opposite	UCBROR
Work Disposition	TIOELINK
STAE	TCBNSTAE
Quiesce Abnormal Termination	CVTXWTO
Time Slice Element Address	
- MFT, MVT	CVTTSCE
SVC number format	XRBNM
DECB - BSAM, BDAM	DECTYPE
Correction	CVTRELNO
ECB - BSAM, BDAM, BISAM	DECSDECB, DECBECB
TIOT - Device is a Data Cell Drive	TIOEFSRT
TIOT - Device Entry Description	TIOT - Device Entry Description TCB
TCB Format Change	
BTAM	DECB - BTAM, ECB - BTAM
Field Names	FL2TRTCW, FL2CNTR
M = 1	Device Address
GJP	TCBFLGS, TCBTRN
Model 91	TCBTRN
ISAM Status	DCBST, DS2STIND
Miscellaneous	DS1DSIND, DS1EXPDT, UCBTYP - Graphics, Deletion of TCBJSE, CVTIXAVL, DCBIFLG, TCBFLAGS, XSTAB, RBSTAB, DS4HPCHR, DCBBUFCT

# System Control Blocks

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

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

- 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.

## MBBCCCHHR - Actual Address Format

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

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

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

Table 1. Relation of BCCCHH 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.

## Revised Page Format

The page format used to contain the control block field descriptions has been revised to that shown in the following:

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

The new 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. The new format also includes a new item: 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 new page format and their use are:

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

Example:  
16 (10)

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

Examples:

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

**Field Name** - A name that identifies the field.

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

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

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

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

Examples:

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



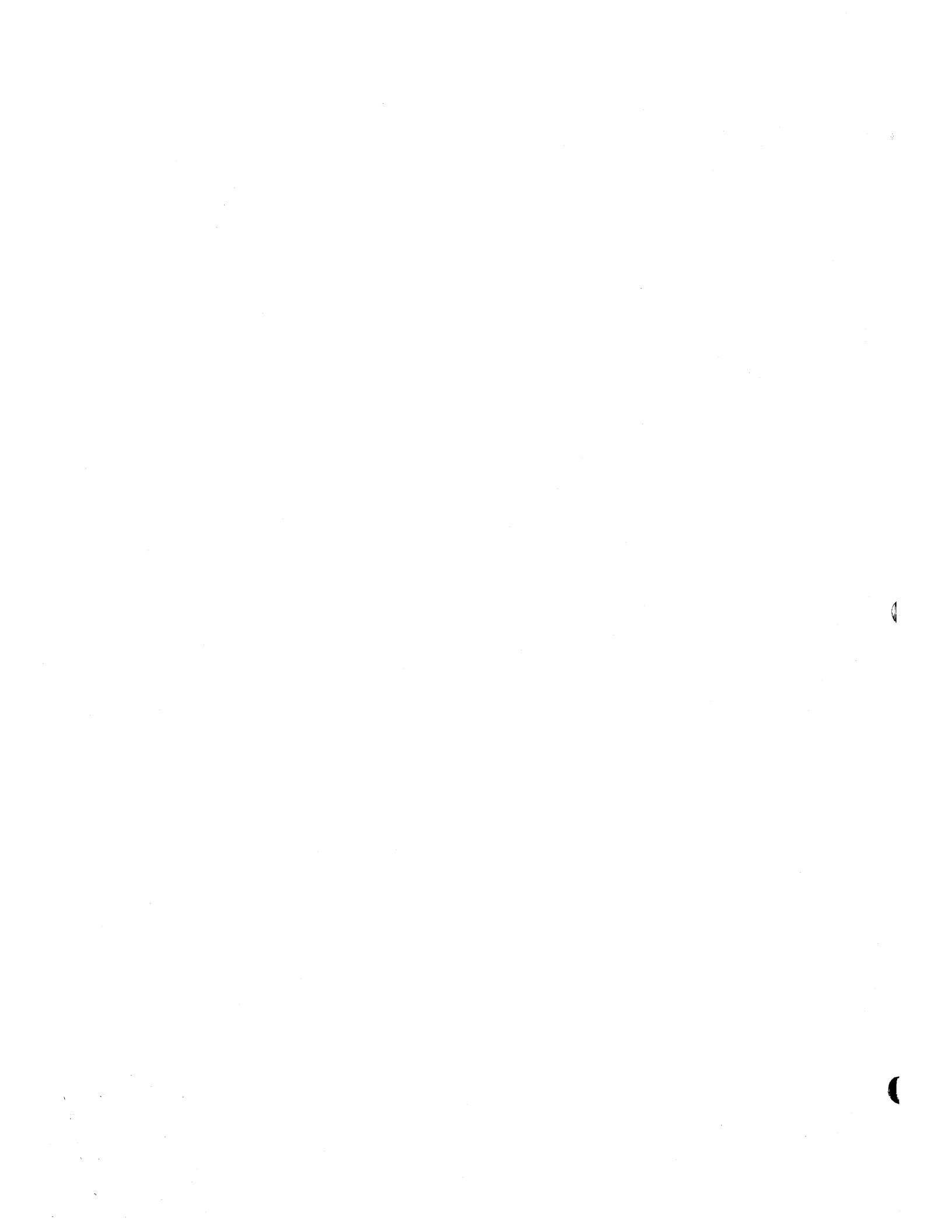
Field Description, Contents, Meaning - The use of the field.

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

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

POINTER DIAGRAM

The pointer diagram previously shown here has been superseded by a similar one now shown in the IBM publication IBM System/360 Operating System: Programmer's Guide to Debugging, Form C28-6628.



## 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. 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). (Location 16(dec.)/10(hex.) points to the CVT but is not a part of the CVT. Figure 1 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

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

Continued

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

Continued

COMMUNICATION VECTOR TABLE

64 (40)	CVTZDTAB Address of I/O Device Characteristic Table	
68 (44)	CVTXITP Address of Error Interpreter Routine	
72 (48)	CVTXWTO PCP: Address of Console Output Routine MFT, MVT: Address of System Quiesce Routine	
76 (4C)	CVT0FN00 Entry-Point Address to FINCH	
80 (50)	CVTEXTIT An SVC 3 Instruction	82 (52) CVTBRET A BCR 15, 14 Instruction
84 (54)	CVTSVDCB Address of DCB for SYS1.SVCLIB	
88 (58)	CVTTPC Address of Pseudo Clock for Timer Routine	
92 (5C)	CVTPBLDL Address of BAL Entry-Point to BLDL Routine	
96 (60)	CVTSJQ Address of Selected Job Queue	
100 (64)	CVTCUCB Address of Table with Console UCB Address	
104 (68)	CVTQTE00 Address of Timer Enqueue Routine	
108 (6C)	CVTQTD00 Address of Timer Dequeue Routine	
112 (70)	CVTSTB Address of I/O Device Statistics Table	
116 (74)	CVTDCB System Configuration, Address of DCB for SYS1.LOGREC	
120 (78)	CVTIOQET Address of Request Element Table	
124 (7C)	CVTIXAVL Address of IOS Freelist Pointer	

Continued

•Figure 1. Communication Vector Table (Part 2 of 4)

**COMMUNICATION VECTOR TABLE**

Continued

128 (80)	CVTNUCB Lowest Storage Address Not in Nucleus
132 (84)	CVTBOSV Address of Program Fetch Routine
136 (88)	CVT0DS Address of Entry-Point of Dispatcher
140 (8C)	CVTILCH Address of Logical Channel Word Table
144 (90)	CVTIERLC Address of Asynchronous Exit Queue
148 (94)	CVTMSEB PCP: Address of Major QCB MFT, MVT: Address of Master Scheduler Resident Data Area
152 (98)	CVTOPT01 Address of Branch Entry-Point for Post Routine
156 (9C)	CVTTRMTB Address of Terminal Table for QTAM
160 (A0)	CVTHEAD Address of Highest Priority TCB in Ready Queue
164 (A4)	CVTMZ00 Highest Storage Address in Machine
168 (A8)	CVTIEF00 Address of IRB Creation Routine
172 (AC)	CVTQOCR 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)	PCP, MFT, MVT: Reserved
184 (B8)	PCP: CVTCRTR - TTR of JCT for Restart MFT: CVTQCDSR - Reserved MVT: CVTQCDSR - Address of Search Routine for Contents Directory
187 (BA)	PCP: CVTSTUSA
188 (BC)	PCP: CVTSTRK PCP, MFT: CVTQLPAQ - Reserved MVT: CVTQLPAQ - Address of Top of Contents Directory in LPA Queue
190 (BE)	PCP: Reserved

Continued

•Figure 1. 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)	PCP, MFT, MVT: Reserved	
200 (C8)	CVTABEND PCP, MFT: Reserved MVT: Address of Secondary CVT	
204 (CC)	CVTUSER PCP, MFT, MVT: Field Available to the User	207 (CF)
<b>MFT, MVT Extension</b>		
208 (D0)	MFT, MVT: Reserved	
212 (D4)	CVTQABST MFT: Reserved MVT: An SVC 13 Instruction	214 (D6)  MFT, MVT: Reserved
216 (DC)	CVTTSCE MFT: Address of TSCE MVT: Address of First TSCE	219 (DF)

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

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
-4	(-4) 4	CVTRELNO	Reserved.
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.
60	(3C) 4	CVTMSLT	PCP: Address of master scheduler linkage table. MFT, MVT: Address of master scheduler resident data area. (Compare the use of this field with the use of the CVTMSER field 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	CVTXWTO	PCP: Address of the console output routine. MFT, MVT: Address of the system quiesce routine.
76	(4C) 4	CVT0FN00	Address of entry point of the FINCH routine.



COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
80	(50) 2	CVTEXTIT		An SVC 3 instruction (EXIT).
82	(52) . . 2	CVTBRET		A BCR 15,14 instruction (used by data management routines).
84	(54) 4	CVTSVDCB		Address of the DCB for the SYS1.SVCLIB data set.
88	(58) 4	CVTTPC		Address of the 6-hour pseudo clock (SHPC), used by timer supervisor routines.
92	(5C) 4	CVTPBLDL		Address of BAL entry point to the 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.
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. (Compare the use of this field with the use of the CVTMSLT field 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.

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex Dig</u>	<u>Field Description, Contents, Meaning</u>
160	(A0) 4	CVTHEAD		Address of the highest priority TBC 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.
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) . . 2			PCP,MFT,MVT: Reserved
184	(B8) 4	CVTQCDSR		MFT: Reserved MVT: Address of the routine that searches the contents directory.
184	(B8) 3	CVTCRTR		PCP: TTR address of the modified job control table (JCT) used in automatic restart.
187	(BB) . . . 1	CVTSTUSA		PCP: Status byte A.  (Reserved bits) xxxx ...x .... 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.
188	(BC) 4	CVTQLPAQ		MFT: Reserved MVT: Address of the top entry of contents directory chain of entries in link pack area (LPA) queue.
188	(BC) 2	CVTSCTRK		PCP: TT part of TTR address of SYS1.SYSJOBQE data set area pre-empted for automatic restart.
190	(BE) . . 2			PCP: Reserved

COMMUNICATION VECTOR TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diag. Field Description, Contents, Meaning</u>
192	(C0) 4	CVTMPCVT	PCP, MFT: Reserved MVT: - If M65MP was specified in the system generation process: Address of the Model 65 Multiprocessing (M65MP) secondary CVT. - If M65MP was not specified in the system generation process: Zero.
196	(C4) 4		PCP, MFT, MVT: Reserved
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.
<u>MFT, MVT EXTENSION</u>			
208	(D0) 4		Reserved
212	(D4) 2	CVTQABST	MFT: Reserved MVT: An SVC 13 instruction (ABEND).
214	(D6) . . 2		Reserved
216	(D8) 4	CVTTSCE	MFT: Address of the time slice control element (TSCE). MVT: Address of the first time slice control element (TSCE).  END OF MFT, MVT EXTENSION.  END OF CVT.



## 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 foundation segment), and an access method interface segment. The foundation segment is basic to the format of all the DCBs; its extent is fixed as being at decimal displacements 40-48 (hexadecimal 28-30).

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 2A illustrates the formats of the various device type segments; Figure 2B the foundation segments; and Figure 2C, the access method segments. Following all these illustrations are descriptions of fields in each of the segments.

DATA CONTROL BLOCK -- SAM

Device Interface Segment

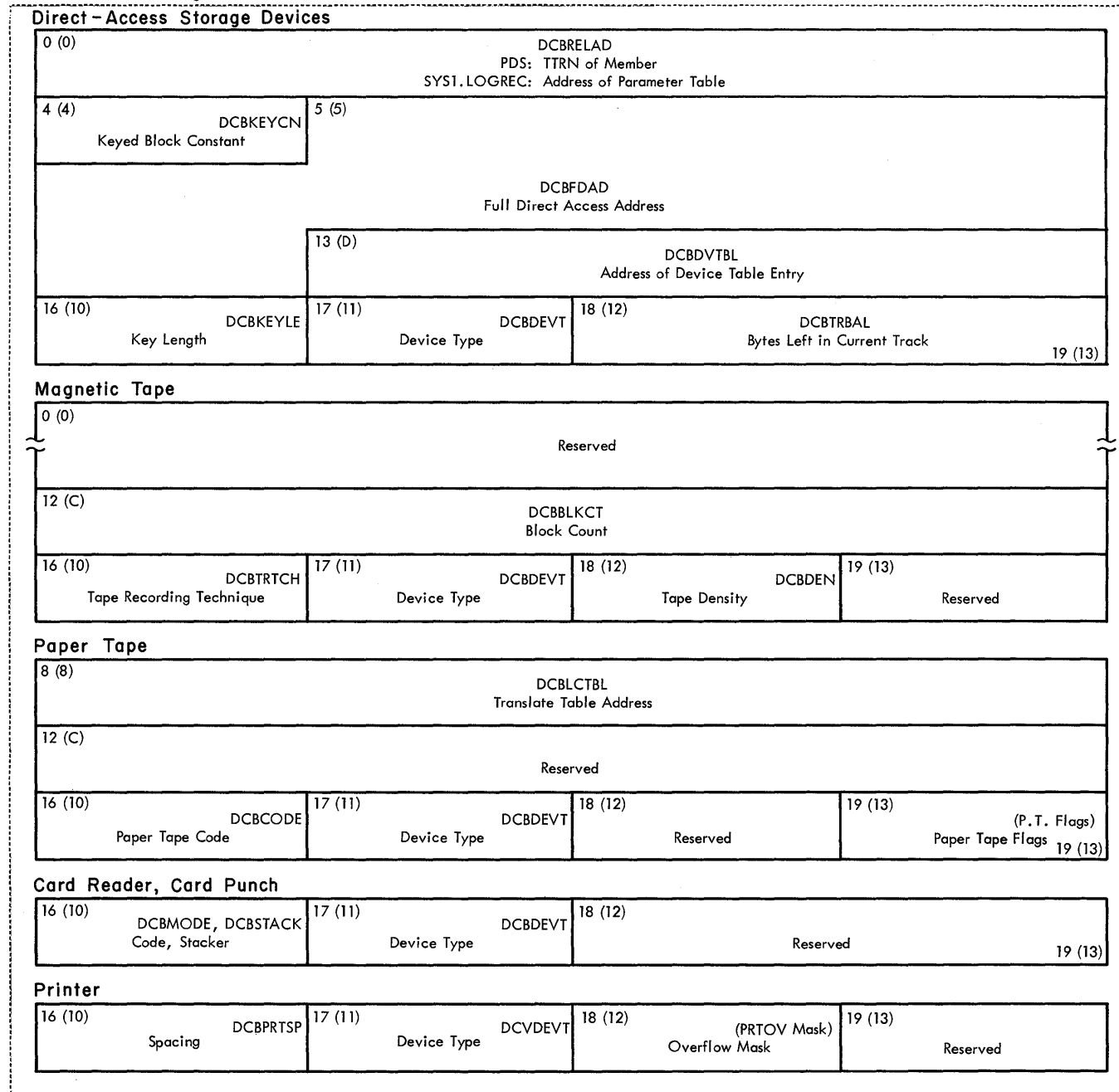


Figure 2A. Data Control Block - QSAM, BSAM, BPAM, EXCP - Device Type Segments



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	
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
40 (27)	

**Foundation**

<b>Before OPEN</b>		
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)		
<b>After OPEN</b>		
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 2B. Data Control Block - QSAM, BSAM, BPAM, EXCP - Foundation Segments

**DATA CONTROL BLOCK -- SAM**

**Access Method Segments**

EXCP Access Method Interface			
	49 (31)	Reserved	
52 (34)	DCBOPTCD Option Codes	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		
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		
80 (50)	DCBDIRCT Directory Block Length	82 (52)	DCBLRECL Logical Record Length
84 (54)	DCBCNTRL, DCBNOTE, DCBPOINT Address of CNTRL or NOTE/POINT Module		
			87 (57)

Continued

•Figure 2C. 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 Address of End of Buffer						
76 (4C)	DCBRECAD Address of Current or Next Logical Record						
80 (50)	Reserved		82 (52)	DCBLRECL Logical Record Length			
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 2C. Data Control Block - QSAM, BSAM, BPAM, EXCP - Access Method Segments (Part 2 of 2)**

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEVICE INTERFACE SEGMENTS</u>			
<u>DIRECT-ACCESS STORAGE DEVICES INTERFACE</u>			
0	(0) 4	DCBRELAB	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 IEAQFXOO, 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  (Reserved bits) ..1. ...1 1311 Disk Drive ..1. ..1. 2301 Parallel Drum ..1. ..11 2303 Serial Drum ..1. .1.. 2302 Disk Storage ..1. .1.1 2321 Data Cell Drive ..1. 1... 2314 Disk Storage Facility
18	(12) . . 2	DCBTRBAL	Track balance. Number of bytes remaining on current track after a write.
<u>MAGNETIC TAPE INTERFACE</u>			
0	(0) 12		Reserved for I/O Supervisor.
12	(C) 4	DCBBLKCT	Block count for each volume.
16	(10) 1	DCBTRTCH	Tape recording technique for 7-track tape. <u>Code</u> (Reserved bits) E Even parity. T BCD/EBCDIC translation. C Data conversion. ET Even parity and translation.
17	(11) . 1	DCBDEVT	Device type  1... ...1 2400 Series Magnetic tape unit (7-track or 9-track). .xxx xxx. (Reserved bits)

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>MAGNETIC TAPE INTERFACE (Continued)</u>			
18	(12) . . 1	DCBDEN	Tape density - 2400 series magnetic tape units.
		Code	<u>7-tracks</u> <u>9-tracks</u>
			(Reserved bits)
	..xx xx..	0	200 bpi       -
	.... ..11	1	556 bpi       -
	.1.. ..11	2	800 bpi       800 bpi
	1... ..11	3	-               1600 bpi
	11.. ..11		
19	(13) . . . 1		Reserved
<u>PAPER TAPE INTERFACE</u>			
8	(8) 4	DCBLCTBL	Address of translate table.
12	(C) 4		Reserved
16	(10) 1	DCBCODE	Paper tape code being used. The appropriate translate table is made available.
		Code	
	1... .....	N	No conversion
	.1.. .....	I	IBM BCD
	..1. ....	F	Friden
	...1 ....	B	Burroughs
	.... 1...	C	National Cash Register
	.... .1..	A	ASCII (8-track)
	.... ..1.	T	Teletype
	.... ....x		(Reserved bit)
17	(11) . 1	DCBDEVT	Device type.
		0.0. 0000	(Reserved bits)
		.1.1 .....	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.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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CARD READER, CARD PUNCH INTERFACE

16	(10)	1	DCBMODE, DCBSTACK	
				<u>Code</u>
			xxxx ....	Mode of operation for 1442 Card Read Punch.
			1... ....	C Column binary mode.
			.1... ....	E EBCDIC mode.
			..xx ....	(Reserved bits)
			.... xxxx	Stacker selection
			.... ...1	1 Stacker 1
			.... ..1.	2 Stacker 2
			.... xx..	(Reserved Bits)

17	(11)	. 1	DCBDEVT	Device type
			x.xx x...	(Reserved bits)
			.1.. ..11	1442 Card Read Punch
			.1.. ...1	2540 Card Reader
			.1.. ..1.	2540 Card Punch
			.1.. .1..	2501 Card Reader
			.1.. .1.1	2520 Card Read Punch

18	(12)	. . 2		Reserved
----	------	-------	--	----------

PRINTER INTERFACE

16	(10)	1	DCBPRTSP	Number indicating normal printer spacing.
				<u>Code</u>
			xxx. .xx.	(Reserved bits)
			.... ...1	0 No spacing.
			.... 1..1	1 Space one line.
			...1 ...1	2 Space two lines.
			...1 1..1	3 Space three lines.

17	(11)	. 1	DCBDEVT	Device type.
			x.xx .x.x	(Reserved bits)
			.1.. 1...	1403 Printer and 1404 Printer (continuous form support only)
			.1.. 1.1.	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:
----	------	-------	--	---

				<u>Code</u>
			xx.. xxxx	(Reserved bits)
			..1. ....	9 Test for channel 9 overflow.
			...1 ....	12 Test for Channel 12 overflow.

19	(13)	. . . 1		Reserved
----	------	---------	--	----------

END OF DEVICE INTERFACE SEGMENTS

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>COMMON INTERFACE</u>			
20	(14) 1	DCBBUFNO	Number of buffers required for this data set. May range from 0 to a maximum of 255.
21	(15) . 3	DCBBUFCB	Address of buffer pool control block.
24	(18) 2	DCBBUFL	Length at buffer. May range from 0 to a maximum of 32,767.
26	(1A) . . 2	DCBDSORG	Data set organization to be used.
<u>Code</u>			
26	(1A)	Byte 1 1... .. .1... .. ..1... .. ...X XX.. .... ..1. .... ...1	IS Indexed sequential organization. PS Physical sequential organization. DA Direct organization. (Reserved bits) PO Partitioned organization. U Unmovable - the data contains location dependent information.
27	(1B)	Byte 2 1... .. .xxx xxxx	GS Graphics organization. (Reserved bits)
28	(1C) 4	DCBIOBAD	Address of the IOB when chained scheduling is used.
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBHIARC, DCBBFTEK, DCBBFALN	
<u>Code</u>			
		x... .x..	Buffer pool location.
		0... .0..	coded in the DCB macro instruction: Before Open -
		none	No choice made in the DCB macro instruction. After Open -
		0... .1..	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.
		1... .0..	0 Hierarchy 0 main storage. (See also: After Open, above.) 1 Hierarchy 1 main storage.
		.x.x ....	Buffering Technique:
		.1.0 ....	S Simple buffering.
		.0.1 ....	E Exchange buffering.
		..x. 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	End-of-data address. Address of a user-provided routine to handle end-of-data conditions.

DATA CONTROL BLOCK -- SAM

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



DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Address</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
49	(31) . 1	DCBIFLG	Used by I/O supervisor in communicating error conditions and in determining corrective procedures.
		00.. .....	Not in error procedure.
		01.. .....	Error correction in process.
		11.. .....	Permanent error condition.
		..10 .....	Channel 9 printer carriage tape punch sensed.
		..01 .....	Channel 12 printer carriage tape punch sensed.
		.... 00..	Always use I/O supervisor error routine.
		.... 11..	Never use I/O supervisor error routine.
		.... 01..	Never use I/O supervisor error routine.
		.... 10..	Never use I/O supervisor error routine.
		.... ..XX	(Reserved bits.)
50	(32) . . 2	DCBMACR	Macro instruction reference. Major macro instructions and various options associated with them. Used by the Open routine to determine access method. Used by the access method executors in conjunction with other parameters to determine which load modules are required.
			<u>EXCP ACCESS METHOD</u>
		Byte 1	<u>Code</u>
50	(32)	1... .....	Execute Channel Program (EXCP).
		.1.. .....	Foundation extension is present with EXCP.
		..1. ....	Appendages are required with EXCP.
		...1 .....	Common interface is present with EXCP.
		.... xxxx	(Reserved bits.)
		Byte 2	
51	(33)	xxxx .....	(Reserved bits.)
		.... 1... .....	Five word device interface is present with EXCP.
		.... .1.. .....	Four word device interface is present with EXCP.
		.... ..1. ....	Three word device interface present with EXCP.
		.... ...1 .....	One word device interface is present with EXCP.
		Byte 1	<u>BSAM - Input</u>
50	(32)	00.. .....	Always zero for BSAM.
		..1. ....	R READ
		...x x..x	(Reserved bits.)
		.... .1.. .....	P POINT (which implies NOTE).
		.... ..1. ....	C CNTRL
		Byte 2	<u>BSAM - Output</u>
51	(33)	00.. .....	Always zero for BSAM.
		..1. ....	W WRITE
		...x ...x	(Reserved bits)
		.... 1... .....	L Load mode BSAM (create BDAM data set).
		.... .1.. .....	P POINT (which implies NOTE).
		.... ..1. ....	C CNTRL

DATA CONTROL BLOCK -- SAM

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

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE SEGMENTS</u>			
<u>EXCP ACCESS METHOD INTERFACE</u>			
49	(31) . 3		Reserved
52	(34) 1	DCBOPTCD	Option Codes <u>Code</u> (Reserved bits) Z Magnetic tape devices: Use reduced error recovery procedure.
		xxxx x.xx .... .1..	
53	(35) . 7		Reserved
60	(3C) 2	DCBEOEA	End-of-Extent Appendage ID (Identification) (See note).
62	(3E) . . 2	DCBPCIA	Program-Controlled-Interruption Appendage ID (Identification) (See note).
64	(40) 2	DCBSIOA	Start-I/O Appendage ID (Identification) (See note).
66	(42) . . 2	DCBCENDA	Channel-End Appendage ID (Identification) (See note).
68	(44) 2	DCBXENDA	Abnormal-End Appendage ID (Identification) (See note).
70	(46) . . 2		Reserved <u>Note:</u> The ID is that of an executable load module in the SVC Library. The module is loaded by the Open routine. Its address is placed into the appropriate slot in an appendage vector table constructed by the Open routine. If the ID is blank, its slot in the appendage vector table will contain the address of a return-point in I/O supervisor.
<u>BSAM, BPAM INTERFACE</u>			
49	(31) . 3	DCBREAD, DCBWRITE	Address of READ or WRITE module.
52	(34) 1	DCBOPTCD	Option codes <u>Code</u> W Write validity check. U Allow a data check caused by an invalid character (1403 printer with UCS feature). C Chained scheduling using the Program Controlled Interruption. (Reserved bits) Z Magnetic Tape Devices: use reduced error recovery procedure.
		1... .. .1.. .. ..1. .... ...x x.xx .... .1..	
53	(35) . 3	DCBCHECK	Address of the CHECK module.
56	(38) 1	DCBIOBL	IOB length in double words.
57	(39) . 3	DCBSYNAD	Address of user's synchronous error routine to be entered when a permanent error occurs.
60	(3C) 1	DCBCIND1	Condition Indicators.  (Reserved bits) Search direct. Volume full or paper tape EOVS. Exchange buffering supported.
		x..x xxx. .1.. .. .1. .... .... ..1	

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
61 (3D)	. 1	DCBCIND2	Condition Indicators
		1... ..	Partitioned data set: STOW has been performed.
		.1.. ..	Sequential data set: Update.
		..1. ....	Direct organization data set: Last I/O was a write record zero.
		...1 ....	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.
		.... ...0	Chained scheduling being supported.
			FEOV bit (QSAM only).
			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	DCBIOBA	Normal Scheduling: Address of BSAM/BPAM prefix of IOB. Chained Scheduling: Address of ICB.
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	DCBEOBR	Address of the end-of-block module for read.
76 (4C)	4	DCBEOBW	Address of the end-of-block module for write.
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.
84 (54)	4	DCBCNTRL, DCBNOTE, DCBPOINT	Address of the CNTRL module or of the NOTE/POINT module.

DATA CONTROL BLOCK -- SAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>QSAM INTERFACE</u>			
49	(31) . 3	DCBGET, DCBPUT	Address of GET module or PUT module.
52	(34) 1	DCBOPTCD	Option codes.
			<u>Code</u>
		1... ..	W Validity check.
		.1.. ..	U Allow a data check for an invalid character (1403 with UCS).
		..1. ....	C Chained scheduling using the program controlled interruption.
		...x x.xx	(Reserved bits)
		.... .1..	Z Magnetic tape devices. Use reduced error recovery procedure.
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... ..	2540 Card Punch:
		.1.. ..	Data set was opened but no data was written.
		..1. ....	Search direct.
		...x xxxx	Volume full.
			(Reserved bits.)
61	(3D) . 1	DCBCIND2	Condition Indicators.
		1... ..	STOW has been performed.
		.1.. ..	Last I/O was a write record zero.
		...x. ....	(Reserved bit)
		...1 .....	Permanent I/O error.
		.... 1...	OPEN acquired buffer pool.
		.... ..1.	Track overflow in use.
		.... ...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.
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 QSAM prefix of the IOB.
67	(43) . . . 1	DCBOFFSW	Offset of the Write CCW from the QSAM prefix of the IOB.

DATA CONTROL BLOCK -- SAM

Offset	Bytes and Alignment	Field Name	Field Description, Contents, Meaning
68	(44) 4	DCBIOBA	Normal Scheduling: Address of QSAM prefix of IOB. Chained Scheduling: Address of ICB.
72	(48) 4	DCBEOBAD	End-of-buffer address. Address of last byte of the current buffer.
76	(4C) 4	DCBRECAD	Address of the current or next logical record.
80	(50) 2		Reserved
82	(52) . . 2	DCBLRECL	Format F records: Record length. Format U records: Record length. 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. 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 synchronous 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	DCBEOB	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 3 illustrates the format of this DCB. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- ISAM

**Device Interface**

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

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

**Foundation Extension**

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

**Foundation**

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

**Access Method Interface - ISAM**

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

Continued

•Figure 3. Data Control Block - ISAM (Part 1 of 4)



DATA CONTROL BLOCK -- ISAM

Continued

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

Continued

Figure 3. Data Control Block - ISAM (Part 2 of 4)

DATA CONTROL BLOCK -- ISAM

Continued

132 (84)		DCBLEMI3 Direct-Access Address of Last Entry in Third-Level Master Index	
		137 (89) DCBNLEV No. of Index Levels	138 (8A) DCBFIRSH HHR of First Prime Data Record
Continued		141 (8D) DCBHMASK 2301, not 2301	142 (8E) DCBLDT HH of Last Prime Data Track
144 (90) DCBHRCM Highest R for Indexes	145 (91) DCBHIRPD Highest R for Prime Data	146 (92) DCBHIROV Highest R for Overflow	147 (93) DCBHIRSH Last R of Shared Track
148 (94) DCBTDC Tag Deletion Count		150 (96) DCBNCRHI Bytes Needed for Highest-Level Index	
152 (98) DCBRDRG3 Count of Access to Overflow Records Other than the First			
156 (9C) DCBNREC No. of Logical Records in Prime Data Area			
160 (A0) Status Indicators	DCBST	161 (A1) DCBFTCI Direct-Access Address of First Track of Cylinder Index	
168 (A8) Reserved		169 (A9) DCBFTMI1 Direct-Access Address of First Track of First-Level Master Index	
176 (B0) Size of Highest Index	DCBNTHI	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			

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

Continued

DATA CONTROL BLOCK -- ISAM

Continued

192 (C0)	DCBLETI Direct-Access Address of Last Active Normal Entry of Track Index on Last Cylinder	
	197 (C5) Reserved	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)	DCBLEMI1 Direct-Access Address of Last Active Entry in First-Level Master Index	
	213 (D5) Reserved	214 (D6) DCBNOREC No. of Logical Records in Overflow Area
216 (D8)	DCBLIOV Direct-Access Address of Last Record in Overflow Area	
224 (E0)	DCBRORG1 No. of Full Cylinder Overflow Areas	226 (E2) Reserved
228 (E4)	DCBWKPT1 Pointer to Work Area or Channel Program	
232 (E8)	DCBWKPT2 Pointer to Work Area or Channel Program	
236 (EC)	DCBWKPT3 Pointer to Work Area or Channel Program	
240 (F0)	DCBWKPT4 Pointer to Work Area or Channel Program	
244 (F4)	DCBWKPT5 Pointer to Work Area or Channel Program	
248 (F8)	DCBWKPT6 Pointer to Work Area or Channel Program	
		251 (FB)

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

DATA CONTROL BLOCK -- ISAM

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

DEVICE INTERFACE

16	(10)	1	DCBKEYLE	Key length.
17	(11)	. 1	DCBDEVT	Device type.
			xxxx ....	(Reserved bits)
			.... ..1	2311 Disk Drive.
			.... ..10	2301 Parallel Drum.
			.... ..11	2303 Serial Drum.
			.... .1..	2302 Disk Storage.
			.... .1.1	2321 Data Cell Drive.
			.... 1...	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.
			...x xxxx	(Reserved bits)

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

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

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

DATA CONTROL BLOCK -- ISAM

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

FOUNDATION SEGMENT -- BEFORE OPEN

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

DATA CONTROL BLOCK -- ISAM

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

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

50	(32)	Byte 1 00.0 0... ..1. .... .... .1.. .... ..1. .... ...x			<u>BISAM - Input</u> Always zero for BISAM. R READ S Dynamic buffering. C CHECK (Reserved bit)
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51	(33)	Byte 2 00.0 0000 ..1. ....		W	<u>BISAM - Output</u> Always zero for BISAM. WRITE
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50	(32)	Byte 1 0.0. .0.. .1. .... ...1 .... .... 1... .... ...xx		G M L	<u>QISAM - Input</u> Always zero for QISAM. GET Move mode of GET. Locate mode for GET. (Reserved bits)
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51	(33)	Byte 2 1... .... .1. .... ..0. .... ...1 .... .... 1... .... .1.. .... ..1. .... ...1		S P M L U K I	<u>QISAM - Output</u> SETL PUT or PUTX. Always zero for QISAM. Move mode of PUT. Locate mode of PUT. Update in place (PUTX). SETL by key. SETL by ID.
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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.
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42	(2A) . . 2	DCBMACRF			Contents and meaning are the same as those of the DCBMACR field in the foundation before Open.
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44	(2C) 1	DCBIFLGS			Contents and meanings are the same as those of the DCBIFLG field in the foundation before Open.
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45	(2D) . 3	DCBDEBAD			Address of the associated DEB.
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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.
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DATA CONTROL BLOCK -- ISAM

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

49	(31) . 3	DCBGET, DCBPUT	Address of GET module or of PUT module.
52	(34) 1	DCBOPTCD	Option codes: <u>Code</u> W Write Validity check. (Reserved bits) M Master Indexes. I Independent overflow area. Y Cylinder overflow area. L Delete option. R Reorganization criteria.
53	(35) . 1	DCBMAC	Extension of the DCBMACRF field for ISAM. <u>Code</u> (Reserved bits) U Update for read. U Update type of write. 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	Number of tracks to be reserved on each cylinder to hold records that overflow from other tracks on that cylinder. Maximum permissible value: 99.
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.



DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diag. Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE -- ISAM (Continued)</u>			
80	(50) 1	DCBEXCD1	First byte in which exceptional conditions detected in processing data records are reported to the user. 1... .. Lower key limit not found. .1.. .... Invalid device address for lower limit. ..1. .... Space not found. ....1 .... Invalid request. .... 1... Uncorrectable input error. .... .1.. Uncorrectable output error. .... ..1. Unreachable block. .... ...1 Overflow record.
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. .... xxxx (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	DCBRELS	Work area for temporary storage of register contents.
100	(64) 4	DCBPUTX	Work area for temporary storage of register contents.
104	(68) 4	DCBRELEX	Address of read exclusive module.
108	(6C) 4	DCBFREED	Address of dynamic buffering module.
112	(70) 1	DCBDBUFN	Reserved
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.
138	(8A) . . 3	DCBFIRSH	HHR of the first data record on each cylinder.

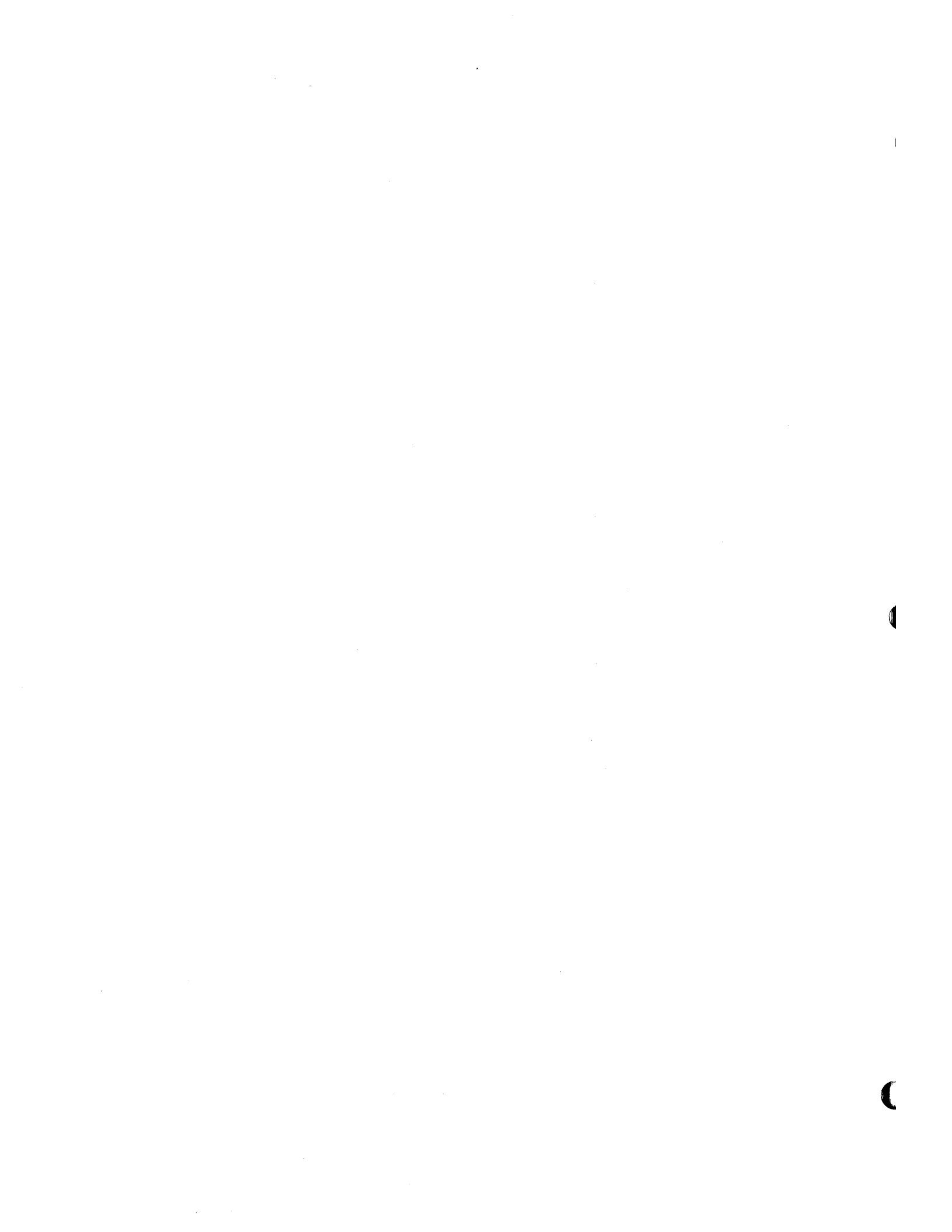
DATA CONTROL BLOCK -- ISAM

Hex.  
Dig. Field Description, Contents, Meaning

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Field Description, Contents, Meaning</u>
141	(8D) . 1	DCBHMASK	07 FF	Device is a 2301 drum. Device is other than a 2301 drum.
142	(8E) . . 2	DCBLDT		HH is the last prime data track on each cylinder.
144	(90) 1	DCBHIRCM		Highest possible R for tracks of the cylinder and master indices.
145	(91) . 1	DCBHIRPD		Fixed-length record format: Highest possible R for prime data tracks.
146	(92) . . 1	DCBHIROV		Fixed-length record format: Highest possible R for overflow data tracks.
147	(93) . . . 1	DCBHIRSH		R of the last data record on a shared track, if applicable.
148	(94) 2	DCBTDC		Tag deletion count.
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			Reserved
169	(A9) . 7	DCBFTMI1		Direct access device address of the first track of the first level master index (in the form MBBCCHH).
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			Reserved

DATA CONTROL BLOCK -- ISAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE - ISAM (Continued)</u>			
198	(C6) . . 2 ●	DCBNBOV	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 (in the form MBECCHHR).
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 4 illustrates the format of the data control block used in BDAM. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- BDAM

**Device Interface**

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

**Common Interface**

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

**Foundation Extension**

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

**Foundation**

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

•Figure 4. Data Control Block - BDAM (Part 1 of 2)

DATA CONTROL BLOCK -- BDAM

BDAM Interface		
		49 (31) DCBREAD, DCBWRITE Address of Read or Write Module
52 (34) Option Codes	DCBOPTCD	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)		DCBIOBUG 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

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

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEVICE INTERFACE</u>			
16	(10) 1	DCBKEYLE	Key length.
17	(11) . 3	DCBREL	Number of relative tracks or blocks in this data set.
<u>COMMON INTERFACE</u>			
20	(14) p	DCBBUFNO	Number of buffers required for this data set. May range from 0 to 255.
21	(15) . 3	DCBBUFCEB	Address of buffer pool control block.
24	(18) 2	DCBBUFL	Length of buffer. May range from 0 to 32,767.
26	(1A) . . 2	DCBDSORG	Data set organization being used.
26	(1A)	Byte 1 xx.x xxx. ..1. .... .... ..1	<u>Code</u> (Reserved bits) DA Direct organization. U Unmovable - the data contains location dependent information.
27	(1B)	Byte 2	Reserved
28	(1C) 4	DCBIOBAD	Address of the standard fields of the first IOB in the pool of IOBS.
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBHIARC, DCBBFTEK, DCBBFALN	
		x... .x..	<u>Code</u> Buffer pool location, coded in the DCB macro instruction:
		0... .0..	Before Open -
		none	No choice made in the DCB macro instruction. After Open -
		0... .1..	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	Hierarchy 0 main storage.
		1... .0..	(See also: After Open, above.)
		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		Reserved



DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION (Continued)</u>			
36	(24) 1	DCBRECFCM	Record Format.
			<u>Code</u>
		10.. ....	F Fixed record length.
		01.. ....	V Variable record length.
		11.. ....	U Undefined record length.
		..1. ....	T Track overflow.
		...0 000.	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.
<u>FOUNDATION SEGMENT</u>			
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
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.
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)

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION SEGMENT -- BEFORE OPEN (Continued)</u>			
50	(32) . . 2	DCBMACR	Macro instruction reference. Major macro instructions and various options associated with them that will be used.
		Byte 1	<u>Code</u>
50	(32)	00.. .....	Always zero for BDAM.
		..1. ....	R READ
		...1 ....	K Key segment with READ.
		.... 1...	I ID argument with READ.
		.... .1..	S System provides area for READ (dynamic buffering).
		.... ..1.	X Read exclusive.
		.... ...1	C CHECK macro instruction.
		Byte 2	<u>Code</u>
51	(33)	00.. .....	Always zero for BDAM.
		..1. ....	W WRITE
		...1 ....	K Key segment with WRITE.
		.... 1...	I ID argument with WRITE.
		.... .X.X	(Reserved bits)
		.... ..1.	A Add type of WRITE.
<u>FUNDATION SEGMENT -- AFTER OPEN</u>			
40	(28) 2	DCBTIOT	Offset from the TIOT origin to the TIOELNGH field in the TIOT entry for the DD statement associated with this DCB.
42	(2A) . . 2	DCBMACRF	Contents and meaning are the same as DCBMACR in the foundation before OPEN.
44	(2C) 1	DCBIFLGS	Contents and meaning are the same as DCBIFLG in the foundation before OPEN.
45	(2D) . 3	DCBDEBAD	Address of the associated DEB. Note: The above fields overlay the DCBDDNM field during OPEN and are restored to their original form at CLOSE.
48	(30) 1	DCBOFLGS	Contents and meaning are the same as DCBOFLGS in the foundation before OPEN.

DATA CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>ACCESS METHOD INTERFACE -- BDAM</u>			
49	(31) . 3	DCBREAD, DCBWRITE	Address of the READ/WRITE module.
52	(34) 1	DCBOPTCD	Option Codes:  <u>Code</u> 1... .. 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	DCBDFOR	Address of a FORMAT module.
96	(60) 4	DCBDFBK	Address of a FEEDBACK module.
100	(64) 4	DCBDYNB	Address of dynamic buffer module.



# 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 5 shows the format of the block by segments; descriptions of the fields follow the illustration.

## QTAM Data Sets

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

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

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

## QTAM DCB Segments

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

### Prefix Segment --

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

### Foundation Segment --

- Before Open.
- After Open.

### Extension Segment --

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

DATA CONTROL BLOCK -- QTAM

**WTTA Interface**

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

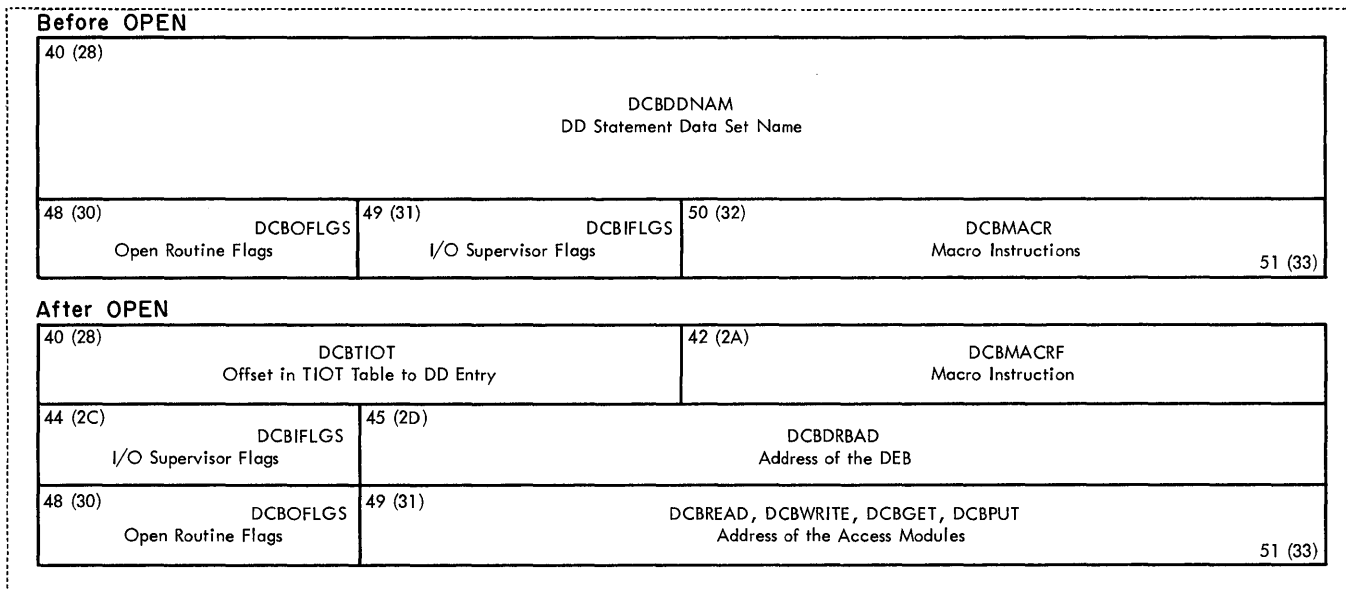
**Data Set Interface**

<b>Line Group</b>			
20 (14) Buffers Requested DCBBUFRQ	21 (15) Address of the LPS Routine DCBCLPS		
24 (18) Intentional Interval DCBINTVL	25 (19) Offset DCBACLOC	26 (1A) Data Set Organization DCBDSORG	
28 (1C) Device Type DCBDEVTP	29 (1D) Address of First IOB DCBIOBAD		
32 (20) Priority DCBCPRI	33 (21) Base for Addressing LCBs DCBLCBAD		
36 (24) Size of the LCB DCBEIOBX	37 (25) Address of the Exit List DCBEXLST		38 (27)
<b>Processing Program Message Queue</b>			
20 (14) Buffers to be Filled DCBBUFRQ	21 (15) Address of the Terminal Name DCBTRMAD		
24 (18) Size of the Work Area DCBSOWA	26 (1A) Data Set Organization DCBDSORG		
28 (1C) Address of Current Segment DCBSEGAD			
32 (20) Address of the EODAD Routine DCBEODAD			
36 (24) Record Format DCBRECFM	37 (25) Address of the Exit List DCBEXLST		39 (27)
<b>DASD Message Queue, Checkpoint</b>			
20 (14) Reserved DCBBUFNO	21 (15) Address of Terminal Table DCBBUFCB		
24 (18) Length of the Data DCBBUFL	26 (1A) Data Set Organization DCBDSORG		
28 (1C) Address of the IOB DCBIOBAD			31 (1F)

Figure 5. Data Control Block - QTAM (Part 1 of 2)

**DATA CONTROL BLOCK -- QTAM**

**Foundation**



**Extension**

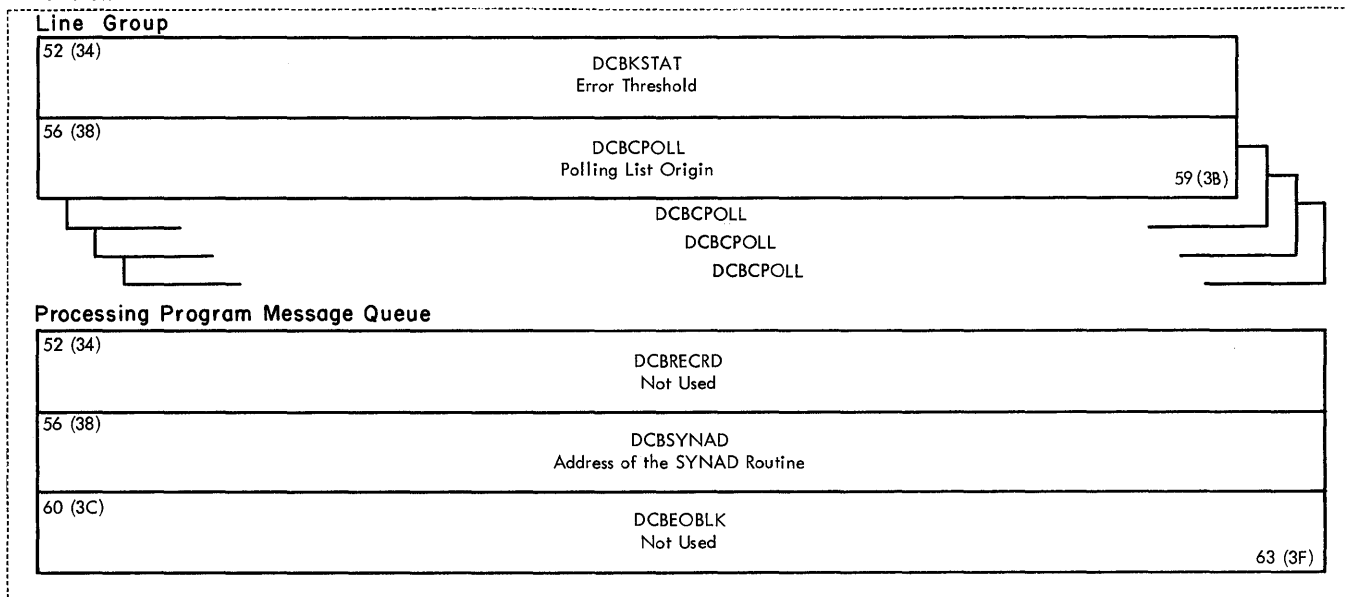


Figure 5. Data Control Block - QTAM (Part 2 of 2)

DATA CONTROL BLOCK -- QTAM

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



DATA CONTROL BLOCK -- QTAM

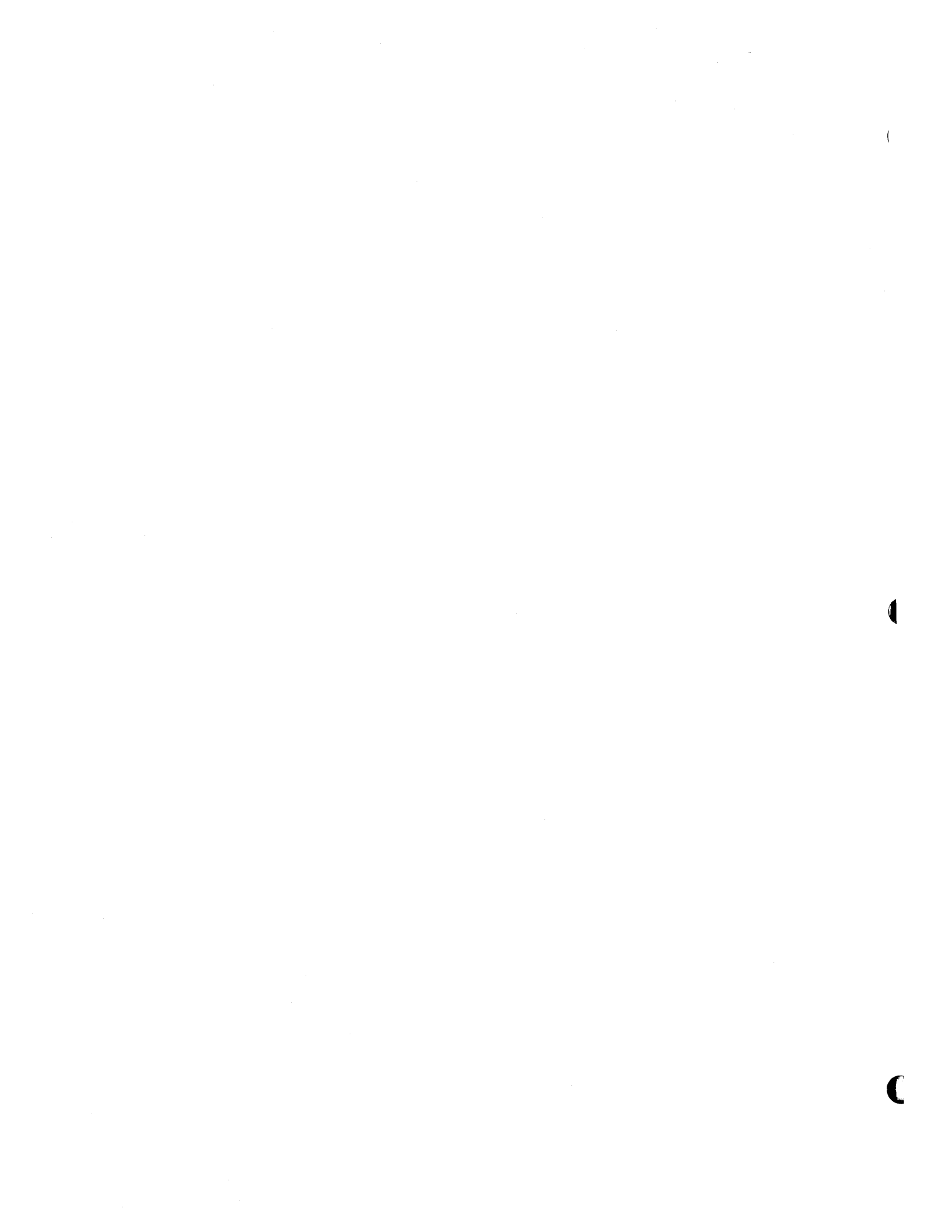
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PROCESSING PROGRAM MESSAGE QUEUE INTERFACE</u>			
20	(14) 1	DCBBUFRQ	Number of buffers to be filled from the direct access queue.
21	(15) . 3	DCBTRMAD	Address of a user-provided area in which the terminal name is stored.
24	(18) 2	DCBSOWA	Size of the user-provided work area.
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(1A)	Byte 1 xxxx x.xx .... .1..	<u>Code</u> (Reserved bits) MQ Problem program message queue.
27	(1B)	Byte 2	Reserved
28	(1C) 4	DCBSEGAD	Address of current segment.
32	(20) 4	DCBEODAD	Address of a user-provided routine.
36	(24) 1	DCBRECFM	Record Format.
		0000 ...0 .... ..1. .... .1.. .... 1...	<u>Code</u> (Reserved bits) R Record G Message S Segment
37	(25) . 3	DCBEXLST	Address of the exit list.
<u>DIRECT ACCESS STORAGE DEVICE (DASD) MESSAGE QUEUE INTERFACE, CHECKPOINT DATA SET INTERFACE</u>			
20	(14) 1	DCBBUFNO	Reserved
21	(15) . 3	DCBBUFCB	Address of the terminal table.
24	(18) 2	DCBBUFL	Size of the data in the buffer equated to IECKBUFL.
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(11A)	Byte 1 xxxx .xxx .... 1...	<u>Code</u> (Reserved bits) CQ Direct-access message queue
27	(1B)	Byte 2	Reserved
28	(1C) 4	DCBIOBAD	Address of input/output block.
<u>FOUNDATION SEGMENT</u>			
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
40	(28) 8	DCBDDNAM	Data set name as used in data definition statement. Used by Open routine to locate address of job file control block (JFCB).
			<u>Note:</u> If the DD name is TPCHKPNT, this DCB is used for the checkpoint data set.

DATA CONTROL BLOCK -- QTAM

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

DATA CONTROL BLOCK -- QTAM

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



## Data Control Block—BTAM

The data control block (DCB) used in BTAM is described in the following. The common interface and foundation extension exist for all DCBs. Figure 6 illustrates the format of this DCB; a description of the fields follows the illustration.

DATA CONTROL BLOCK -- BTAM

**WTTA Interface**

16 (10)	DCBBQFLG WTTA Flags	17 (11)	DCBWTEOM EOM Character	18 (12)	DCBWTEOT EOT Character	19 (13)	DCBWTPAD Number of Padding Characters
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**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 Directory I/O Directory	29 (1D)	DCBIOBAD Base for Addressing IOBs

**Foundation Extension**

32 (20)	DCBHIARC, DCBBFTEK	33 (21)	DCBERROP Error Recovery Procedures	34 (22)	Reserved
36 (24)	DCBEIOBX Size of IOB	37 (25)	DCBEXLST Address of User-Provided 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 or Write Module
52 (34)	DCBLERB Address of Line Error Block	

•Figure 6. Data Control Block - BTAM (Part 1 of 2)

DATA CONTROL BLOCK -- BTAM

**BSC Interface - Before Open**

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

**BSC Interface - After Open**

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

•Figure 6. Data Control Block - BTAM (Part 2 of 2)

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>WTTA Interface</u>			
16	(10) 1	DCBBQFLG	WTTA flag byte.
		x..x xxxx	(Reserved bits.)
		.1.. ....	WRU feature to be used.
		..1. ....	IAM feature to be used.
17	(11) . 1	DCBWT EOM	The EOM character.
18	(12) . . 1	DCBWT EOT	The EOT character.
19	(13) . . . 1	DCBWT PAD	Number of padding characters required for motor-on delay.
<u>COMMON INTERFACE</u>			
20	(14) 1	DCBBUFNO	Number of buffers obtained by the Open routine. Range: 0-255
21	(15) . 3	DCBBUF CB	Address of the buffer pool control block.
24	(18) 2	DCBBUF L	Buffer length. Range: 0 - 32,760 bytes
26	(1A) . . 2	DCBDS ORG	Data set organization being used:
26	(1A)	Byte 1 xxx. xxxx ...1 ....	<u>Code</u> (Reserved bits) CX Telecommunications -- line group.
27	(1B)	Byte 2	Reserved
28	(1C) 1	DCBDEV TP	Index to the device entry in the device I/O directory.
29	(1D) . 3	DCBIOBAD	Base for addressing IOBs. (Base = Address of first IOB -- length of an IOB)
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBHIARC, DCBBFTEK	
		x... .x..	<u>Code</u> Buffer pool location, coded in the DCB macro instruction:
		0... .0..	Before Open -
		none	No choice made in the DCB macro instruction.
			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.



DATA CONTROL BLOCK -- BTAM

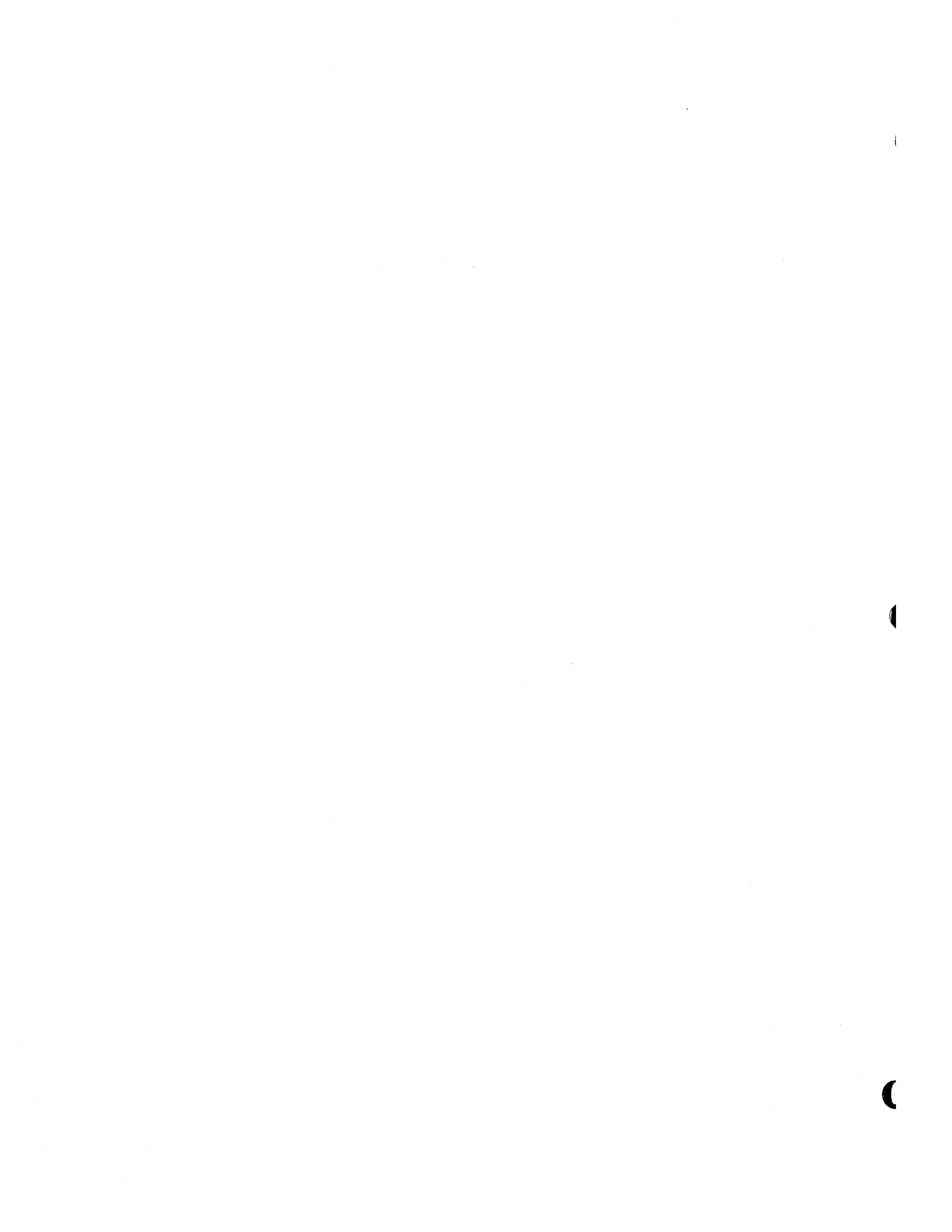
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>FOUNDATION EXTENSION (Continued)</u>			
33	(21) . 1	DCBERROP	Error recovery procedure: <u>Code</u> (Reserved bits) T On-line test facilities to be used. C Threshold and cumulative error counts to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

DATA CONTROL BLOCK -- BTAM

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

DATA CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BSC Interface -- After Open</u>			
56	(38) 1	DCBXMODE	Mode of transmission for binary synchronous communication (BSC).  .1.. .... Intermediate block checking is to be performed. ..1. .... Transmission is through a 2701 Data Adapter Unit Dual Communication Interface B. .... 1... Transmission is in code B for a 2701 Data Adapter Unit Dual Code Feature. x..x .xxx Reserved
57	(39) 1	DCBXCDE	BSC control station flag, transmission code.  x... .... BSC control station flag. 0... .... This is the control station. 1... .... This is the remote station.  .x.. .... If PTOPI 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	WBT control character.
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	DLE SAK 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 7 illustrates the format of the DCB used in GAM. Descriptions of the fields follow the illustration.

DATA CONTROL BLOCK -- GAM

**Graphic Device Interface**

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

**Common Interface**

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

**Foundation Extension**

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

**Foundation**

<b>Before OPEN</b>			
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)
<b>After OPEN</b>			
40 (28)		42 (2A)	
DCBTIOT Offset to DD Entry in TIOT		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 7. Data Control Block - GAM

<u>DATA CONTROL BLOCK -- GAM</u>			
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig. Field Description, Contents, Meaning</u>
<u>DEVICE-DEPENDENT INTERFACE</u>			
0	(0) 12		Reserved
12	(C) 2	DCBBRSA	Blank before execution of the second I/O operation. Last buffer start address.
14	(E) . . 1	DCBGTYPE	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.
<u>COMMON INTERFACE</u>			
20	(14) 6		Reserved
26	(1A) . . 2	DCBDSORG	Data set organization.
26	(1A)	Byte 1	All zeros.
27	(1B)	Byte 2 1... .. .xxx xxxx	<u>Code</u> GS Graphics organization. (Reserved bits)
28	(1C) 4	DCBIOBAD	Blank before execution of Open routine. Address of the standard fields of the first input/output block (IOB) after execution of Open routine.
<u>FOUNDATION EXTENSION</u>			
32	(20) 1	DCBGNCP	Number of I/O instructions to be issued before a WAIT macro instruction.
33	(21) . 3	DCBPOLST	Address of area where a DCB list is to be constructed for polling purposes.
36	(24) 1		Reserved
37	(25) . 3	DCBEXLST	Address of user's exit list.
<u>FOUNDATION SEGMENT</u>			
<u>FOUNDATION SEGMENT -- BEFORE OPEN</u>			
40	(28) 8	DCBDDNAM	Eight byte name from the data definition statement that defines the data set associated with this DCB.

DATA CONTROL BLOCK -- GAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Dig. Field Description, Contents, Meaning</u>
48 (30)	1	DCBOFLG	Flags used by the Open routine.
		1... ..	Last I/O operation was a GWRITE.
		0... ..	Last I/O operation was a GREAD.
		.x... ..	(Reserved bit)
		..1. ....	Set to <u>1</u> by EOVS when it calls the Close routine for concatenation of data sets with unlike attributes.
		...1 ....	An OPEN has been successfully completed.
		.... 1...	Set to <u>1</u> by a problem program to indicate a concatenation of unlike attributes.
		.... .1..	Tape mark has been read.
		.... ..0.	Set to <u>0</u> by an I/O support function when that function takes a user exit. It is set to <u>0</u> to inhibit other I/O support functions from processing this particular DCB.
		.... ..1.	Set to <u>1</u> on return from the user exit to the I/O support function which took the exit.
		.... ...1	Set to <u>1</u> by an I/O support function if the DCB is to be processed by that function.
49 (31)	. 1	DCBIFLG	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	xx.x xx.x ..1. .... .... ..1.	(Reserved bits) Read operation to be performed. Control operation to be performed with the read operation.
51 (33)	Byte 2	xx.x xx.x ..1. .... .... ..1.	(Reserved bits) Control operation to be performed with the write operation.
<u>FOUNDATION SEGMENT -- AFTER OPEN</u>			
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.
<u>Note:</u> 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 DCBOFLG field in the foundation segment before OPEN.
49 (31)	. 3	DCBGIOCR	Address of the graphics input/output control routine.

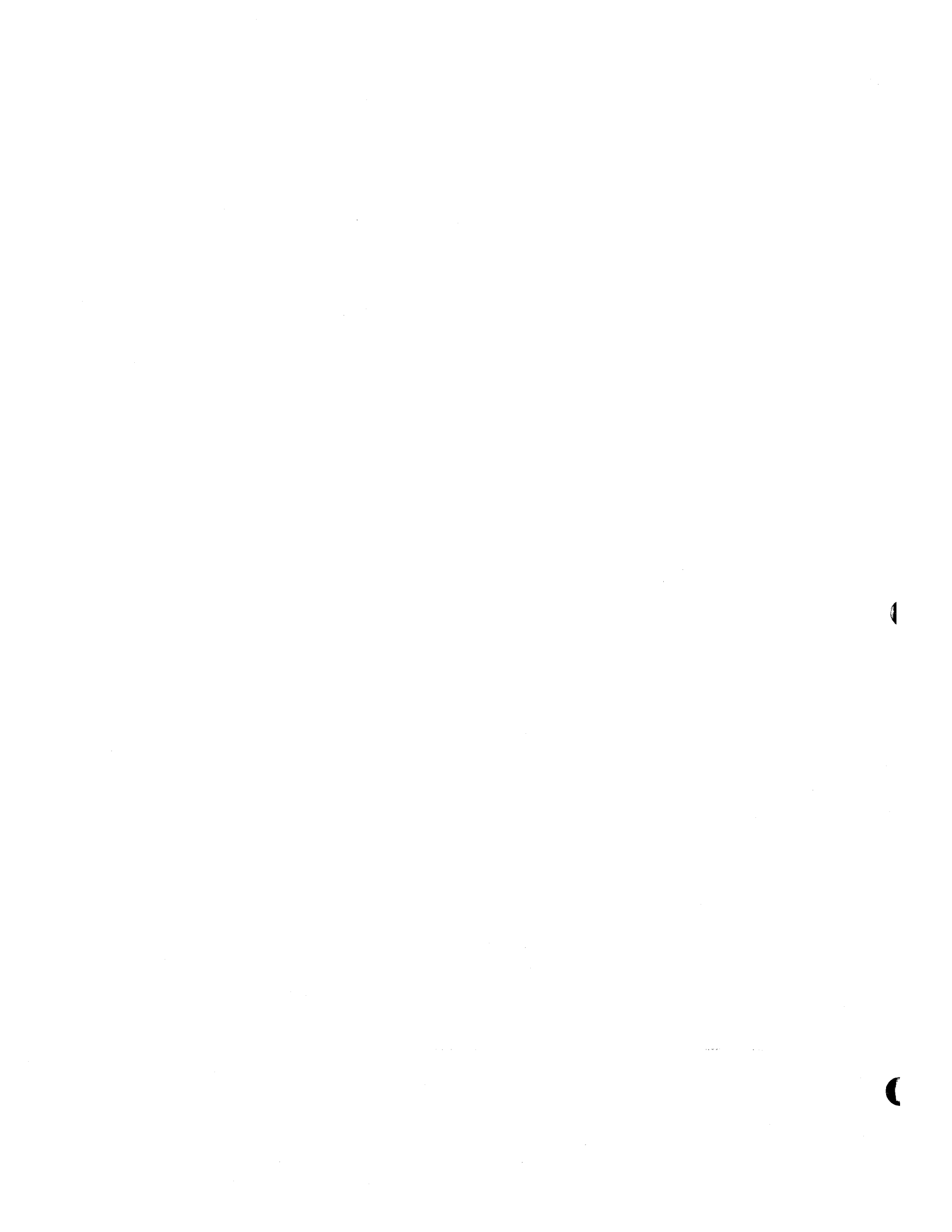


## Data Extent Blocks

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 8 illustrates the format of the DEB. Descriptions of the fields follow the illustrations.

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

**DATA EXTENT BLOCK -- ORDINARY**

**Appendage Table**

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

**DEB Prefix**

-16 (-10) DEBKARA I/O Support Work Area	-15 (-F)  DEBDCBA 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)  Reserved
16 (10) DEBNMEXT No. of Extents	17 (11)  DEBUSRPG Address of First IOB in User Purge Chain	
20 (14) DEBPRIOR Priority	21 (15)  DEBECBAD Address of Parameter List to Find Purge ECB	
24 (18) DEBPROTG, DEBDEBID Protection Key, DEB Id	25 (19)  DEBDCBAD Address of DCB	
28 (1C) DEBXSCL Extent Scale	29 (1D)  DEBAPPAD Address of I/O Appendage Vector Table	
	31 (1F)	

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

**Figure 8. Data Extent Block -- Ordinary (Part 1 of 4)**

**DATA EXTENT BLOCK -- ORDINARY**

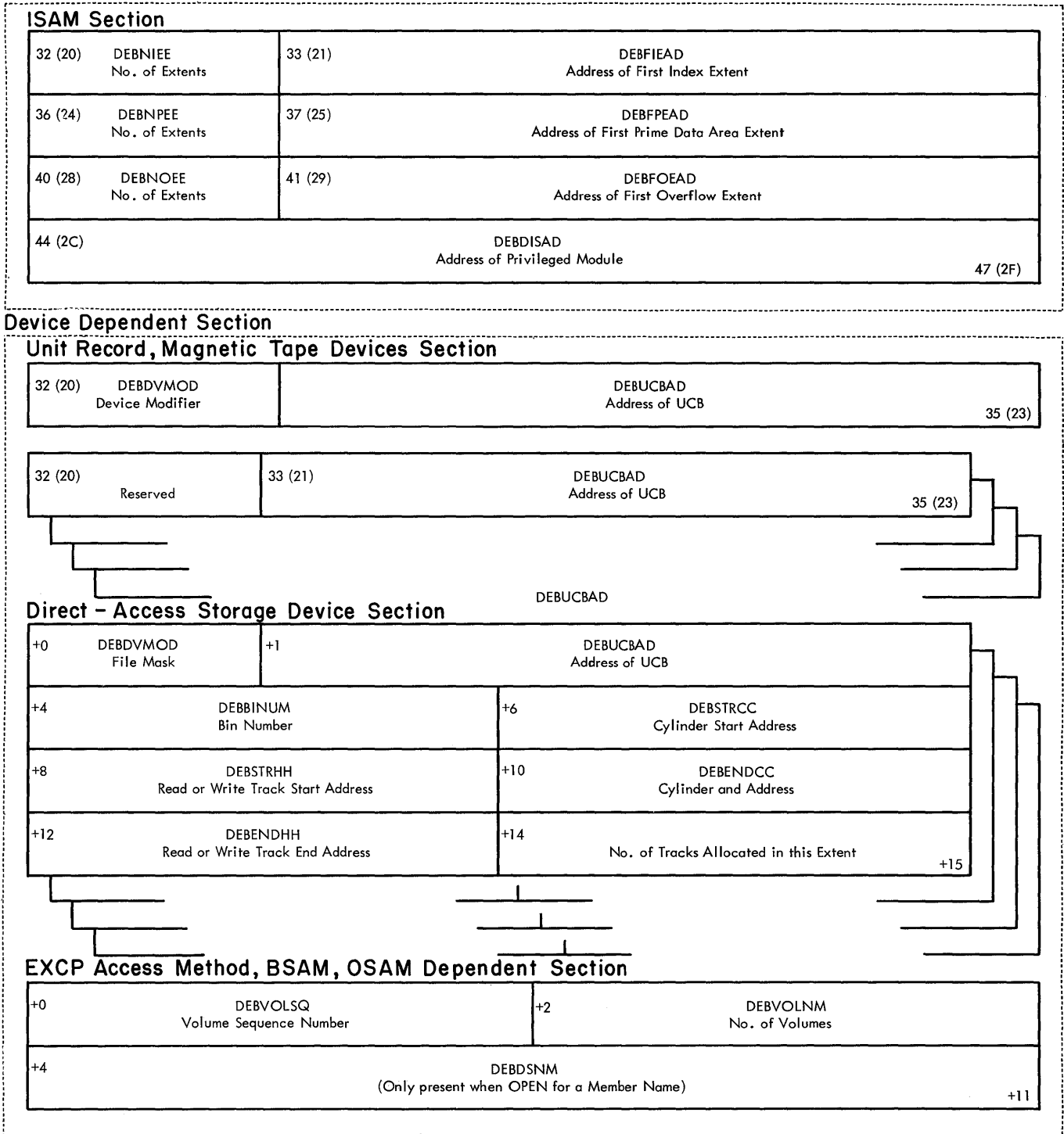


Figure 8. Data Extent Block -- Ordinary (Part 2 of 4)

DATA EXTENT BLOCK -- ORDINARY

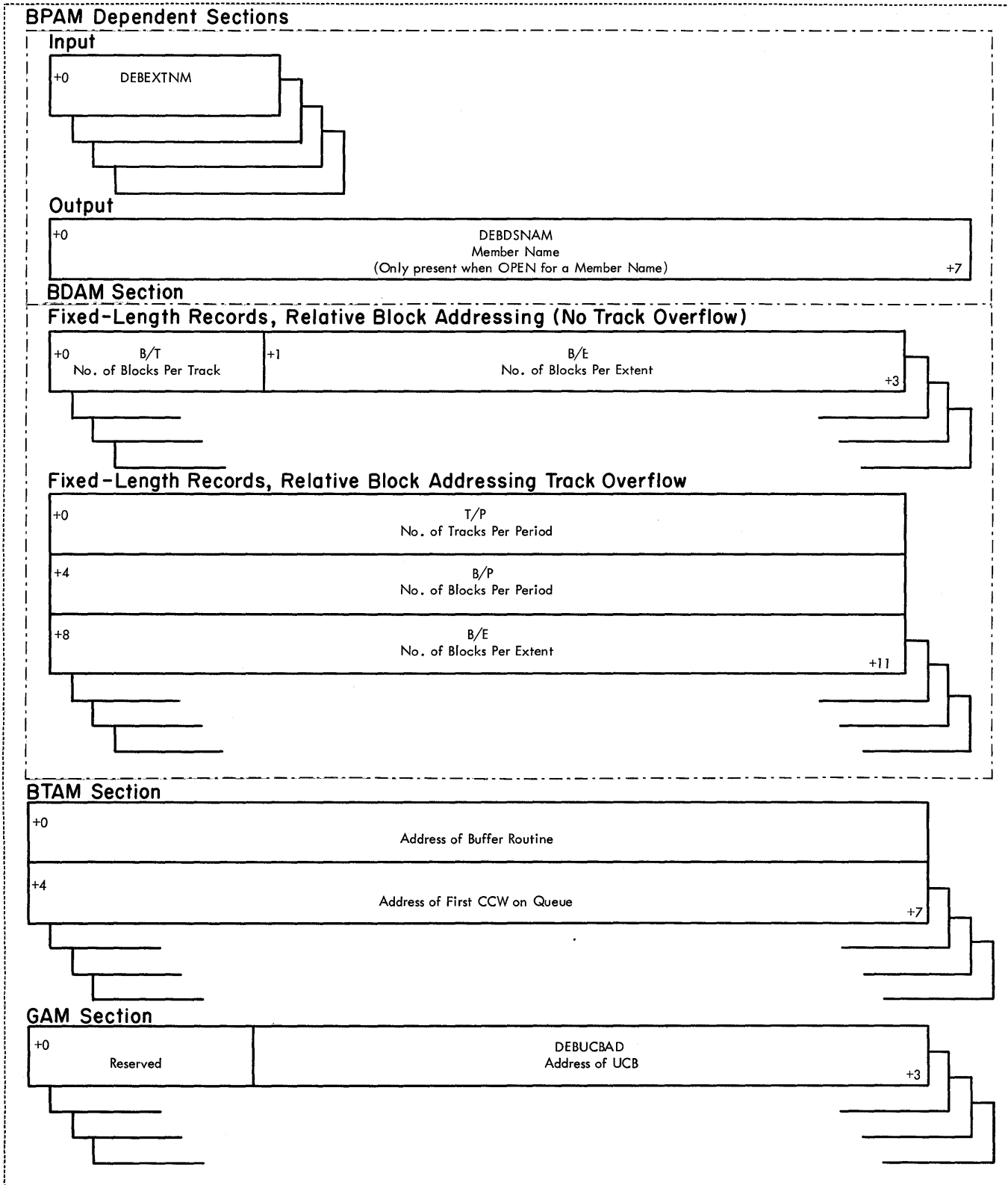


Figure 8. Data Extent Block -- Ordinary -- (Part 3 of 4)

DATA EXTENT BLOCK -- ORDINARY

**Subroutine Name Section**

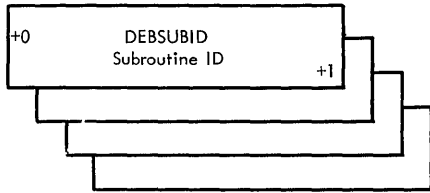


Figure 8. Data Extent Block -- Ordinary (Part 4 of 4)

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>APPENDAGE TABLE</u>			
<u>BSAM, QSAM, BPAM, BDAM, GAM</u>			
-36 (-24)	4	(End of Extent)	Address of the end-of-extent appendage routine.
-32 (-20)	4	(Start I/O)	Address of the start I/O appendage routine.
-28 (-1C)	4	(PCI)	Address of the program-controlled-interruption appendage routine.
-24 (-18)	4	(Channel End)	Address of the channel-end appendage routine.
-20 (-14)	4	(Abnormal End)	Address of the abnormal-end appendage routine.
<u>BTAM, QTAM MESSAGE CONTROL</u>			
-36 (-24)	4	DEBEOEA	Address of the end-of-extent appendage routine.
-32 (-20)	4	DEBSIOA	Address of the start I/O appendage routine.
-28 (-1C)	4	DEBPCIA	Address of the program-controlled-interruption appendage routine.
-24 (-18)	4	DEBCEA	Address of the channel-end appendage routine.
-20 (-14)	4	DEBXCEA	Address of the abnormal-end appendage routine.
END OF APPENDAGE TABLE			
<u>PREFIX SECTION</u>			
<u>DIRECT-ACCESS STORAGE DEVICES</u>			
-16 (-10)	1	DEBWKARA	I/O Support work area.
-15 (-9)	. 7	DEBDSCBA	DSCB address (BBCCHHR) used by I/O support.
<u>ALL DEVICES</u>			
-8 (-8)	4	DEBDCBMK	DCB modification mask used by I/O support.
-4 (-4)	1	DEBLNGTH	Length of DEB in double words.
-3 (-3)	. 3		Reserved



DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DEB PROPER</u>			
<u>BASIC SECTION</u>			
0	(0) 1	DEBNMSUB	Number of subroutines loaded by the open executor routines.
1	(1) . 3	DEBTCBAD	Address of the TCB for this DEB.
4	(4) 1	DEBAMLNG	Number of bytes in the access method dependent section. For BDAM this field contains the length expressed in number of words.
5	(5) . 3	DEBDEBAD	Address of the next DEB in the same task.
8	(8) 1	DEBOFLGS	Data Set status flags.
		01.. ....	Disposition is OLD
		10.. ....	Disposition is MOD
		11.. ....	Disposition is NEW
		..1. ....	EOV or EOF
		...1 ....	Release unused external storage
		.... 1...	DCB modification
		.... .1..	Split cylinder
		.... ..1.	Nonstandard labels
		.... ...1	Magnetic Tape Devices: Use reduced error recovery procedure.
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.
		00.. ....	(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.
14	(E) . . 2		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.

DATA EXTENT BLOCK -- ORDINARY

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

BASIC SECTION (Continued)

24	(18)	1	DEBPROTG, DEBDEBID	
			xxxx .... .... 1111	Protection key. A hex "F" to identify this block as a DEB.
25	(19)	. 3	DEBDCBAD	Address of DCB associated with this DEB.
28	(1C)	1	DEBEXSCL	Extent scale: 4 for direct access device and 2 for nondirect access device and communication device. This field is used to determine the size of the Device Dependent Section.
29	(1D)	. 3	DEBAPPAD	Address of the I/O appendage vector table.

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.

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.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DIRECT-ACCESS STORAGE DEVICES</u>			
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.
<u>ACCESS METHOD DEPENDENT SECTION</u>			
Follows the device dependent section, except for ISAM. The ISAM dependent section precedes the device dependent section.			
<u>BSAM, QSAM, EXCP Access Method</u>			
+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.
<u>BPAM</u>			
Only one of the following fields is present:			
+0	(m-1)x1	DEBEXTNM	For a partitioned data set opened for input, <u>each one byte field</u> contains the extent number of the first extent entry for each data set except the first, if two or more data sets (m) are concatenated. The number of bytes in the field is equal to one less than the number of data sets concatenated.
+0	8	DEBDSNAM	For a partitioned data set opened for output for a member name, this field is the member name.

DATA EXTENT BLOCK -- ORDINARY

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>BDAM</u>
			<u>Only present for fixed-length records with the option of relative block addressing (but not track overflow)</u>
			There is one of these four byte fields for each extent described in the device dependent section.
+0	1	B/T	Number of blocks per track.
+1	. 3	B/E	Number of blocks per extent.
			<u>Only present for fixed-length records with the option of relative block addressing and track overflow</u>
			These fields occur only once within a DEB:
+0	4	T/P	Number of tracks per period.
+4	4	B/P	Number of blocks per period.
			The following field occurs once for each extent:
+8	4	B/E	Number of blocks per extent.
			<u>BTAM</u>
			This segment is always present for BTAM. It is used when a buffer pool or dynamic buffering is used; else the fields are zero.
+0	4		Address of the buffer routine.
+4	4		Address of the first CCW on the queue.
	4	n times	Address of following CCWs on the queue.
			<u>GAM</u>
+0	1		Reserved.
+1	. 3	DEBUCBAD <sub>1</sub>	Pointer to first UCB.
	1		Reserved
	. 3	DEBUCBAD <sub>n</sub>	Pointer to last UCB.
			<u>SUBROUTINE NAME SECTION</u>
			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 9A shows the format of the DEB proper used for message processing queues; Figure 9B shows the DEB for destination queues.

Prefix

DATA EXTENT BLOCK -- QTAM

-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

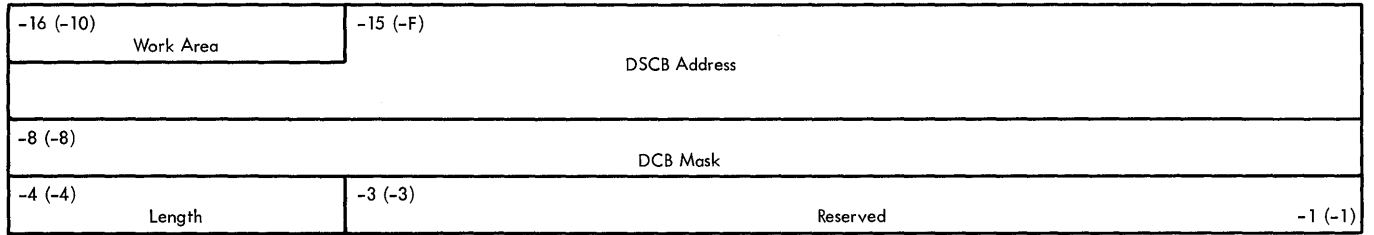
48 (30)			Reserved
52 (34)	Priority	53 (35)	Reserved
56 (38)	Op Code	57 (39)	Address of QCB
60 (3C)	Hex Code	61 (3D)	Address of DEB + 32
			63 (3F)

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

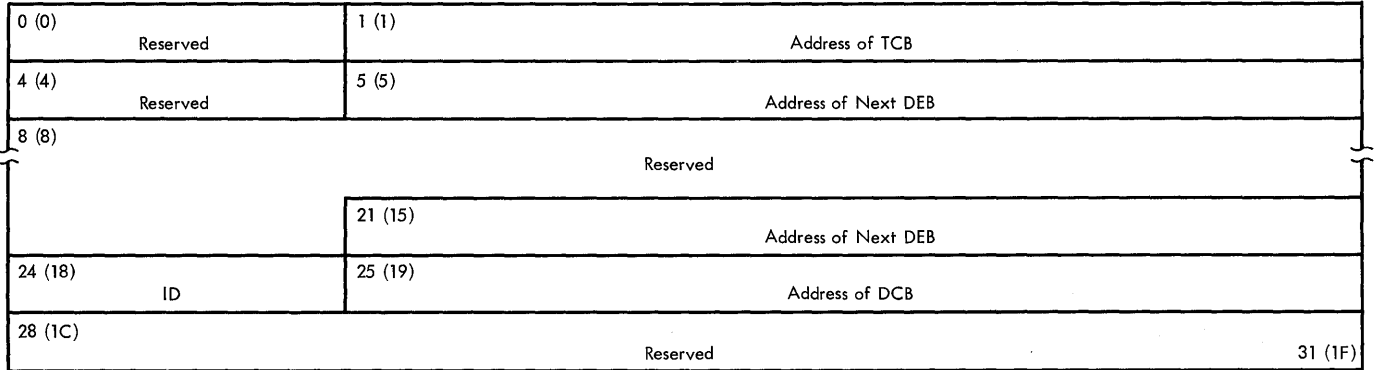
Figure 9A. Data Extent Block -- QTAM -- Message Process Queue

**Prefix**

**DATA EXTENT BLOCK -- QTAM**



**Basic Section**



**Queue Control Block**

**Buffer Request Block**



**Line Control Block**

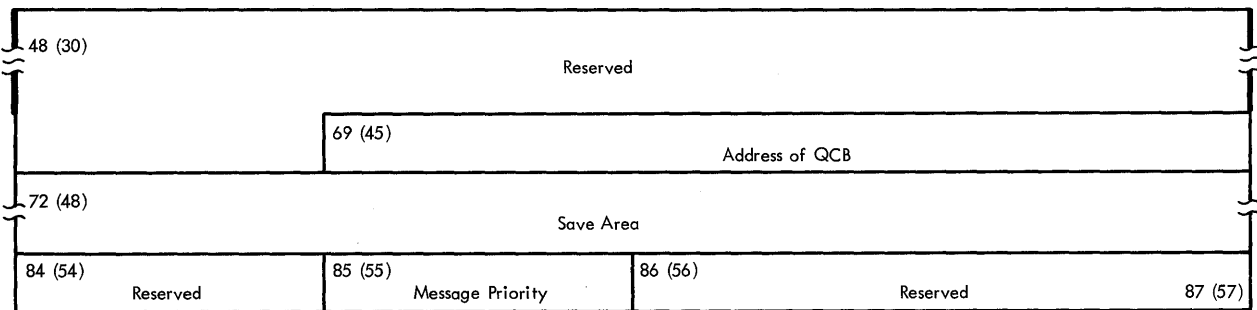
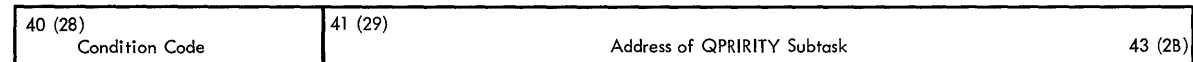


Figure 9B. Data Extent Block -- QTAM -- Destination Queue

DATA EXTENT BLOCK -- QTAM

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

MESSAGE PROCESS QUEUE

PREFIX

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

DEB PROPER

BASIC SECTION

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

QUEUE CONTROL BLOCK

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



DATA EXTENT BLOCK -- QTAM

<u>Offset</u>		<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
<u>BUFFER REQUEST BLOCK</u>			
48	(30)	4	Reserved
52	(34)	1	Priority
53	(35)	. 3	Reserved
56	(38)	1	X'08'; identifies the operation code for a TIC command.
57	(39)	. 3	Address of the process queue control block on the direct access device.
60	(3C)	1	X'07'; indicates a dummy buffer request block.
61	(3D)	. 3	Address of the beginning of the line control block portion of this DEB.
END OF BUFFER REQUEST BLOCK			
64	(40)	2	Size of work area necessary for GET.
66	(42)	. . 22	Reserved
<u>DESTINATION QUEUE</u>			
<u>PREFIX</u>			
-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
<u>DEB PROPER</u>			
<u>BASIC SECTION</u>			
0	(0)	1	Reserved
1	(1)	. 3	Address of TCB.
4	(4)	1	Reserved
5	(5)	. 3	Address of the next DEB in the same task.
8	(8)	13	Reserved
21	(15)	. 3	Address of the next DEB on the chain of processing program's DEBS
24	(18)	1	X'0F' identifies this block as a DEB.
25	(19)	. 3	Address of the DCB.
28	(1C)	4	Reserved

DATA EXTENT BLOCK -- QTAM

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

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

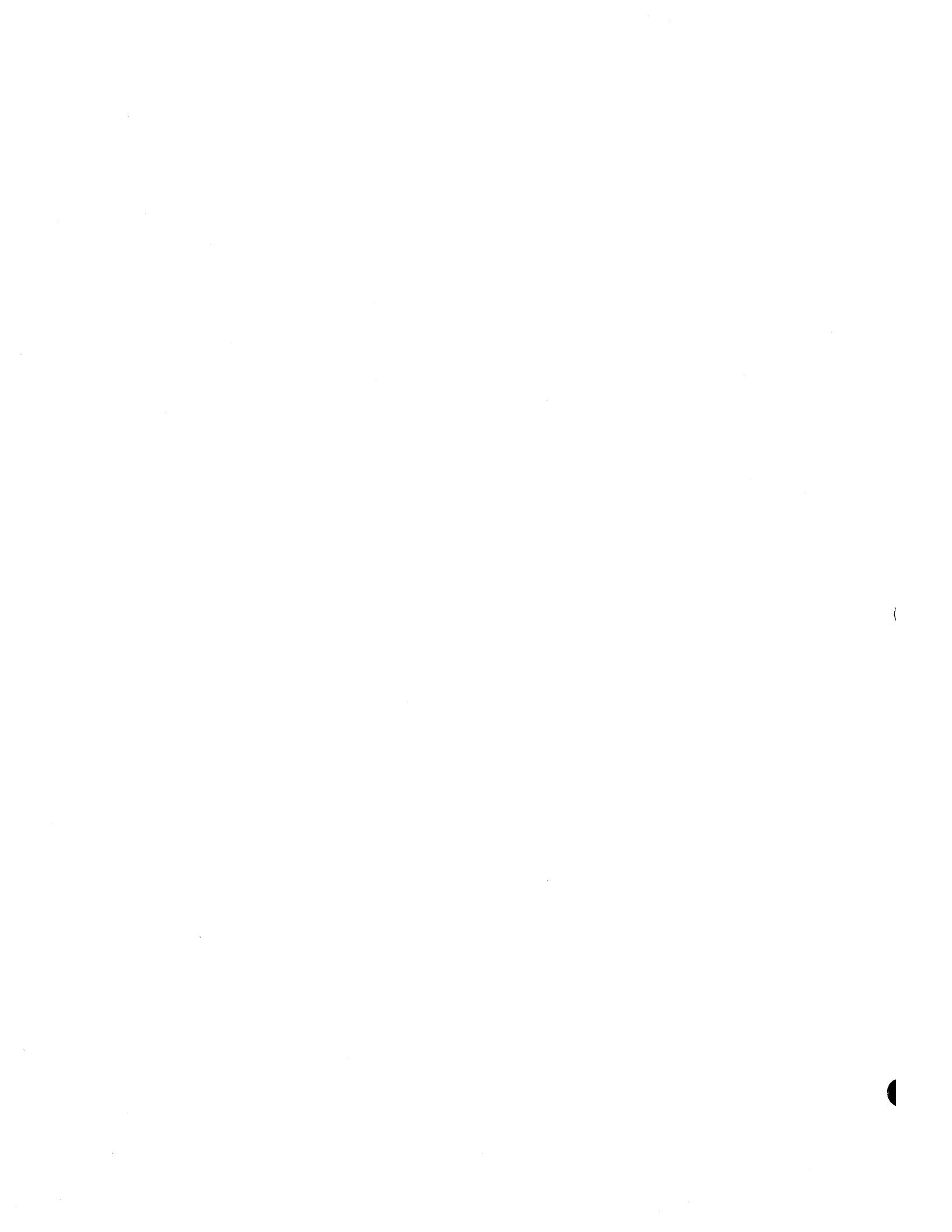
END OF QTAM DEB

## Data Event Control Blocks

Data event control blocks (DECBC) 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 DECBCs:

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

DATA EVENT CONTROL BLOCK -- BSAM

0 (0)	DECSDECB Event Control Block	
4 (4)	DECTYPE Type of I/O Request	6 (6) DECLNGTH Length of Key and Data
8 (8)	DECDCBAD Address of DCB	
12 (C)	DECAREA Address of Key and Data	
16 (10)	DECIOBPT Address of IOB	

19 (13)

Figure 10. Data Event Control Block -- BSAM

DATA EVENT CONTROL BLOCK -- BSAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Name Field</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB	Event control block.
4	(4) 2	DECTYPE	Type of I/O request.
4	(4)	Byte 1 1... .. .xxx xxxx	Type of length operand: S coded for length. (Reserved bits)
5	(5)	Byte 2 1... .. .1.. .. ..1. .... ...1 .... .... x.xx .... .1..	Type of operation: READ SF READ SB WRITE SF WRITE SD (Reserved bits.) WRITE SZ
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.
12	(C) 4	DECAREA	Address of the key and data.
16	(10) 4	DECIOBPT	Address of the IOB.

## Data Event Control Block—ISAM

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 11 shows the format of the DECB used in ISAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- ISAM

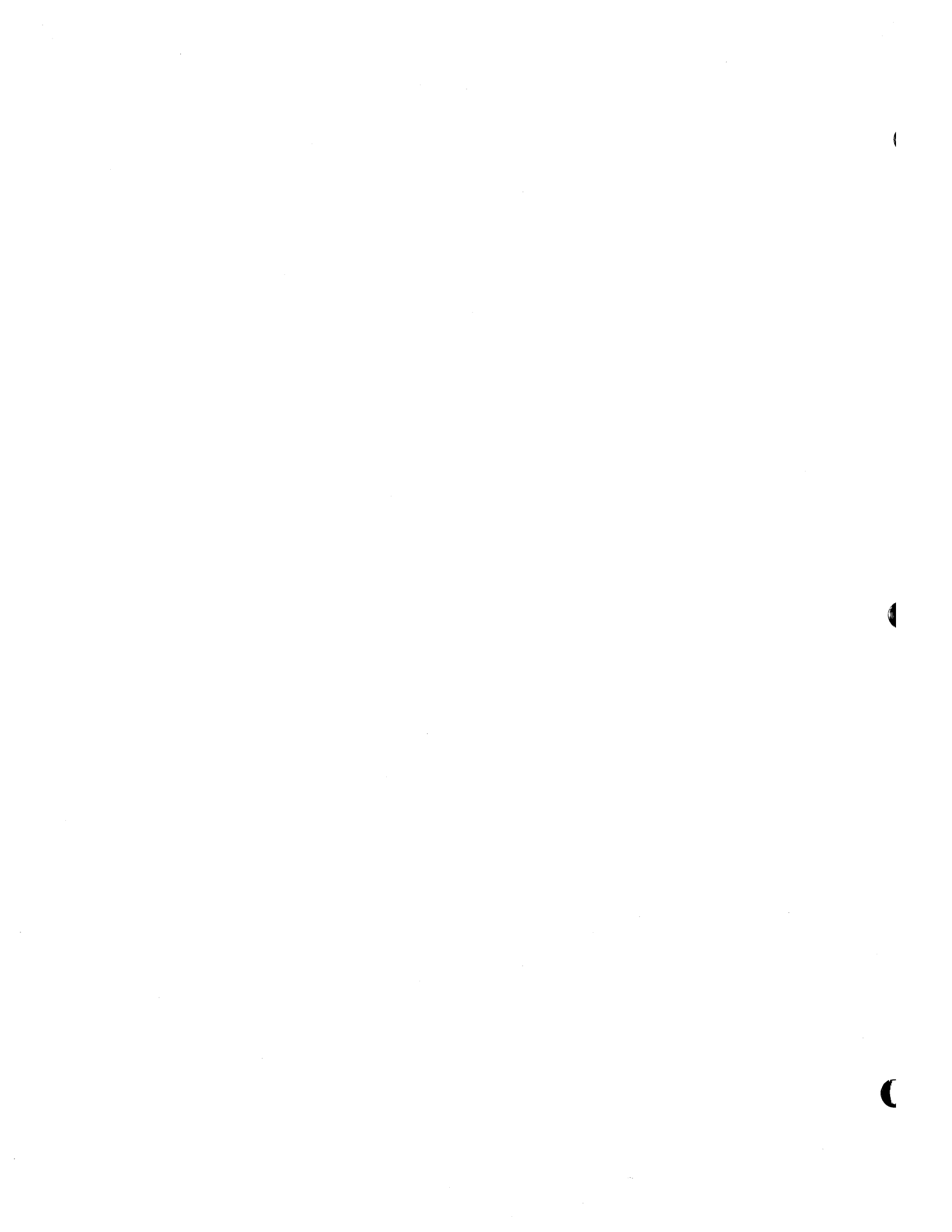
0 (0)			DECBECB Event Control Block
4 (4)	DECBTYP1 Options	5 (5)	DECBTYP2 Type of I/O
		6 (6)	DECBLGTH No. of Bytes Read or Written
8 (8)			DECBDCBA Address of DCB
12 (C)			DECBAREA Storage Address for Record
16 (10)			DECBLOGR Address of Logical Record
20 (14)			DECBKEY Address of Key Portion of Record
24 (18)	DECBEXC1 Exceptional Condition Codes	25 (19)	DECBEX2 Exceptional Condition Codes

**Figure 11. Data Event Control Block -- ISAM**



DATA EVENT CONTROL BLOCK -- BISAM

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



## 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 12 shows the format of the DECB used in BDAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- BDAM

0 (0)	DECSDECB Event Control Block	
4 (4)	DECTYPE Type of I/O Request	6 (6) DECLNGTH Length of Data
8 (8)	DEDCBAD Address of DCB	
12 (C)	DECAREA Address of the Data	
16 (10)	DECIOBPT Address of the IOB	
20 (14)	DECKYADR Address of the Key	
24 (18)	DECREPT Address of Block Reference Field	
		27 (1B)

Figure 12. Data Event Control Block -- BDAM

DATA EVENT CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB	Event control block.
0	(0)	Byte 1 1... ... .xxx xxxx	Awaiting event completion. Waiting for completion of event. (Reserved bits)
1	(1)	Byte 2-4	Address of the request block for the program waiting for completion of the event.
0	(0)	Byte 1 x.xx xxxx .1.. ....	After event completion: (Reserved bits) Event has completed.
1	(1)	Byte 2 1... .... .1.. .... ..1. .... ...1 .... .... 1... .... .1.. .... ..1. .... ...1	Record not found. Record length check. Space not found. Invalid request. (This condition also sets a bit in the next byte.) Uncorrectable I/O error. End of data. Uncorrectable error other than an I/O error. A READ with exclusive control was not preceded by a WRITE with exclusive control.
2	(2)	Byte 3 x... .... .1.. .... ..1. .... ...1 .... .... 1... .... .1.. .... ..1. .... ...1	(A reserved bit) A WRITE macro instruction was addressed to an input data set. An extended search was specified with the DCBLIMCT field set to zero. The block requested is not within the data set. A write-by-identification (DI) addressed record zero. A search-on-key (DK) was specified with the DCBKEYLE field set to zero or without an address for the key. A macro instruction used an option not set in the DCB. The key for the fixed-length record to be added begins with hex. FF.
3	(3)	Byte 4	Reserved
4	(4)	DECTYPE	Type of I/O request.
4	(4) 1	1... .... .1.. .... ..1. .... ...1 .... .... 1... .... .1.. .... ..1. .... ...1	Verify. Overflow. Extended search. Feedback. Actual addressing. Dynamic buffering. Read exclusive. Relative block addressing.
5	(5) . 1	1... .... .1.. .... ..xx ...x .... x... .... 0... .... 1... .... .x.. .... .0.. .... .1.. .... ..1.	S coded for key address. S coded for block length. (Reserved bits.) Type of operation - WRITE READ Type of search argument - Id. Key. Add option of WRITE operation.

DATA EVENT CONTROL BLOCK -- BDAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
6	(6) . . 2	DECLNGTH	Length of the data.
8	(8) 4	DEDCBAD	Address of the DCB to which this I/O request is related.
12	(C) 4	DECAREA	Address of the data.
16	(10) 4	DECIOBET	Address of the IOB.
20	(14) 4	DECKYADR	Address of the key.
24	(18) 4	DECRCPT	Address of the Block Reference Field.

## 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 13 shows the format of the DECB used in QTAM. Descriptions of the fields follow the illustration.

DATA EVENT CONTROL BLOCK -- QTAM

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

• Figure 13. Data Event Control Block -- QTAM

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



## Data Event Control Block—BTAM

The data event control block (DECB) is used in the execution of a READ or WRITE macro instruction. It contains information about the input or output operation that is requested by the macro instruction. Figure 14 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)			DECCMCO, DECENTRY Error Command, Terminal List Address		
24 (18)	DECFLAGS Operations Status	25 (19)	DECRLN Relative Line No.	26 (1A)	DECRESPL 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		
<b>BSC Extension</b>					
40 (28)		Reserved	42 (2A)	DECWLN Data Area Length	
44 (2C)			DECWAREA Data Area Address	47 (2F)	

• Figure 14. Data Event Control Block -- BTAM

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4	DECSDECB		Event control block.
4	(4) 2	DECTYPE		Programming indicators.
		Byte 1		
4	(4)	xx.. ....		Except during BSC on-line test:
		1... ....		READ, using Autopoll
		..x.. ....		(Reserved bit)
		xx.. ....		During BSC on-line test:
		0... ....		On-line test, requested by RFT message.
		1... ....		On-line test, initiated by ONLTST macro instruction.
		.0.. ....		Sending text messages.
		.1.. ....		Receiving text messages.
		..xx x...		(Reserved bits)
		.... .1..		'S' coded for terminal entry.
		.... ..1.		'S' coded for area.
		.... ...1		'S' coded for length.
				<u>Command Code</u>
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 change.
			08	TA Write acknowledge.
			09	TS Read skip.
			0A	TN Write negative acknowledge,
			TR	Write reset (BSC).
			0B	TB Read buffer.
			0C	TL Write at line address.
			0D	TIV Write initial conversational.
			0E	TS Write erase.
			0F	TTV Write continue conversational.
			10	TD Write disconnect.
			11	TTS Read stop.
			12	TIX Write initial transparent.
			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.
			1D	TIVX Write initial conversational transparent.
			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 conversation with reset.
			86	TVR Write conversation with reset.
			87	TPR Read repeat with reset.
			89	TSR Read skip with reset.
			8C	TLR Write at line address with reset.
			92	TIXR Write initial transparent with reset.
			94	TTXR Write continue transparent with reset.

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
6	(6) . . 2	DECLNGTH		Length of buffer or message area.
8	(8) 1	DECBUFCT		Contains a running count of buffers obtained by BTAM for the current Read or Write operation. (Dynamic buffering only.)
9	(9) . 3	DECDCBAD		Address of associated DCB.
12	(C) 4	DECAREA		Address of buffer or message area.
16	(10) 1	DECSSENSO		Sense information.
17	(11) . 1	DECSSENS1		Reserved
18	(12) . . 2	DECCOUNT		Residual count from CSW for last CCW executed.
20	(14) 1	DECCMCO, DECENTRY		Command for which the error occurred.
21	(15) . 3	DECENTRY		Address of the terminal list.
24	(18) 1	DECFLAGS		Operation status.
		xxx. ....		<u>One of These:</u> Start-Stop Operations (Reserved Bits) BSC Operations: SAK received. 1... .... Incorrect acknowledgement received. .1.. .... Acknowledgment alteration incorrect. ..1. .... ....1 .... <u>One of These:</u> TWX 33/35 terminal, BSC terminal: Incorrect ID received. Autopoll: Index byte received does not match an active one. BSC network: Contention occurred. WTTA: Contention occurred. .... 1... READ, dynamic buffering: No buffer was available. (Message lost.) .... .1.. <u>One of These:</u> OPENLST, POLLING: Negative response to polling received. WRAPLST: All entries are inactive. Addressing: Negative response to addressing received. WTTA: Last message received ended with EOT or time-out. (A reserved bit.) .... ..x. WTTA: .... ...1 Last message received ended with WRU.

DATA EVENT CONTROL BLOCK -- BTAM

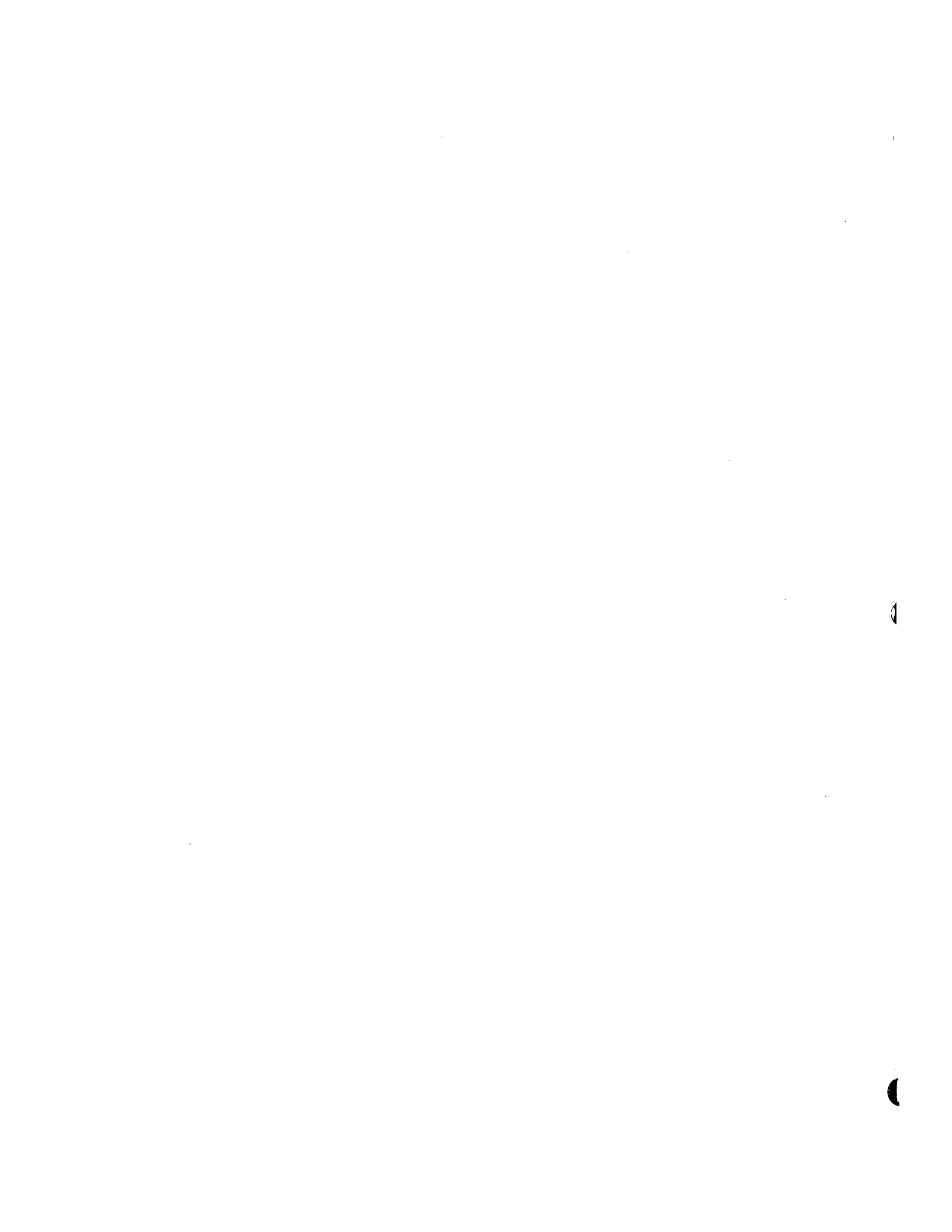
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
25	(19) . 1	DECRLN		Relative line number.
26	(1A) . . 2	DECRESFN		Response indicators (One of these).
26	(1A)	Byte 1 Byte 2		Stop - Start Operations: Response from a terminal to addressing. Vertical redundancy character and longitudinal redundancy character (VRC/LRC) response.
26	(1A)			BSC Operations: Response from a terminal to addressing. Type of <u>Terminal</u>
28	(1C) 1	DECTPCOD		<u>Terminal</u>
			00	On-line test.
			01	Disable when disable is the first command of a channel program. Dial. Enable. Prepare. Write pad character. Write wait before transmitting.
			02	WTTA Sense Write control characters ⓓ ⓐ ⓑ Ⓒ before selection. Write EOT sequence before polling or addressing. Write response to text. Write ⓓ and 15 idle characters.
				2740, Basic
			03	Write polling, addressing, or broadcast characters. Poll write inquiry. Write turn around sequence. Write CPU-ID sequence.
				TWX TWX,BSC
			04	2740 Write space w/st.c (w/st.c. - with station control). 2260R Write 2848 command. 83B3 Write FIGS shift. 1030 Write 1. WTTA Write WRU. Write Identification. Write padding characters. Write letter shift characters.
			05	Read response to polling.
			(DECTPCOD 06	Read response to addressing.
			Continues)	

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>	
28 (1C)		(DECTPCOD 07 Continued)08		<u>Type of Terminal</u>	
			TWX,BSC	Read ID response.	
			1030	Write end-of-addressing character after addressing.	
			1050		
			2740		
			1060		
			2260		
			BSC	Write response to Inquiry. Write response to text. Write EOT, SYN, SYN, SYN, before polling or addressing.	
			09		NOP or TIC after Poll in a READ with SSALST, SSAWLST, AUTOLST, or AUTOWLST.
			0A		Read Index (auto poll). Read response to polling (Programmed polling).
			0B	BSC	Read inquiry.
			0C	BSC	Read response to inquiry.
			10	2260R	Write at line address.
			11		Read or write text.
			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		V open, LOPEN or close routine operation.
			25	BSC	Read response to text.
			40-4C		The last CCW executed was the first Read or Write Text CCW to be executed in a channel program using dynamic buffering.
			50-53		
			61-65		
80-8C		The last CCW in a channel program was executed.			
90-93					
A1-A5					

DATA EVENT CONTROL BLOCK -- BTAM

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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-connected 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: Indexed to current entry in polling list. Bytes 2-4: Address of polling list.  BSC On-Line test: Address of text data.  <u>BSC Extension</u>  Fields are present only if BSC is specified in the OPEN macro instruction.
40	(28) 2			Reserved
42	(2A) . . 2	DECWLNG		Length, in bytes, of the data area in leading-graphics and conversational type operations.
44	(2C) 4	DECWAREA		Address of the data area in leading-graphics and conversational operations.





## 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 15 shows the format of the format 1 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 1

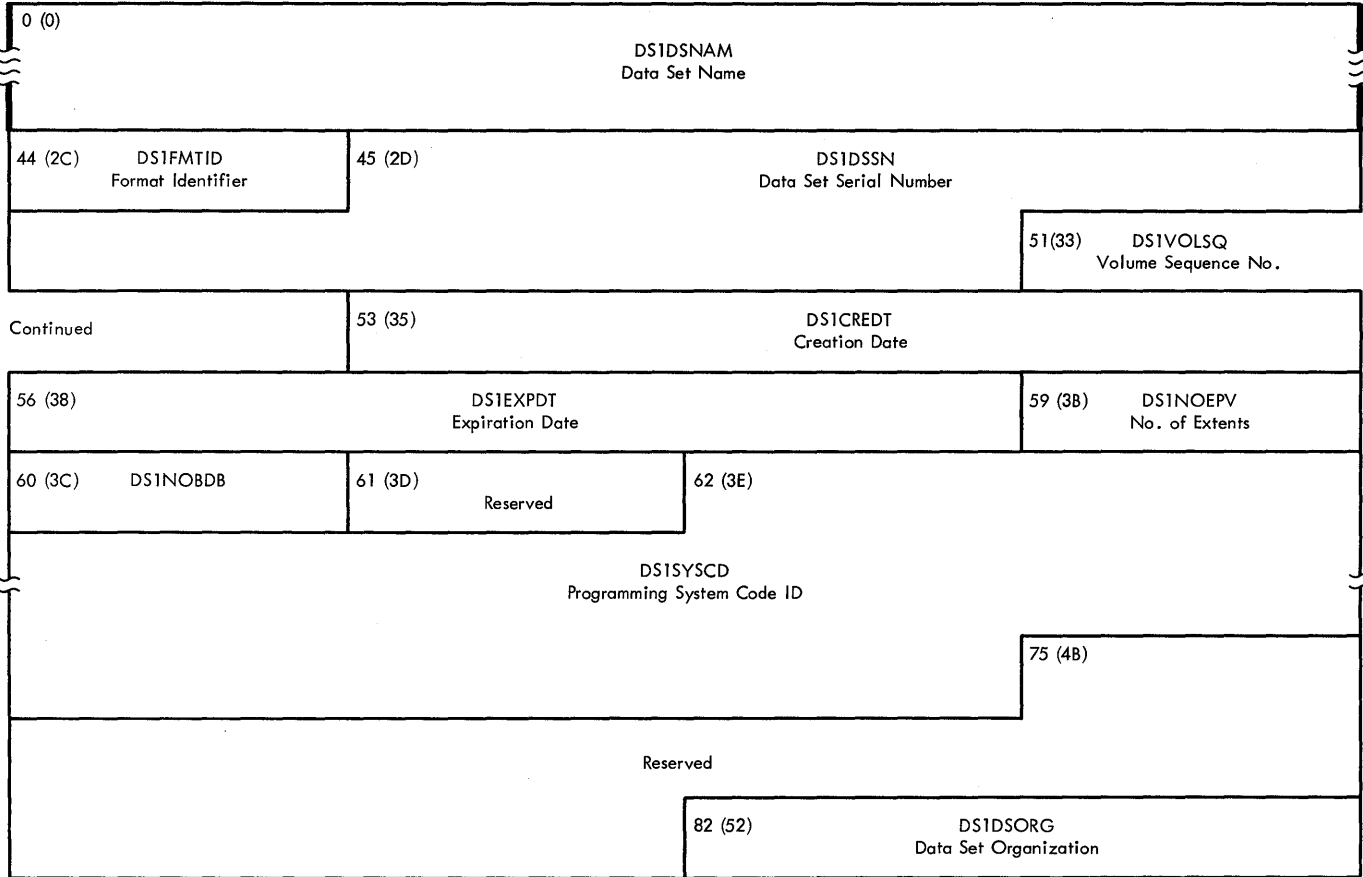


Figure 15. Data Set Control Block -- Format 1 (Part 1 of 2)

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

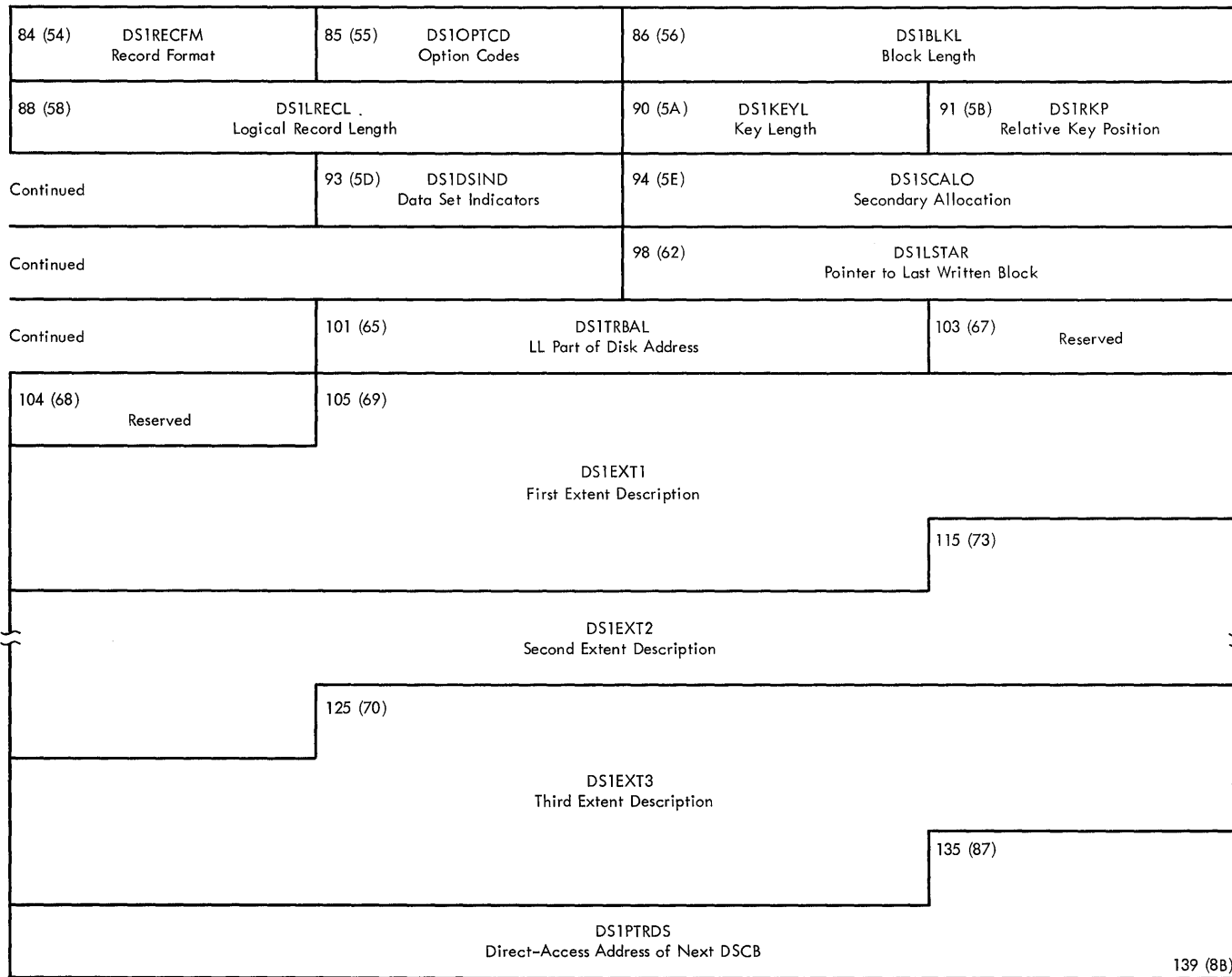


Figure 15. Data Set Control Block -- Format 1 (Part 2 of 2)

DATA SET CONTROL BLOCK -- FORMAT 1

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 44	DS1DSNAM		Data set name.
44	(2C) 1	DS1FMTID		Format identifier - Hex F1.
45	(2D) . 6	DS1DSSN		Data set serial number.
51	(33) . . . 2	DS1VOLSQ		Volume sequence number.
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). 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.
60	(3C) 1	DS1NOBDB		Number of bytes used in the last PDS directory block.
61	(3D) . 1			Reserved
62	(3E) . . 13	DS1SYSCD		System code to identify the programming system.
75	(4B) . . . 7			Reserved
82	(52) . . 2	DS1DSORG		Data set organization.
		Byte 1		<u>Code</u>
		1... ..		IS Indexed sequential organization.
		.1.. ..		PS Physical sequential organization.
		..1. ....		DA Direct organization.
		....x xx..		(Reserved bits)
		.... ..1.		PO Partitioned organization.
		.... ..1		U Unmovable - the data contains location dependent information.
83	(53)	Byte 2 xxxx xxxx		Reserved
84	(54) 1	DS1RECFM		Record format.
				<u>Code</u>
		10.. ..		F Fixed length record format.
		01.. ..		V Variable length record format.
		11.. ..		U Undefined length record format.
		..1. ...		T Track overflow.
		....1 ....		B Blocked: may not occur with undefined (U).
		.... 1...		S Fixed length record format: Standard blocks no truncated blocks or unfilled tracks are embedded in the data set. Variable length record format: Spanned records.
		.... .10.		A ASA control character.
		.... .01.		M Machine control 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.

DATA SET CONTROL BLOCK -- FORMAT 1

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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.
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		Secondary Allocation. Allocation parameters. Type of request issued for the initial allocation and to be used for subsequent extensions. Original request was:
		Byte 1		
94	(5E)	01.. ....		In tracks relative to a specific location. No secondary allocation will be allowed.
		01.. ....		In blocks (physical records).
		10.. ....		In tracks.
		11.. ....		In cylinders.
		..xx ....		(Reserved bits)
		.... 1...		For a contiguous extent.
		.... .1..		For the maximum contiguous extent on the volume.
		.... ..1.		For the five (or less) largest extents that are greater than or equal to a specified minimum.
		.... ...1		In records, to be rounded up to a cylinder boundary.
95	(5F)	Byte 2-4		Secondary allocation quantity. Number of blocks, tracks, or cylinders to be requested at end of data set when processing a sequential data set.
98	(62) . . 3	DS1KLSTAR		The last-block pointer identifies 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.

DATA SET CONTROL BLOCK -- FORMAT 1

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
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.  Data set extent type indicator.
105 (69)		Byte 1	00 01 02 04 40 80 81	Following 9 bytes do not indicate any extent. The extent contains the data blocks (user's blocks), or is a prime area (for IS data sets) The extent is an overflow area (for IS data sets only). The extent is an index area (for IS data sets only). The first extent description describes the user label extent. The extent described is sharing one or more cylinders with one or more data sets 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)
107 (6B)		Byte 3-6		Lower limit of this extent (CCHH).
111 (6F)		Byte 7-10		Upper limit of the extent (CCHH).
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, direct, or IS organization and more than 3 extents. This pointer has the format CCHHR.



## Data Set Control Block—Format 2

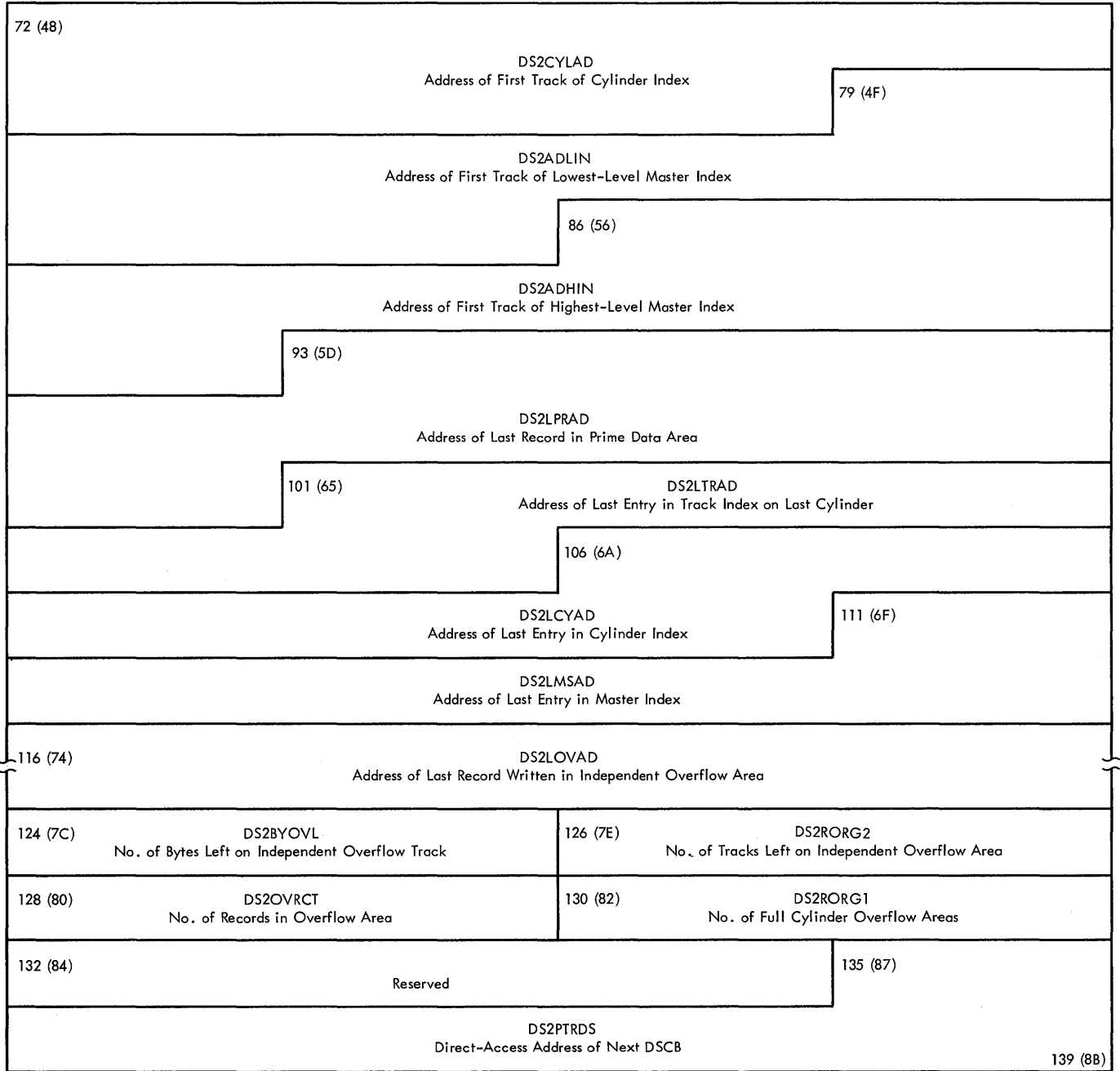
This data set control block (DSCB) describes characteristics of a data set having indexed sequential organization. It is pointed to by a format 1 DSCB which contains additional data set characteristics and up to three extents descriptions. Additional extents are described in a format 3 DSCB pointed to by the format 2 DSCB. Figure 16 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) DS2HIRPR Highest R of Prime Data	55 (37) DS2HIROV Highest R of Overflow Tracks
56 (38) DS2RSHTR Last Data Record R on Shared Track	57 (39) DS2HIRTI Highest R of Track Index	58 (3A) Reserved	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 16. Data Set Control Block -- Format 2 (Part 1 of 2)

DATA SET CONTROL BLOCK -- FORMAT 2



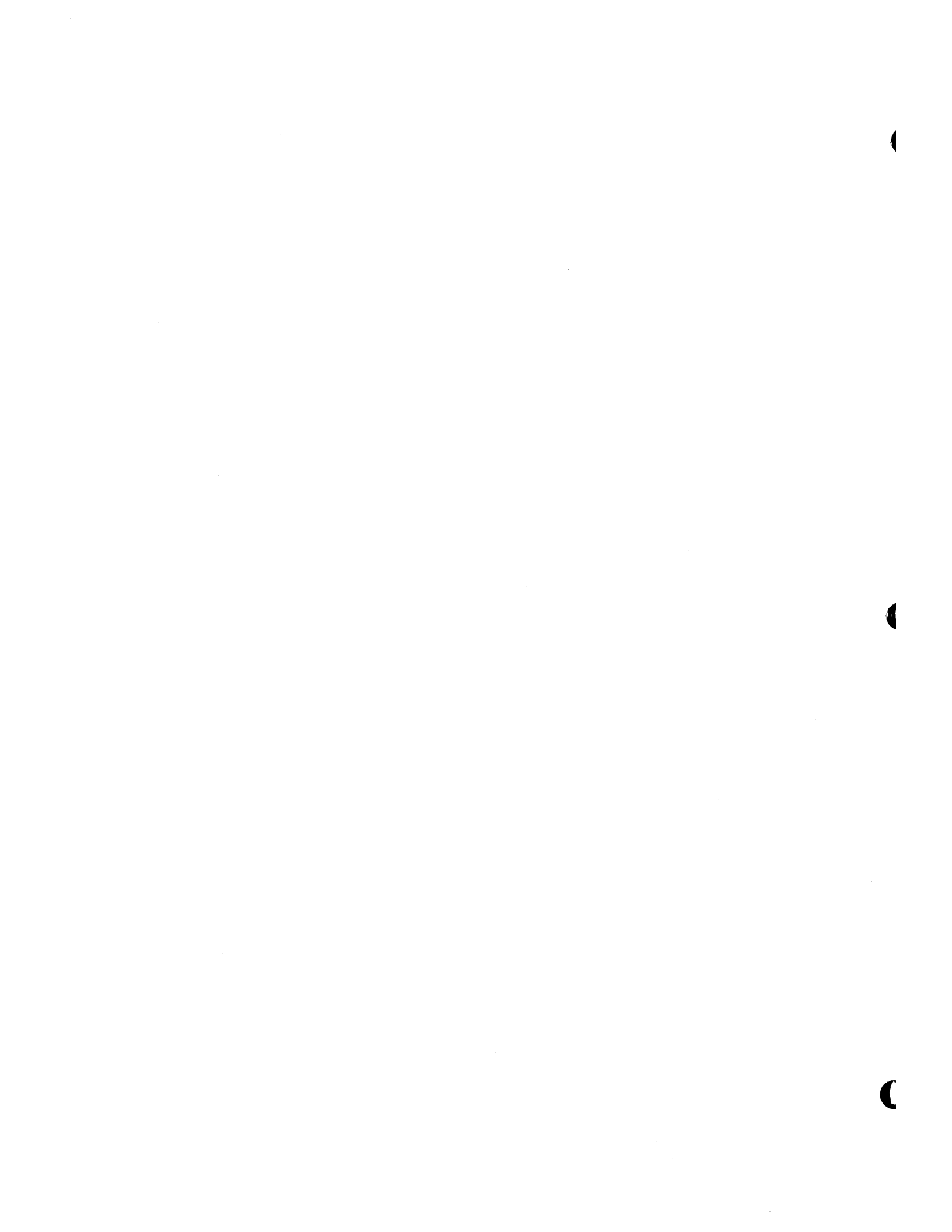
**Figure 16. Data Set Control Block -- Format 2 (Part 2 of 2)**

DATA SET CONTROL BLOCK -- FORMAT 2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1		02	Hex code 02 to avoid conflict with a data set name.
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 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.
46	(2E) . . 1	DS2DVIND		Number of tracks determining development of the master index.
47	(29) . . . 3	DS21RCYL		HHR of the first data record on each cylinder.
50	(32) . . 2	DS2LTCYL		HH of the last data track on each cylinder.
52	(34) 1	DS2CYLOV		Number of tracks of cylinder overflow area on each cylinder.
53	(35) . 1	DS2HIRIN		Highest possible R on a track containing high level index entries.
54	(36) . . 1	DS2HIRPR		Highest possible R on prime data tracks for form F records.
55	(7) . . . 1	DS2HIROV		Highest possible R on overflow data tracks for form 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			Reserved
59	(3B) . . . 2	DS2TAGDT		Number of records that have been tagged for deletion.
61	(3D) . 3	DS2RORG3		Number of random references to overflow records other than the first overflow record.
64	(40) 2	DS2NOBYT		Number of bytes needed to hold the highest-level index in main storage.
66	(42) . . 1	DS2NOTRK		Number of tracks occupied by the highest level index.
67	(43) . . . 4	DS2PRCTR		Number of records in the prime data area.

DATA SET CONTROL BLOCK -- FORMAT 2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
71 (47)	. . . 1	DS2STIND x..x xx.. .1.. .... ..1. .... .... ..1. .... ....1	Status indicators. Reserved Key sequence checking is to be performed. An initial load has been completed. Last block full. 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 last cylinder.
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		Reserved
136 (88)	. . . 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 17 shows the format of the format 3 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 3

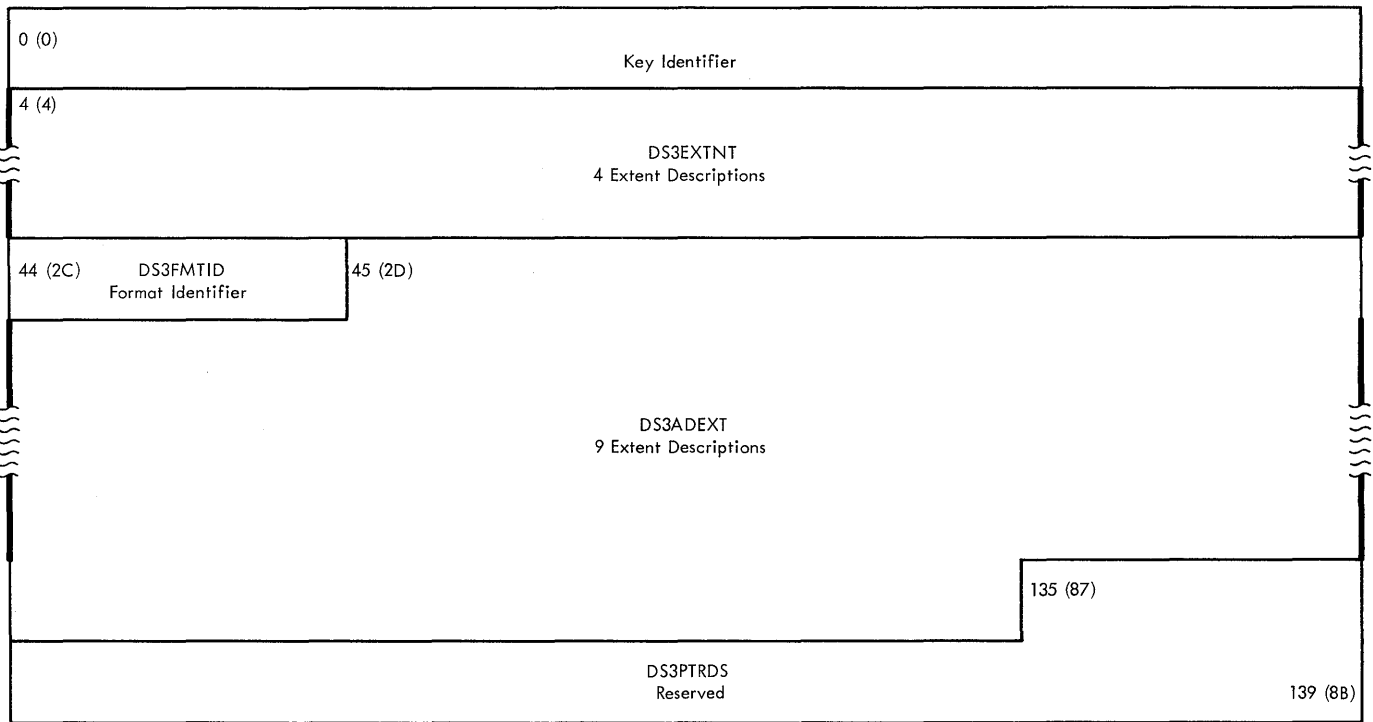


Figure 17. Data Set Control Block -- Format 3

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



## 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 18 shows the format of a format 4 DSCB. Descriptions of the fields follow the illustration.

**DATA SET CONTROL BLOCK -- FORMAT 4**

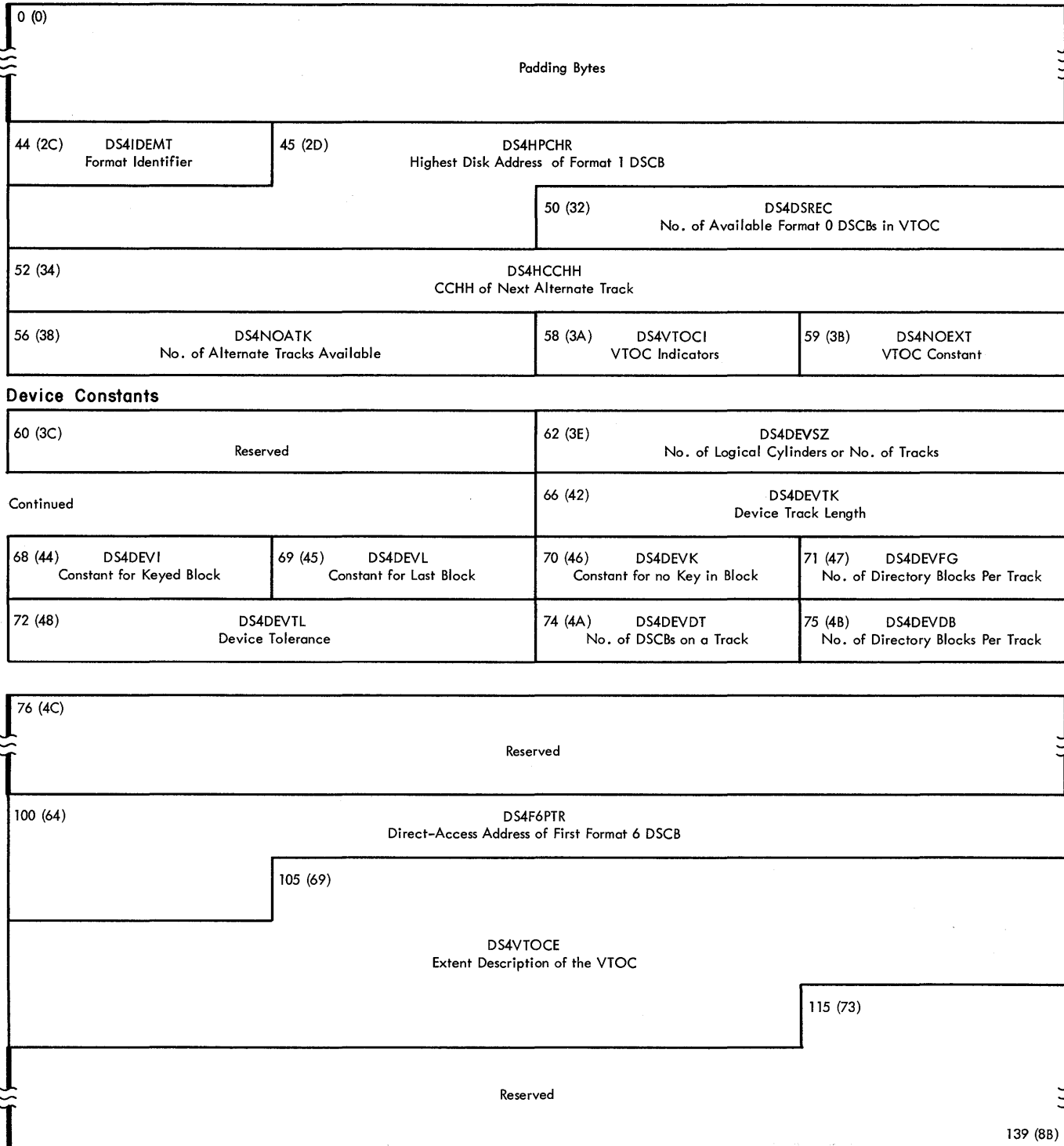


Figure 18. Data Set Control Block -- Format 4

DATA SET CONTROL BLOCK -- FORMAT 4

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 44	(Padding Bytes)	04	Hex 04 in each byte.
44	(2C) 1	DS4IDFMT	F4	Format identifier, Hex F4.
45	(2D) . 5	DS4HPCHR		Highest address previously used for a format 1 DSCB. The address is in the format CCHHR.
50	(32) . . 2	DS4DSREC		Number of available format 0 DSCBs in the VTOC.
52	(34) 4	DS4HCCHH		CCHH of next alternate track available.
56	(38) 2	DS4NOATK		Number of alternate tracks available.
58	(3A) . . 1	DS4VTOCI 1... .. .xxx xxxx		VTOC Indicators. Either no format 5 DSCBs exist or they do not reflect the true status of the volume. (Reserved bits)
59	(3B) . . . 1	DS4NOEXT	01	Hexadecimal constant '01' to indicate the VTOC is one extent.
60	(3C) 2			Reserved
<u>Device Constants (DS4DEVxx)</u>				
The following fields describe the device on which this volume was mounted when the VTOC was created.				
62	(3E) . . 4	DS4DEVSZ		Device size.
62	(3E)	Bytes 1-2		Number of logical cylinders. A logical cylinder is the smallest collection of two or more tracks that can be processed by a set file mask CCW (hex 1F).
64	(40)	Bytes 3-4		Number of tracks per logical cylinder.
66	(42) . . 2	DS4DEVTK		Device track length. Number of available bytes on a track exclusive of home address and record zero.
68	(44) 1	DS4DEVI		Overhead bytes required for a keyed block that is not the last block on a track (see note). <u>Note:</u> Overhead bytes are the number of bytes required for gaps, check bits, and count field for each block.
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. .... ...1		(Reserved bits) A tolerance factor must be applied to all but the last block of the track.

DATA SET CONTROL BLOCK -- FORMAT 4

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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 19 shows the format of the format 5 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 5

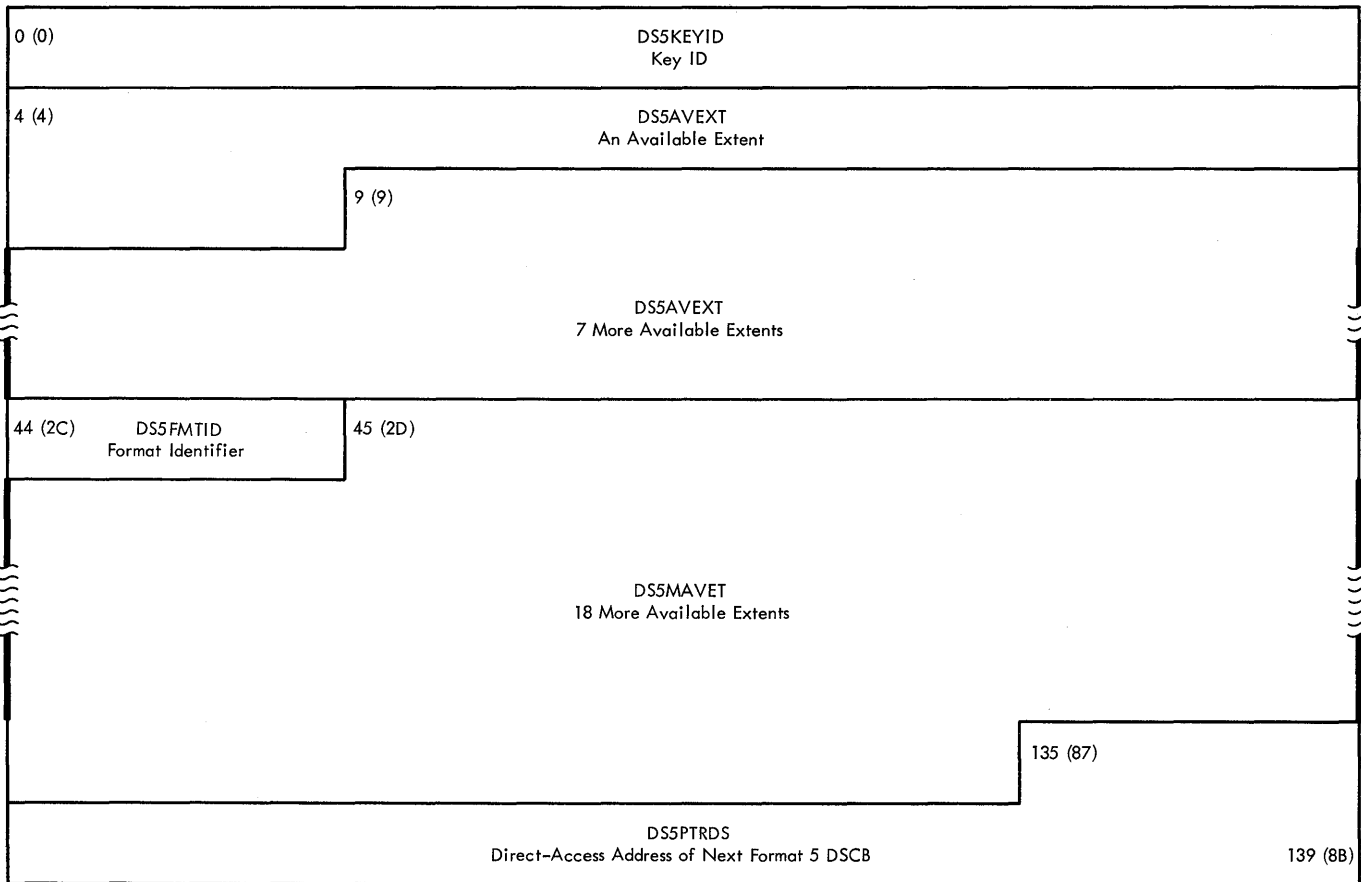


Figure 19. Data Set Control Block -- Format 5

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, space available for allocation of a data set.
4	(4)	Bytes 1-2		Relative track address of the first track in the extent.
6	(6)	Bytes 3-4		Number of full cylinders in the extent.
8	(8)	Byte 5		Number of tracks in the extent in addition to full cylinders.
9	(9) . 35	DS5EXTAV		Available extents. 7 five-byte fields identical in format to the DS5AVEXT field.
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		Pointer to next format 5 DSCB. This pointer has the form CCHHR.

## 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 20 shows the format of the format 6 DSCB. Descriptions of the fields follow the illustration.

DATA SET CONTROL BLOCK -- FORMAT 6

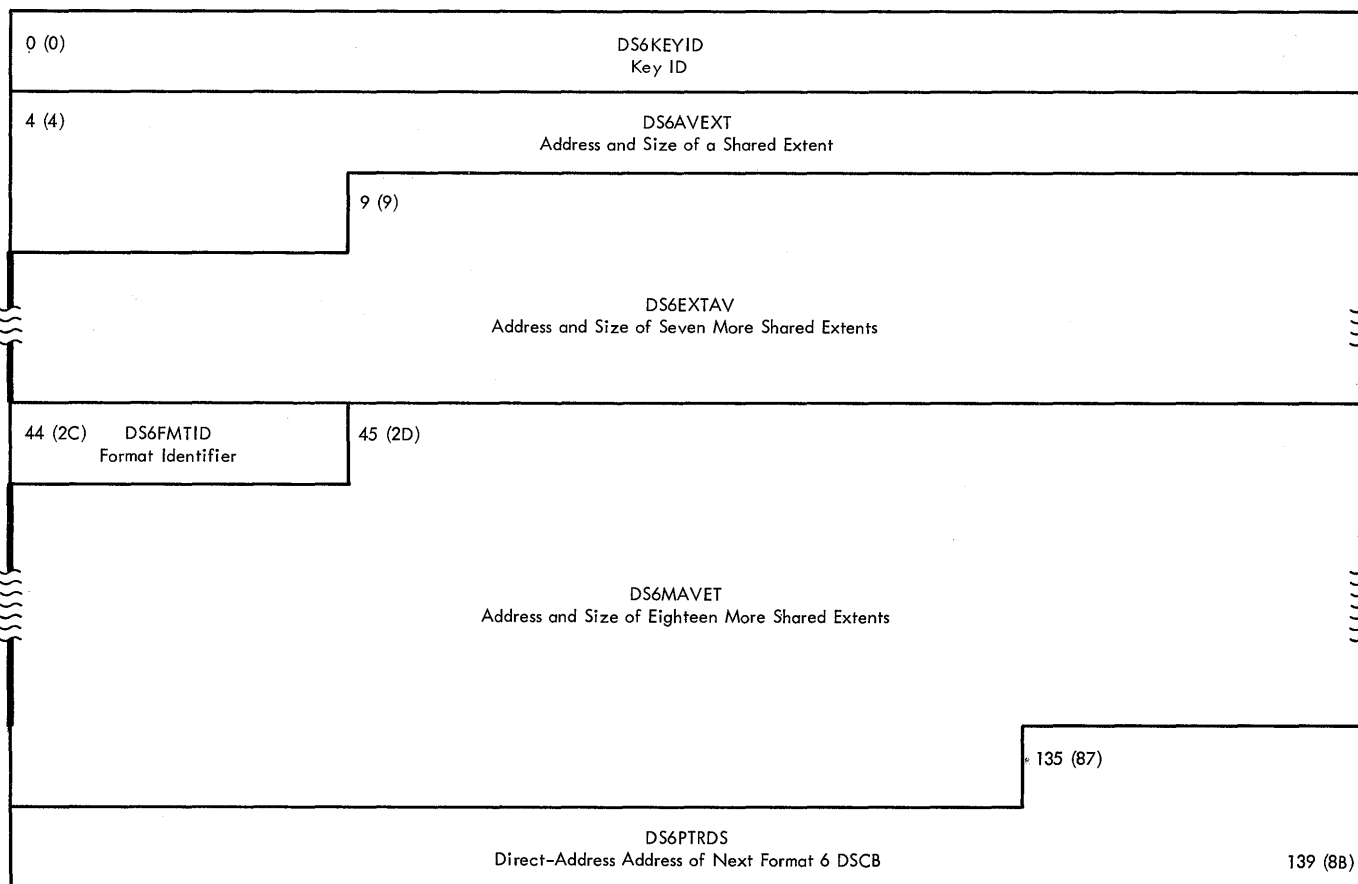


Figure 20. Data Set Control Block -- Format 6

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

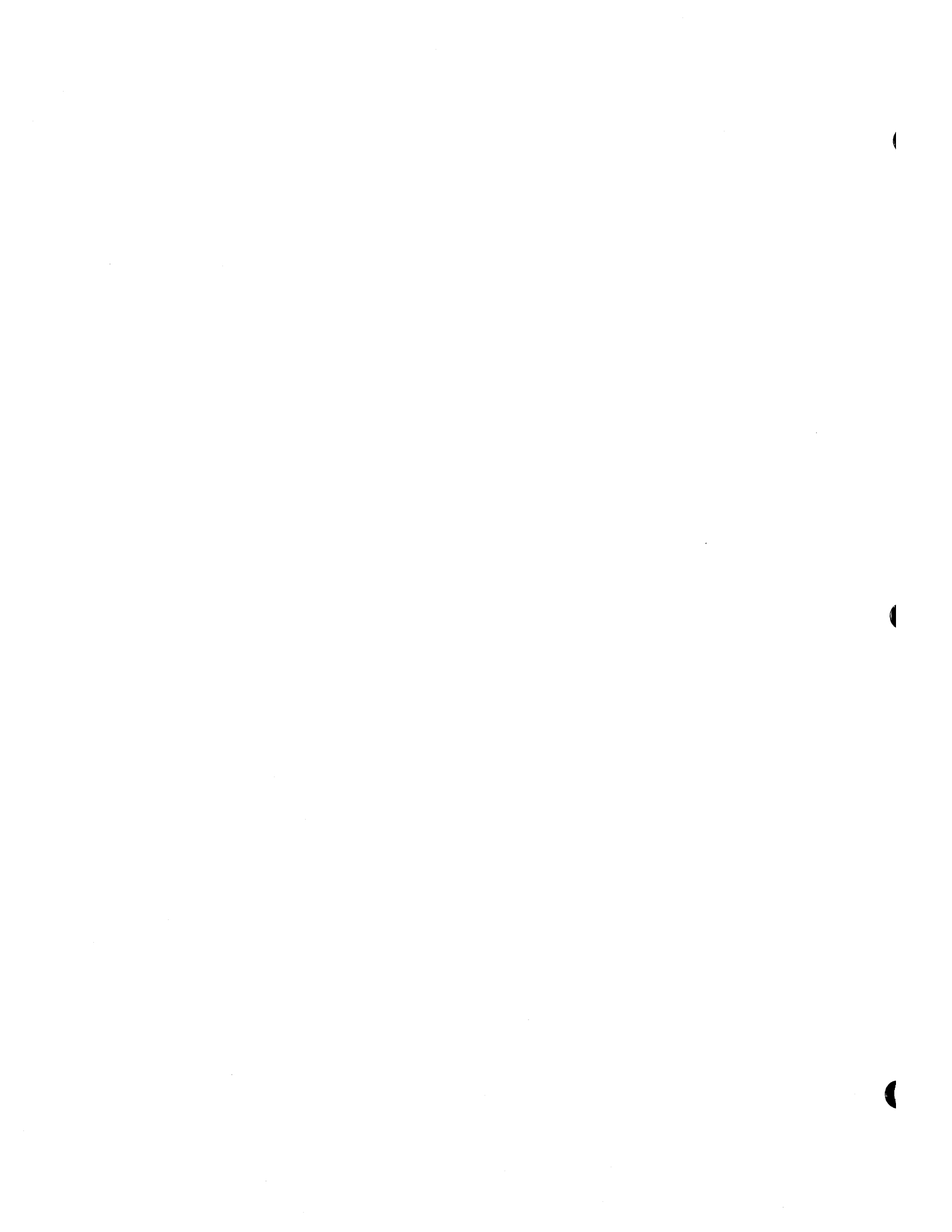


## Data Set Labels—Magnetic Tape

The blocks of information that serve as labels for data sets residing on magnetic tape are the data set label 1 and the data set label 2. 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 21 shows the format of data set label 1. Descriptions of the fields follow the illustration.

DATA SET LABEL 1 -- FL1

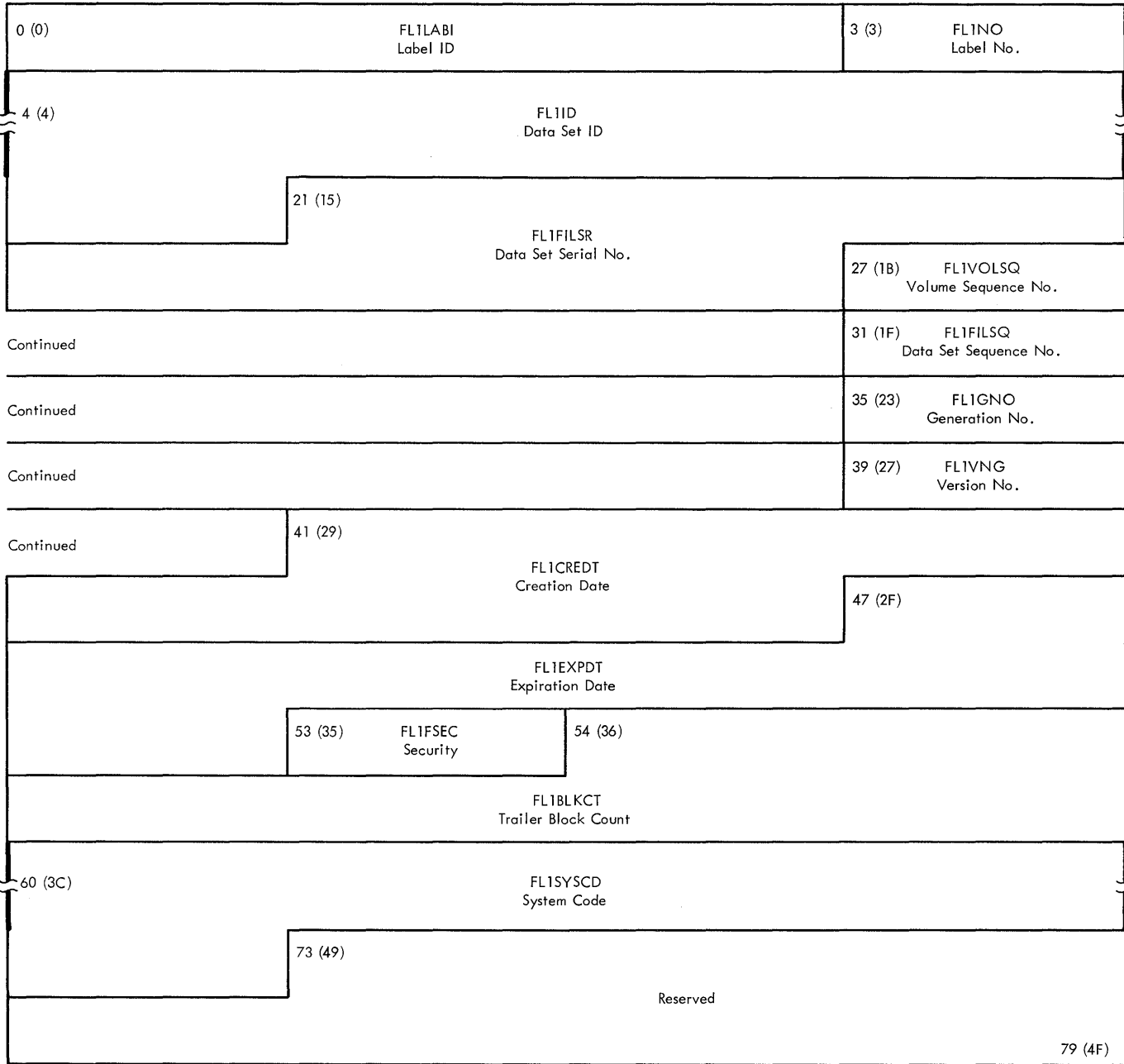
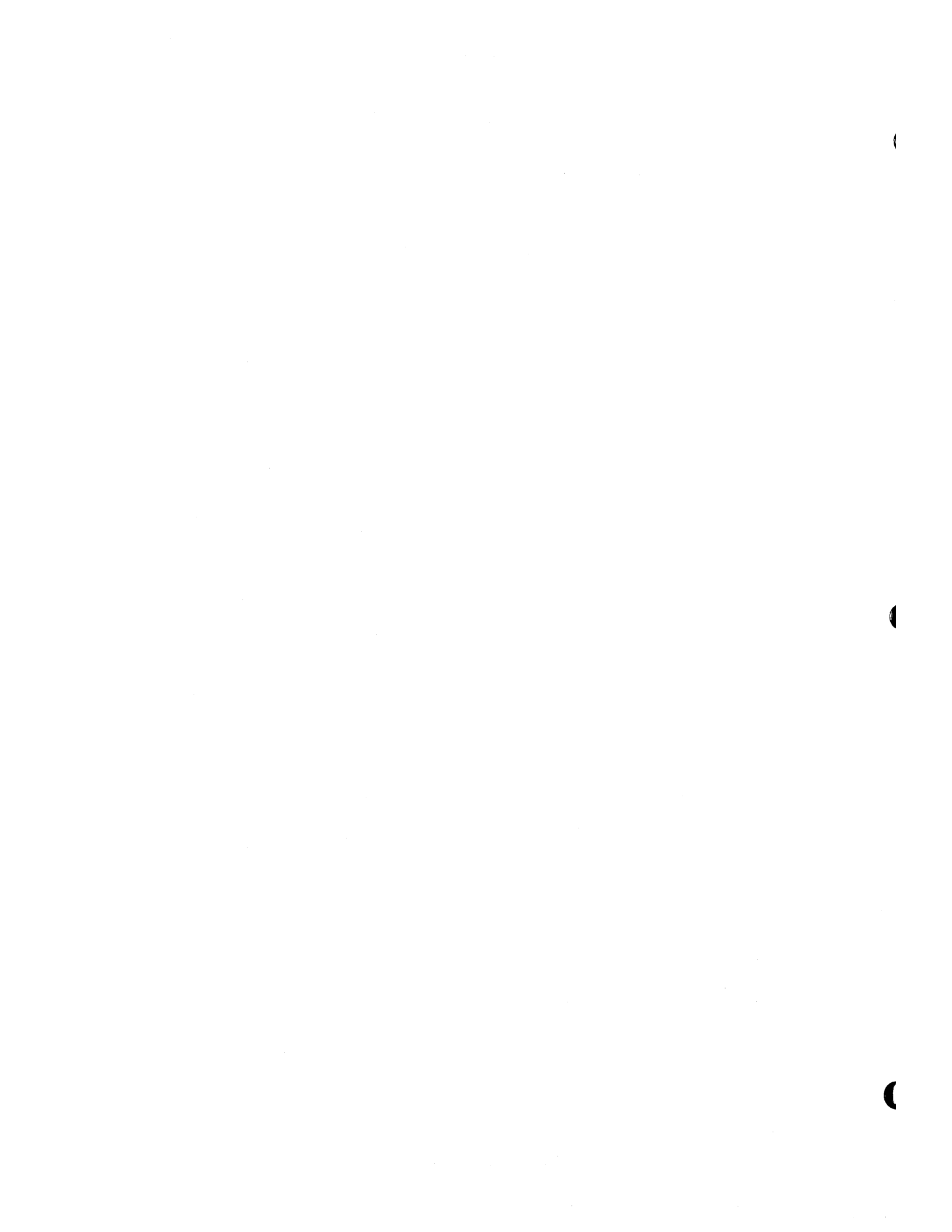


Figure 21. Data Set Label 1

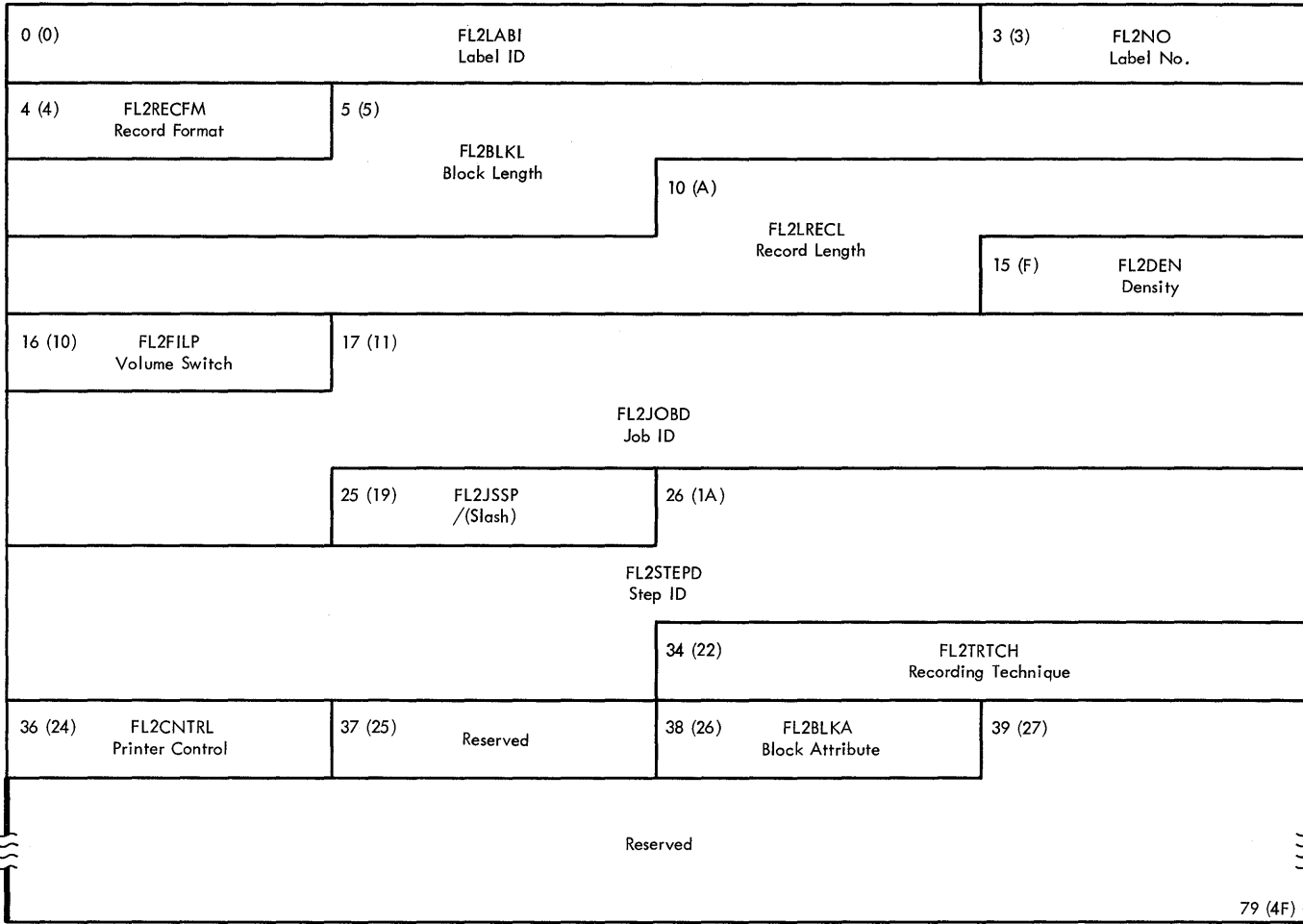
<u>DATA SET LABEL 1 -- FL1</u>				
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u>	<u>Dig. Field Description, Contents, Meaning</u>
0	(0) 3	FL1LABI		Label identifier. HDR - header label. EOV - end-of-volume trailer label. EOF - end-of-data set trailer label.
3	(3) . . . 1	FL1NO		Data set label number = 1.
4	(4) 17	FL1ID		Data set identifier.
21	(15) . 6	FL1FILSR		Data set serial number. Same as the code that appears in the VOLSERNO field of the initial volume label of the first or only volume of the data set or multi-data set aggregate.
27	(1B) . . . 4	FL1VOLSQ		Volume sequence number. Indicates the volume on which the data set is recorded in relation to the volume on which the data set begins.
31	(1F) . . . 4	FL1FILSQ		Data set sequence number. Indicates the position of the data set relative to the first data set in a multi-data set aggregate.
35	(23) . . . 4	FL1GNO		Generation number of the data set.
39	(27) . . . 2	FL1VNG		Version number of a generation of the data set.
41	(29) . 6	FL1CREDIT		Creation date. year and day - in format byydd.  b = blank yy = year (00-99) ddd = day (001-366)
47	(2F) . . . 6	FL1EXPDT		Expiration date. Expressed in the same format as creation date.
53	(35) . 1	FL1FSEC	F0 F1	Data set security indicator. Data set is not security protected. 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 22 shows the format of data set label 2. Descriptions of the fields follow the illustration.

DATA SET LABEL 2 -- FL2



• Figure 22. Data Set Label 2



DATA SET LABEL 2 -- FL2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>															
0	(0) 3	FL2LABI	Label identifier. HDR - Header label. EOV - End-of-volume trailer label. EOF - End-of-data set trailer label.															
3	(3) . . . 1	FL2NO	Data set label number = 2.															
4	(4) 1	FL2RECFM	Record format. F - Fixed length. V - Variable length. U - Undefined length.															
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 <table border="1"> <thead> <tr> <th><u>in EBCDIC</u></th> <th><u>7-track</u></th> <th><u>9-track</u></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>200 bpi</td> <td>-</td> </tr> <tr> <td>1</td> <td>556 bpi</td> <td>-</td> </tr> <tr> <td>2</td> <td>800 bpi</td> <td>800</td> </tr> <tr> <td>3</td> <td>-</td> <td>1600</td> </tr> </tbody> </table>	<u>in EBCDIC</u>	<u>7-track</u>	<u>9-track</u>	0	200 bpi	-	1	556 bpi	-	2	800 bpi	800	3	-	1600
<u>in EBCDIC</u>	<u>7-track</u>	<u>9-track</u>																
0	200 bpi	-																
1	556 bpi	-																
2	800 bpi	800																
3	-	1600																
16	(10) 1	FL2FILP	Data set position. Field Value <table border="1"> <thead> <tr> <th><u>in EBCDIC</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Volume switch previously occurred</td> </tr> <tr> <td>0</td> <td>No volume switch has occurred</td> </tr> </tbody> </table>	<u>in EBCDIC</u>		1	Volume switch previously occurred	0	No volume switch has occurred									
<u>in EBCDIC</u>																		
1	Volume switch previously occurred																	
0	No volume switch has occurred																	
17	(11) . 8	FL2JOBID	Job Identification.															
25	(19) . 1	FL2JSSP	Slash (/).															
26	(1A) . . 8	FL2STEPD	Step identification.															
34	(22) . . 2	FL2TRTCH	These characters denote the tape recording technique used to create this data set (7-track tape only).  Cb - Data conversion feature used. Eb - Even parity used. Tb - BCD to EBCDIC translation required. ET - Even parity and BCD to EBCDIC translation required. bb - Odd parity and no translation required.															

DATA SET LABEL 2 -- FL2

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
36	(24) 1	FL2CNTRL	Printer control This character denotes whether a printer carriage control set was used to create the data set and the type of carriage control specified.  A - 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.

## 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 the UCBs is used in allocation of devices as specified in DD cards. Figure 23 shows the format of the device name table. Descriptions of the fields follow the illustration.

DEVICE NAME TABLE

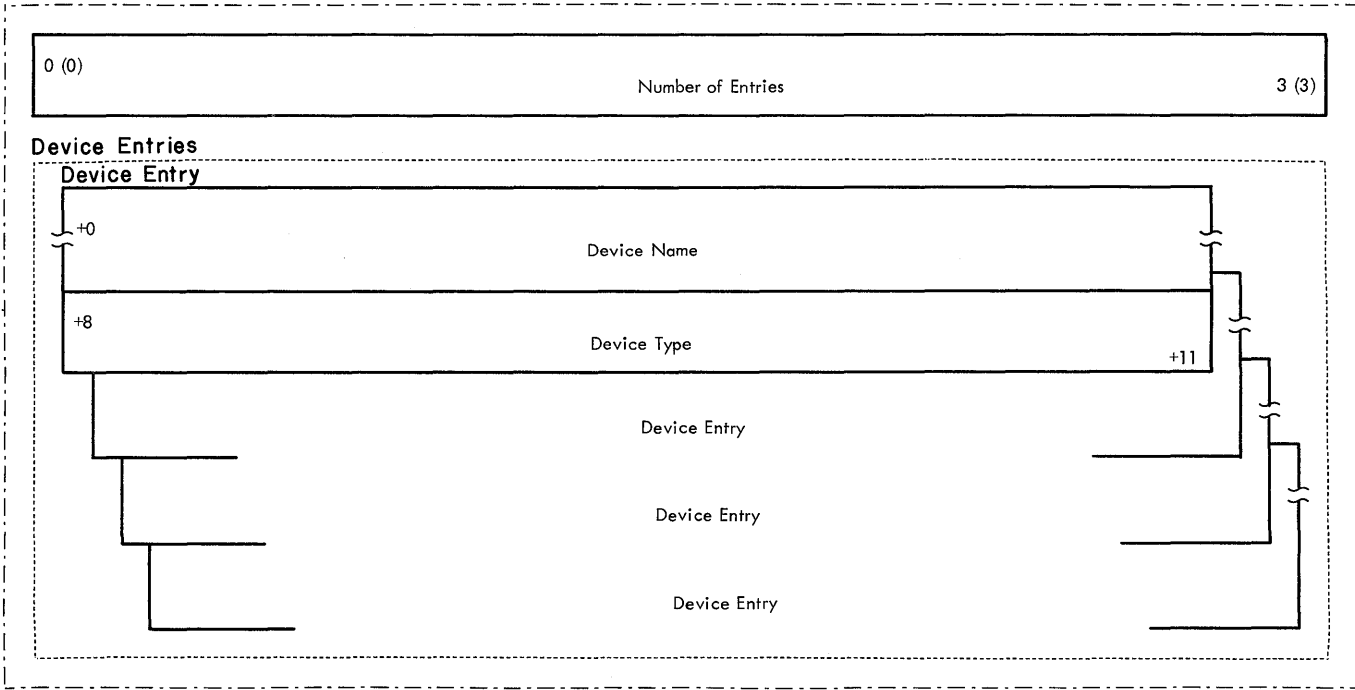


Figure 23. Device Name Table

DEVICE NAME TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>
		Number of Entries.
0	(0) 4	The number of 12 byte entries in the table. Each device name has one entry.
		<u>THE FOLLOWING 12 BYTE FIELD IS REPEATED FOR EACH DEVICE</u>
+0	8	Device name. A device name which is in one of three classes: specific, generic, or user assigned. The name is left justified and padded with blanks to the right.  <u>Specific name:</u> IBM generated 3 character or 5 character (if the device is a 2321) name. The first byte indicates the channel, the second byte indicates the control unit, and the third byte indicates the device. If the device is a 2321, the fourth byte is a slash (/) and the fifth byte indicates the bin.  Examples: 180 (tape) 190 (direct access) 193/5 (2311)  <u>Generic name:</u> IBM generated name up to 8 characters in length.  Examples: 2400 (2400 series 9-track Magnetic Tape Drive) 2311 (disk drive)  <u>User assigned name:</u> User assigned name up to 8 characters in length.  Examples: MAGTAPE
+8		Device type.
+8	4	<u>Generic name:</u> The contents of the field are the same as those of the UCBTYP field in the UCB.
+8	2	<u>Specific name, user assigned name:</u>  A digit one higher than the digit for the preceding specific or user assigned name. The first entry for a specific or user assigned name will contain a 1 in this field.  . . 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. . . . 1 Zero



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



Figure 24. Event Control Block

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diag.</u>	<u>Field Description, Contents, Meaning</u>
+0	1	1... .. .1.. .. ..xx xxxx		<p>Awaiting completion of an event: W - Waiting for completion of an event. After completion of an event: C - The event has completed. Completion code.</p> <p>One of the following completion codes will appear at the completion of a channel program:</p> <p><u>Access Methods Other Than BTAM</u></p> <p>7F Channel program has terminated without error. (CSW contents useful.)</p> <p>41 Channel program has terminated with permanent error. (CSW contents useful.)</p> <p>42 Channel program has terminated because a direct access extent address has been violated. (CSW contents do not apply.)</p> <p>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.)</p> <p>48 Request element for channel program has been made available after it has been purged. (CSW contents do not apply.)</p> <p>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.)</p> <p>7F Completed normally</p> <p>41 Completed with an I/O error</p> <p>48 Enable command halted, or, I/O operation purged.</p> <p>41 Completed with an I/O error</p> <p>48 Enable command halted, or, I/O operation purged.</p>
+1	. 3			<p>Awaiting completion of an event: Request block address. After completion of the event: Zeroes, or remainder of completion code.</p>

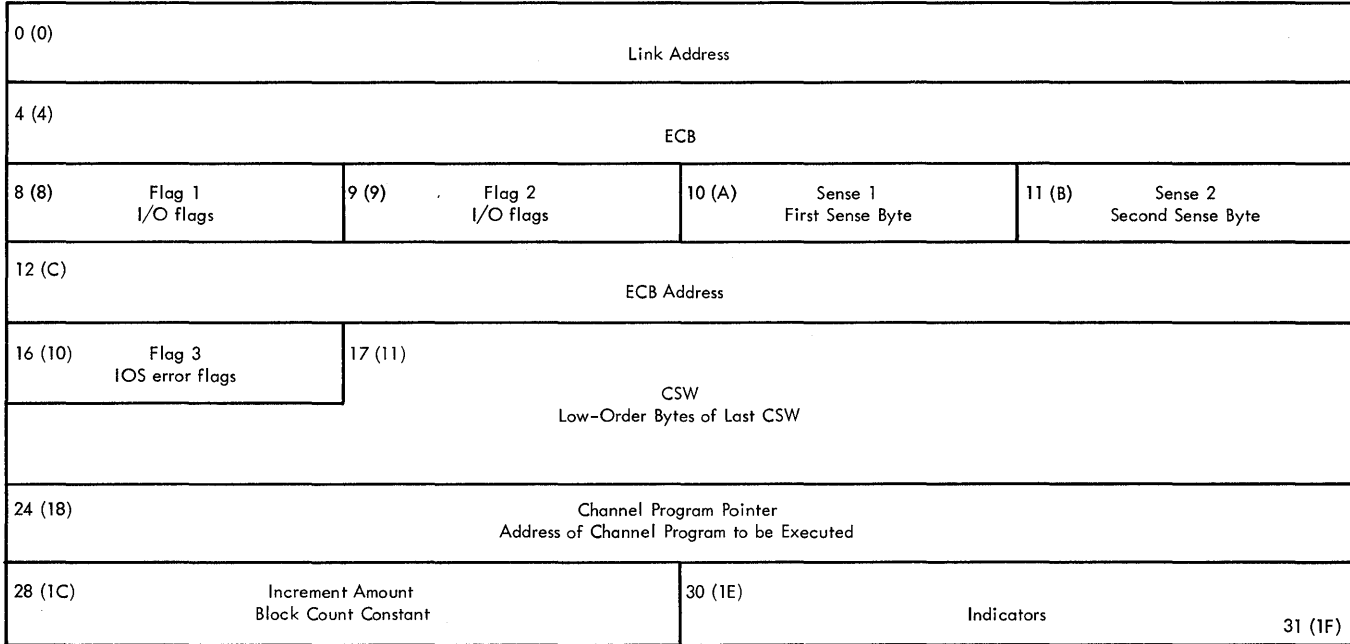




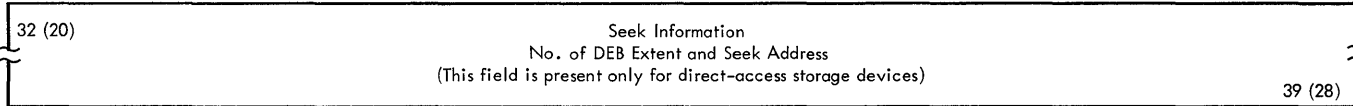
## Interruption Control Block

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 25 shows the format of the ICB. Descriptions of the fields follow the illustration.

INTERRUPTION CONTROL BLOCK



**Direct - Access Storage Devices**



**Channel Program**

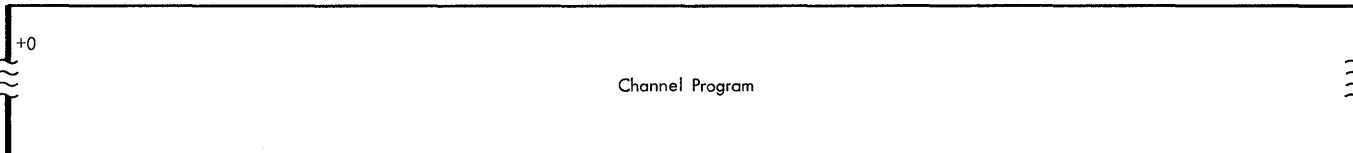


Figure 25. Interruption Control Block

INTERRUPTION CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			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 unreleased flag (i.e., nonsequential).
		.... ...0	START.
		.... ...1	RESTART.
			<u>Note:</u> Chained channel-program scheduling does NOT depend on these bits to perform its chaining.
9	(9) . 1		Flag byte 2.
		1... ....	Halt I/O has been issued.
		.1.. ....	Sense will not be performed until the device is free.
		..1. ....	IOB has been purged.
		....1 ....	Home address (R0) record is to be read.
		.... xxx.	Internal I/O supervisor error correction flags.
		.... ...1	QSAM error recovery routine in control for a 2540 Punch with three buffers.
10	(A) . . 1		First sense byte (device dependent).
11	(B) . . . 1		Second sense byte (device dependent).
12	(C) 4		Address of the ECB to be posted upon completion of an I/O event. ECB address. EXCP - Address of the ECB to be posted upon the completion of an I/O event.  BSAM/BPAM - Address of the ECB in the DECB to be posted upon the completion of an I/O event.  QSAM - Address of the ECB in the QSAM prefix to the IOB to be posted upon the completion of an I/O event.

INTERRUPTION CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex.</u> <u>Diq. Field Description, Contents, Meaning</u>
			Flag byte 3.
16	(10) 7		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... .. .xxx xxxx	Special volume full indicator signifying end-of-tape mark or reflective spot sensed along with a read or write error. (Reserved Bits) Always zero.
31	(1F) . . . 1		Reserved
			Seek Information
32	(20) 8		This field is present for direct access devices only.
32	(20)	Byte 1	The number of the DEB extent to be used for this request. The first extent is number zero.
33	(21)	Bytes 2-8	The Seek address for this I/O request.
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 26 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.

## 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.

	Prefix Segment
0 (0)	Standard Fields Segment
32 (20)	Extension Segment

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 - 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)					

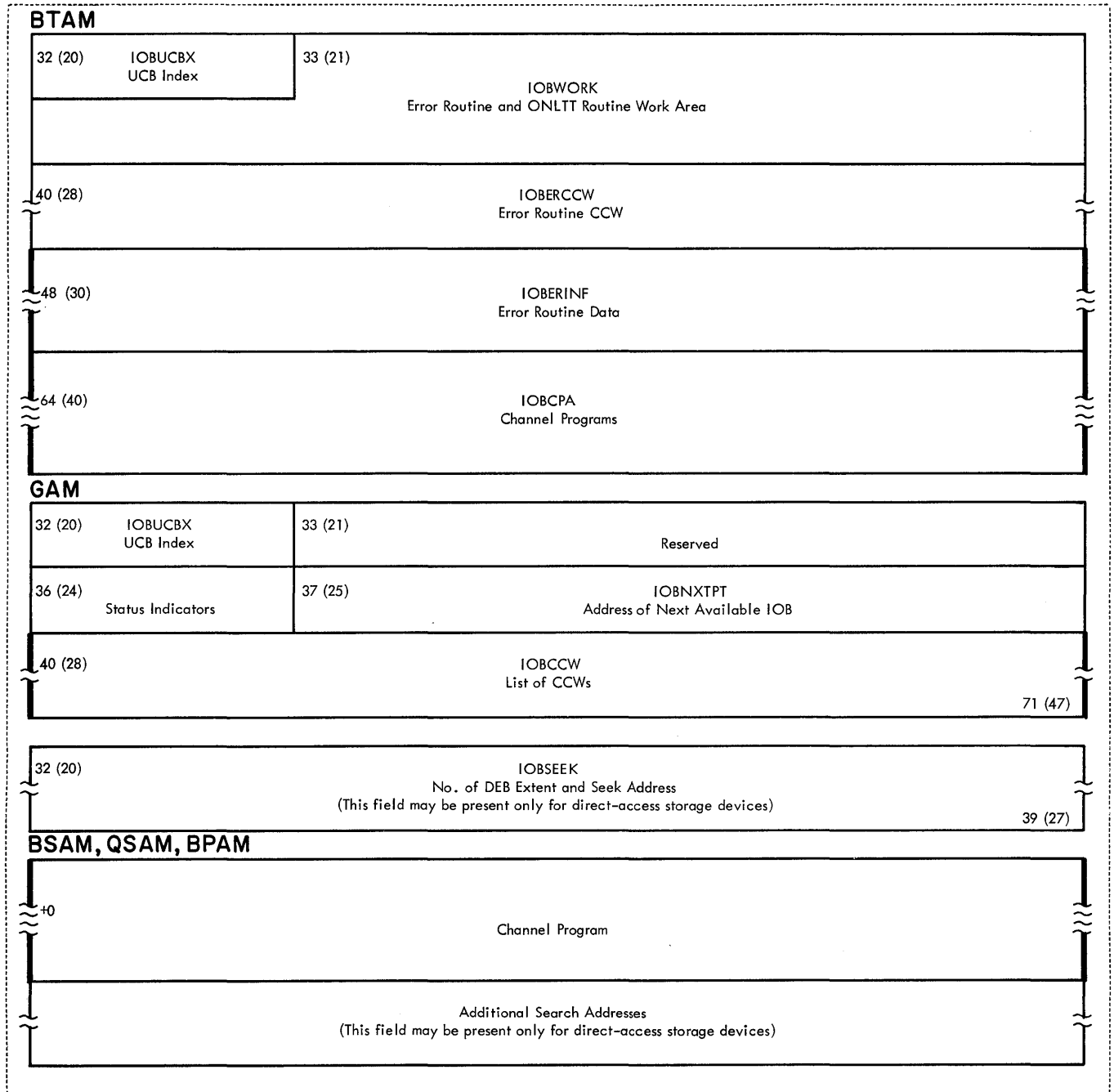
**Standard Fields**

0 (0)	IOBFLAG1 I/O Flags	1 (1)	IOBFLAG2 I/O Flags	2 (2)	IOSENS0 First Sense Byte	3 (3)	IOSENS1 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 (use varies)	30 (1C)	IOBERRCT No. of Error Retries	31 (1F)			

•Figure 26. Input/Output Block (Part 1 of 3)

INPUT/OUTPUT BLOCK

**Extension**



Continued

Figure 26. Input/Output Block (Part 2 of 3)

INPUT/OUTPUT BLOCK

Extension (Continued)

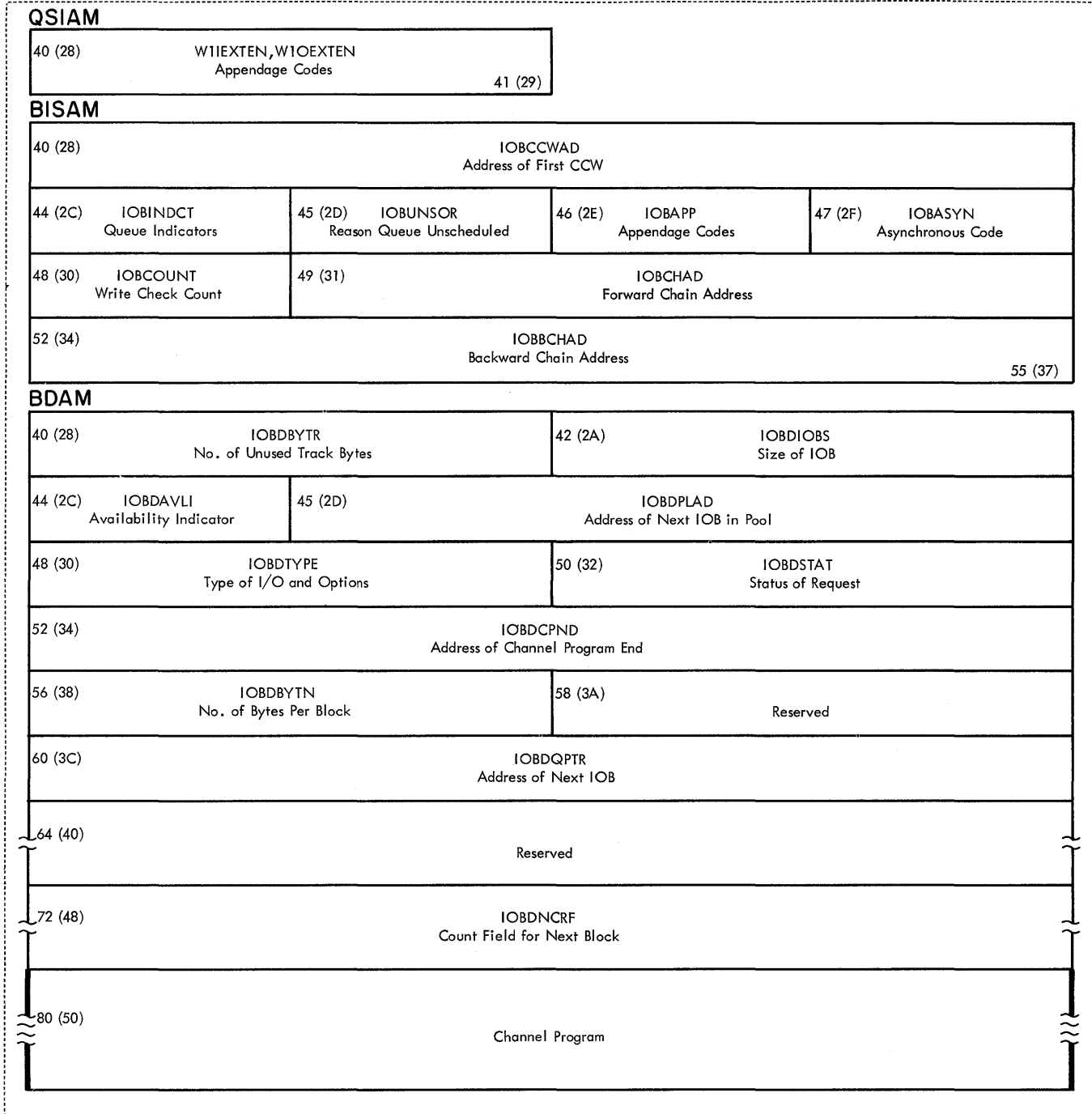


Figure 26. Input/Output Block (Part 3 of 3)



INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PREFIXES</u>			
<u>GAM, QISAM PREFIX</u>			
-4	(-4) 4		GAM: Event control block that is within first IOB only. QISAM: Event control block used to indicate status of an I/O event.
<u>BSAM, QSAM, BPAM -- NORMAL SCHEDULING PREFIX</u>			
-8	(-8) 1		Flag byte.
		1... ..	PRTOV has occurred.
		.1... ..	A WRITE operation is in process.
		..1. ....	A READ operation is in process.
		...1 ....	Update flag. Set on together with bit 1 of this byte to show that the block is to be updated. Can only occur if the OPEN parameter is UPDAT.
		.... 1...	IOB being used for backspace, control, or note/point operation.
		.... .xx.	(Reserved bits).
		.... ...1	This is the first IOB.
-7	(-7) . 3		Address of the next IOB associated with one particular DCB. The IOBs are chained in sequential order.
-4	(-4) 4		An ECB used by QSAM to indicate the status of the I/O event.
<u>BSAM, QSAM, BPAM -- CHAINED SCHEDULING PREFIX</u>			
-16	(-10) 1	FLAG1	I/O Indicators.
		xxxx 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.

INPUT/OUTPUT BLOCK

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

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>STANDARD FIELDS (Continued)</u>			
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.
		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.
		..xx xxx.	(Reserved bits)
		.... ...1	Line is under on-line test operation.
30	(1E) . . 2	IOBERRCT	Used by I/O supervisor error routines to count temporary errors during retry.

INPUT/OUTPUT BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
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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) . 7	IOBWORK	Work area used by error routines and on-line terminal test routines.
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.

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

INPUT/OUTPUT BLOCK

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

46	(2E) . . 1	IOBAPP
----	------------	--------

Appendage code.

READ or WRITE K:

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

Code

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

WRITE KN:

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

Code

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

INPUT/OUTPUT BLOCK

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

47	(2F)	. . . 1	IOBASYN
----	------	---------	---------

Asynchronous routine code.

READ or WRITE K:

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

Code

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

WRITE KN:

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

Code

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

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

Write Check counter.

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

Forward chain address.

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

Backward chain address.

INPUT/OUTPUT BLOCK

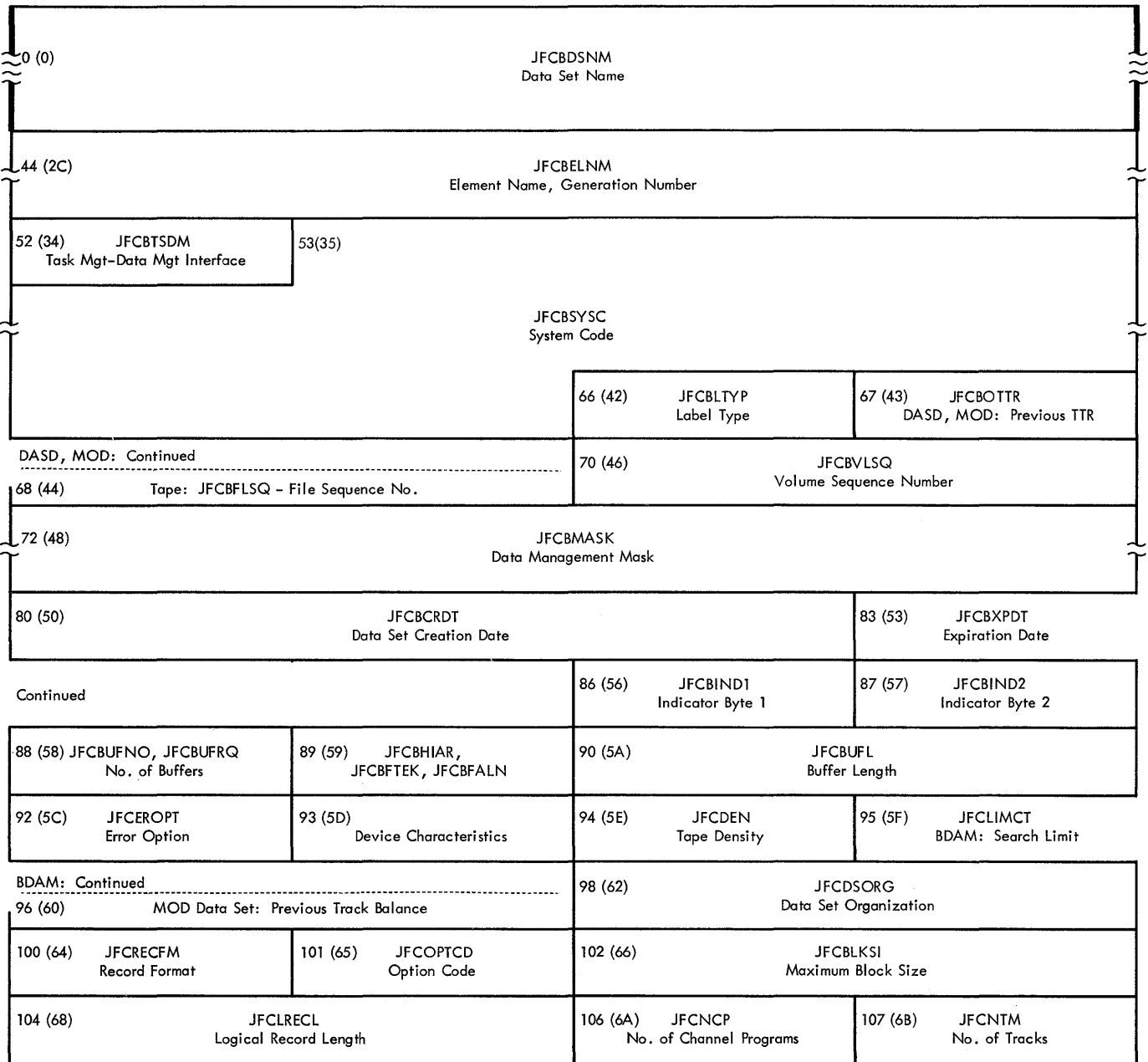
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BDAM EXTENSION</u>			
40	(28) 2	IOBDYTR	Number of unused bytes remaining on the track.
42	(2A) . . 2	IOBDIOBS	Overall size of the IOB.
44	(2C) 1	IOBDVLI	All bits set to zero indicate the availability of this IOB.
45	(2D) . 3	IOBDPLAD	Address of the next IOB in the pool of IOBs.
48	(30) 2	IOBDTYPE	The type of request and specified options.
48	(30)	Byte 1	
		1... ..	Verify
		.1... ..	Overflow
		..1. ....	Extended search
		...1 ....	Feedback
		.... 1...	Actual addressing.
		.... .1..	Dynamic buffering.
		.... ..1.	Read exclusive.
		.... ...1	Relative block addressing.
49	(31)	Byte 2	
		1... ..	Key address coded as 'S'.
		.1... ..	Block length coded as 'S'.
		...xx ....	(Reserved bits)
		.... 1...	READ request.
		.... 0...	WRITE request.
		.... .1..	Key type.
		.... .0..	ID type.
		.... ..1.	Add type.
		.... ...x	(Reserved bit)
50	(32) . . 2	IOBDSTAT	Status of the request
50	(32)	Byte 1	
		1... ..	Abnormal completion.
		..xxx .x.x	(Reserved bits)
		.... 1...	This IOB caused the DCB format flag to be set.
		.... ..1.	IOB being used to add a variable (V) or underlined (U) type record to the data set.
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	IOBDYTN	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 27 shows the format of the JFCB. Descriptions of the fields follow the illustration.

JOB FILE CONTROL BLOCK



• Figure 27. Job File Control Block (Part 1 of 2)

**JOB FILE CONTROL BLOCK**

**Segments**

<b>Normal 108 Segment</b>		
108 (6C) JFCRKP Relative Key Position	109 (6D) JFCCYLOF No. of Tracks	110 (6F) JFCDBUFN Reserved
112 (70) JFCINTVL Seconds of Delay		
<b>UCS Segment</b>		
108 (6C)	JFCUCSID UCS Image Name	
112 (70) JFCUCSOP UCS Image Operation		
	113 (71) JFCCPRI Send/Receive Priority	114 (72) JFCSOWA Size of Work Area
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) JFCBDR LH Data Block Length
Continued	174 (AE) JFCBVLCT Volume Count	175 (AF) JFCBSPTN Split Cyl: No. of Tracks

Figure 27. Job File Control Block (Part 2 of 2)

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 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.
		<u>Code</u>	
		xxx. ....	(Reserved bits)
		...1 ....	BLP Bypass label processing
		.... 1.1.	STUL 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.
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)

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
79 (4F)		Byte 8	Open routine internal switches.
80 (50)	3	JFCBCRDT	Data set creation date: ydd (y=year, dd=day).
83 (53)	. . . 3	JFCBXPDT	Data set expiration date: ydd (y=year, dd=day).
86 (56)	. . 1	JFCBIND1	Indicator Byte 1.
		11.. ....	Release external storage.
		..11 ....	Data set has been located.
		.... 11..	New volume has been added to the data set.
		.... ..1.	Data set is a member of a generation data group.
		.... ...1	Data set is a member of a partitioned data set.
87 (57)	. . . 1	JFCBIND2	Indicator Byte 2.
		01.. ....	OLD data set.
		10.. ....	MOD data set.
		11.. ....	NEW data set.
		..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.
		JFCBUFNO	Access methods other than QTAM: Number of buffers required for this data set.
		JFCBUFRQ	QTAM: 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).
89 (59)	. 1	JFCBHIAR, JFCBFTEK, JFCBFALN	<u>Code</u>
		x... .x..	Access methods other than QTAM Buffer pool location, coded in the DD statement
		0... .0..	0, Hierarchy 0 main storage.
		0... .1..	1 Hierarchy 1 main storage.
		.x.x x...	Buffering technique:
		.1.. ....	S Simple buffering.
		...1 ....	E Exchange buffering.
		.... 1...	D Dynamic buffering.
		.... .x..	(Reserved bit)
		.... ..xx	Buffer alignment:
		.... ..10	D Doubleword boundary.
		.... ..01	F Fullword not a doubleword boundary.
90 (5A)	. . 2	JFCBUFL	Buffer length

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
92	(5C) 1	JFCEROPT	<p>Error option. Disposition of permanent errors if user returns from a synchronous error exit. (QSAM)</p> <p>1... .. Accept .1.. .... Skip ..1. .... Abnormal end of task ...x xxxx (Reserved bits)</p>
<u>Device Characteristics Field</u>			
93	(5D)		<p>The content of this one-byte field depends upon the device in use.</p>
<u>MAGNETIC TAPE</u>			
93	(5D) . 1	JFCTRTCH	<p>Tape recording technique for seven track tape.</p> <p><u>Code</u></p> <p>0010 0011 E Even parity. 0011 1011 T BCD/EBCDIC translation. 0001 0011 C Data conversion. 0010 1011 ET Even parity and translation.</p>
<u>DIRECT-ACCESS STORAGE</u>			
93	(5D) . 1	JFCKEYLE	<p>Direct access key length.</p>
<u>CARD READER, CARD PUNCH</u>			
93	(5D) . 1	JFCMODE	<p>Mode of operation.</p> <p><u>Code</u></p> <p>1000 .... C Column binary mode. 0100 .... E EBCDIC mode.</p>
		JFCSTACK	<p>Stacker Selection.</p> <p><u>Code</u></p> <p>.... 0001 1 Stacker 1 .... 0010 2 Stacker 2</p>
<u>PRINTER</u>			
93	(5D) . 1	JFCPRTSP	<p>Normal printer spacing.</p> <p><u>Code</u></p> <p>0000 0001 0 No spacing. 0000 1001 1 Space one line. 0001 0001 2 Space two lines. 0001 1001 3 Space three lines.</p>
<u>PAPER TAPE</u>			
93	(5D) . 1	JFCCODE	<p>Conversion code.</p> <p><u>Code</u></p> <p>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.</p>

End of Device Characteristics Field.

JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>																						
94	(5E) . . 1	JFCDEN	Tape density. 2400 series magnetic tape units.																						
			<table border="1"> <thead> <tr> <th><u>Code</u></th> <th><u>7-track</u></th> <th><u>9-track</u></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>200 bpi</td> <td>-</td> </tr> <tr> <td>1</td> <td>556 bpi</td> <td>-</td> </tr> <tr> <td>2</td> <td>800 bpi</td> <td>800 bpi</td> </tr> <tr> <td>3</td> <td>-</td> <td>1600 bpi</td> </tr> </tbody> </table>	<u>Code</u>	<u>7-track</u>	<u>9-track</u>	0	200 bpi	-	1	556 bpi	-	2	800 bpi	800 bpi	3	-	1600 bpi							
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1	556 bpi	-																							
2	800 bpi	800 bpi																							
3	-	1600 bpi																							
95	(5F) . . . 3	JFCLIMCT	BDAM: Search limit.																						
96	(60) 2		Data set opened for MOD: If automatic step restart was requested - Track balance existing when the data set was first opened during the original execution of the current step.																						
98	(62)	JFCDSORG	Data set organization being used.																						
98	(62) . . 1		<table border="1"> <thead> <tr> <th><u>Code</u></th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>IS</td> <td>Indexed sequential organization.</td> </tr> <tr> <td>PS</td> <td>Physical sequential organization.</td> </tr> <tr> <td>DA</td> <td>Direct organization.</td> </tr> <tr> <td></td> <td>(Reserved bits)</td> </tr> <tr> <td>PO</td> <td>Partitioned organization.</td> </tr> <tr> <td>U</td> <td>Unmovable - the data contains location dependent information.</td> </tr> </tbody> </table>	<u>Code</u>	Description	IS	Indexed sequential organization.	PS	Physical sequential organization.	DA	Direct organization.		(Reserved bits)	PO	Partitioned organization.	U	Unmovable - the data contains location dependent information.								
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99	(63) . . . 1	0... .. .xxx xxxx	GS Graphics organization. (Reserved bits)																						
100	(64) 1	JFCRECFM	Record format.																						
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T	Track overflow.																								
B	Blocked: may not occur with undefined (U).																								
S	Fixed length record format: Standard blocks no truncated blocks or unfilled tracks are embedded in the set. Variable length record format: Spanned records.																								
A	ASA control character.																								
M	Machine code control character.																								
	No control character.																								
	Always zero.																								
101	(65) . 1	JFCOPTCD	Option codes.																						
			<u>QSAM, BSAM, BPAM</u>																						
			<u>Code</u>																						
101	(65) . 1	1... .. .1.. .. ..1. .... ...x x.xx .... .1..	<table border="1"> <tbody> <tr> <td>W</td> <td>Write validity check.</td> </tr> <tr> <td>U</td> <td>Allow a data check caused by an invalid character (1403 printer with UCS feature.)</td> </tr> <tr> <td>C</td> <td>Chained scheduling using the Program Controlled Interruption.</td> </tr> <tr> <td></td> <td>(Reserved bits)</td> </tr> <tr> <td>Z</td> <td>Magnetic Tape Devices: Used reduced error recovery procedure.</td> </tr> </tbody> </table>	W	Write validity check.	U	Allow a data check caused by an invalid character (1403 printer with UCS feature.)	C	Chained scheduling using the Program Controlled Interruption.		(Reserved bits)	Z	Magnetic Tape Devices: Used reduced error recovery procedure.												
W	Write validity check.																								
U	Allow a data check caused by an invalid character (1403 printer with UCS feature.)																								
C	Chained scheduling using the Program Controlled Interruption.																								
	(Reserved bits)																								
Z	Magnetic Tape Devices: Used reduced error recovery procedure.																								

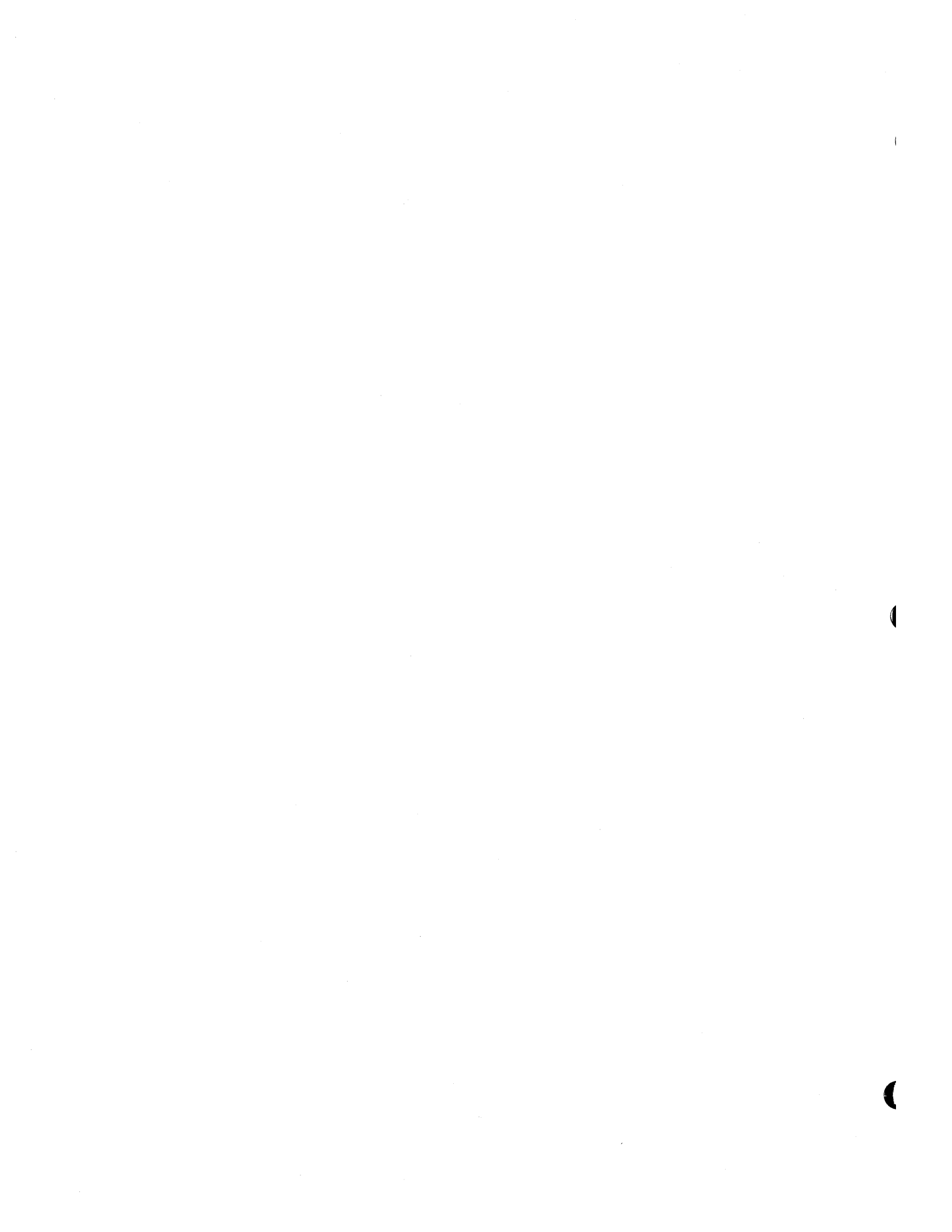
JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>BISAM, QISAM</u>			
<u>Code</u>			
101	(65) . 1	1... .. .x.. .x.. ..1. .... ...1 .... .... 1... .... ..1. .... ...1	W Write validity check. (Reserved bits) M Master Indexes. I Independent overflow area. Y Cylinder overflow area. L Delete option. R Reorganization criteria.
<u>BDAM</u>			
101	(65) . 1	1... .. .1.. .... ..1. .... ...1 .... .... 1... .... .xx. .... ...1	W Write validity check. Track overflow. E Extended search. F Feedback. A Actual addressing. (Reserved bits) R Relative block addressing.
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.
<u>NORMAL 108 SEGMENT</u> (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. Maximum value: 99.
111	(6F) . . . 1	JFCDBUFN	Reserved.
112	(70) 1	JFCINTVL	QTAM: Intentional delay, in seconds, between passes through a polling list.
END OF NORMAL 108 SEGMENT			
<u>UCS SEGMENT</u>			
This segment replaces the normal 108 segment if the DD statement uses the UCS parameter.			
108	(6C) 4	JFCUCSID	Name of the UCS image to be loaded.
112	(70) 1	JFCUCSOP	Operation of the UCS image to be loaded.
		x.x. xxxx .1.. .... ...1 ....	(Reserved bits) UCS image is to be loaded in the FOLD mode. UCS image is to be verified.
END OF UCS SEGMENT			



JOB FILE CONTROL BLOCK

<u>Offset</u>	<u>Alignment</u>	<u>Name</u>	<u>Field Description, Contents, Meaning</u>
113 (71)	. 1	JFCCPRI	<p>QTAM: Priority between send and receive operations.</p> <p><u>Code</u> S Send priority. E Equal priority. R Receive priority. (Reserved bits)</p>
		1.... .. .1.. .. ..1. .... ...x xxxx	
114 (72)	. . 2	JFCSOWA	<p>QTAM: Length, in bytes, of the user provided work area.</p>
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.. .... 01.. .... 10.. .... 11.. .... ..xx .... .... 1... .... .1.. .... ..1. .... ...1	<p>ABSTR request. Average block length request. TRK request. CYL request. (Reserved bits) CONTIG request. MXIG request. ALX request. ROUND request.</p>
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	JFCBDR LH	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 28 shows its format; a description of its fields follows the illustration.

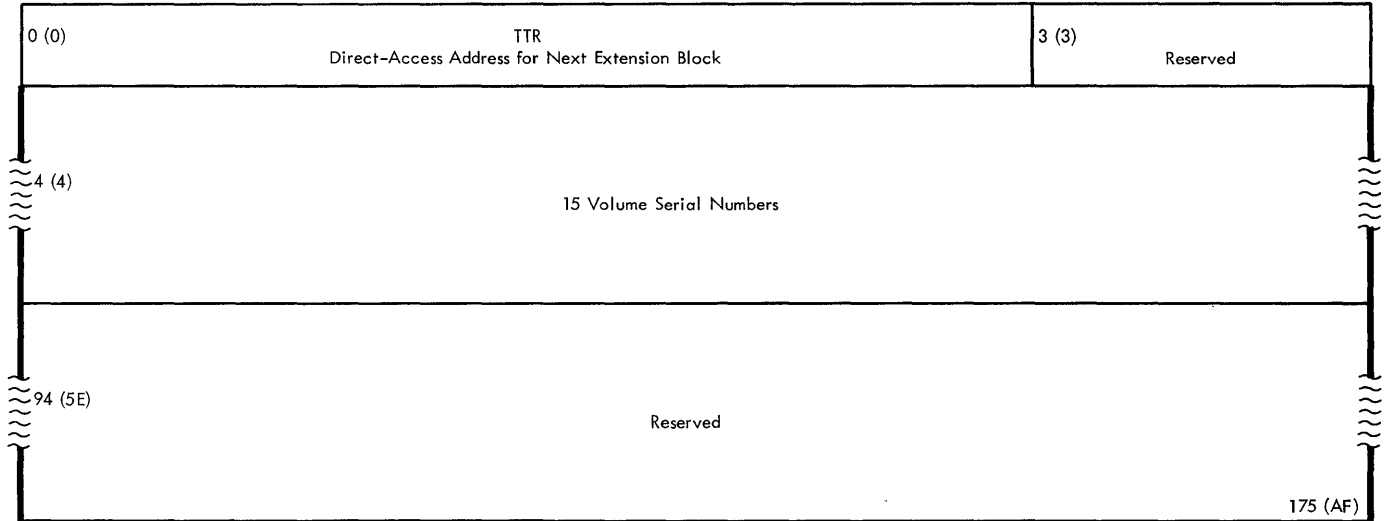
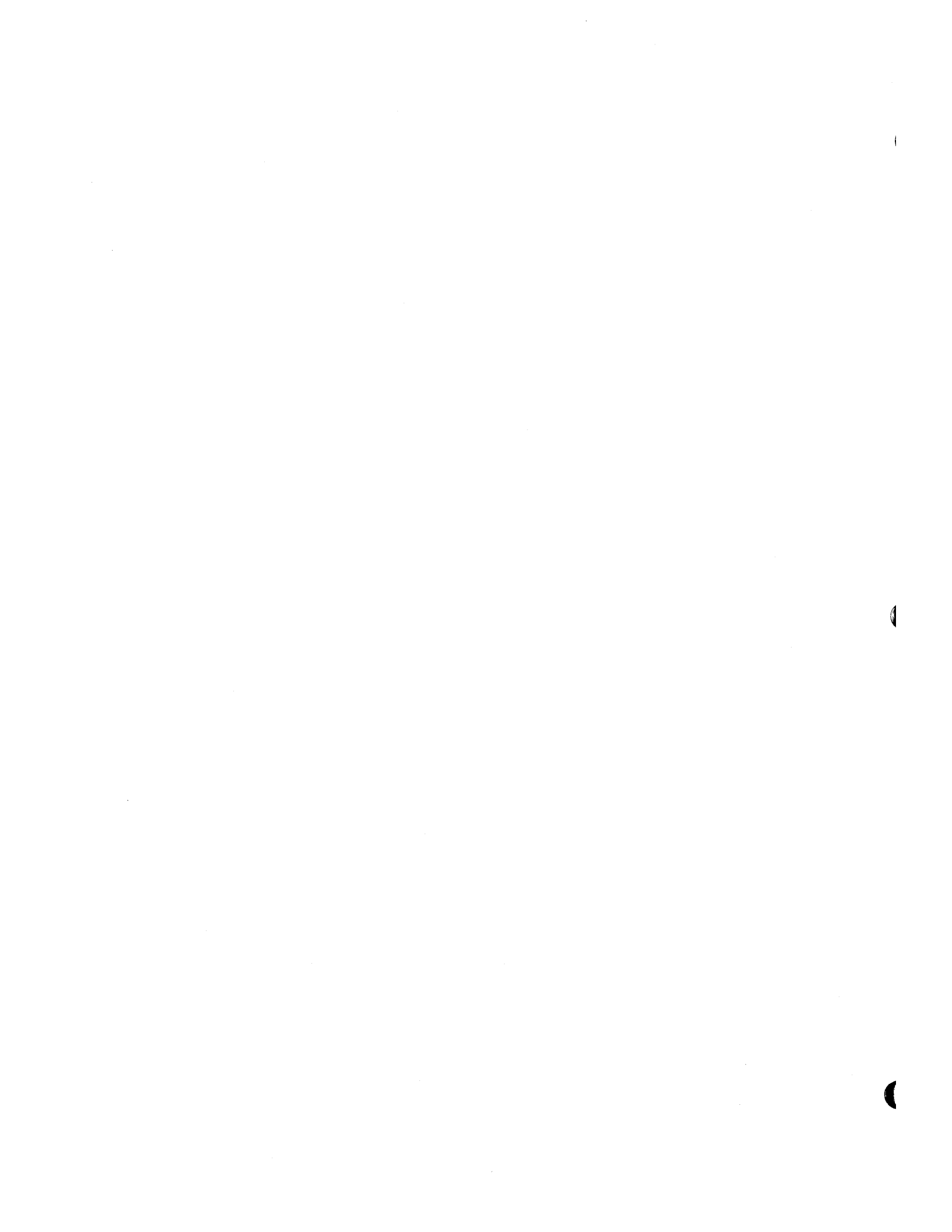


Figure 28. JFCB Extension Block

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



## 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 29 shows the format of the LCB. Descriptions of the fields follow the illustration.

LINE CONTROL BLOCK

Line Control Block

0 (0)	LCBSTATE State of Block	1 (1)	LCBENDOP Incoming-Contents of Reg-14, Outgoing-Address of LCB of Line
4 (4)	LCBCECB Op Code	5 (5)	LCBRCADD Track Address of Last Correctly Transmitted Segment

Receive Scheduler STCB

8 (8)	LCBSCHAD Address of First Waiting QTAM Subtask for This LCB		
12 (C)	LCBCPRI Priority	13 (D)	LCBSCHLK Link Field

16 (10)	LCBCHDR Disk Address of the Current Message Header	19 (13)	LCBCSEG Message Segment
---------	---	---------	----------------------------

Continued	22 (16)	LCBNASEG Track Address of Last Message Received
-----------	---------	--

Continued	25 (19)	LCBSORCE Address of Head of Chain of LCBs
-----------	---------	--

28 (1C)	LCBMSGPR Priority	29 (1D)	LCBDESTQ Address of Destination QCB
---------	----------------------	---------	--

32 (20)	LCBMPLRT Scan Address	33 (21)	LCBCLPCI Address of Last PCI
---------	--------------------------	---------	---------------------------------

36 (24)	LCBCLCCW Address of Last BRB
---------	---------------------------------

40 (28)	LCBERRST Line Errors	42 (2A)	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 29. Line Control Block (Part 1 of 2)

LINE CONTROL BLOCK

Line Control Block - Continued

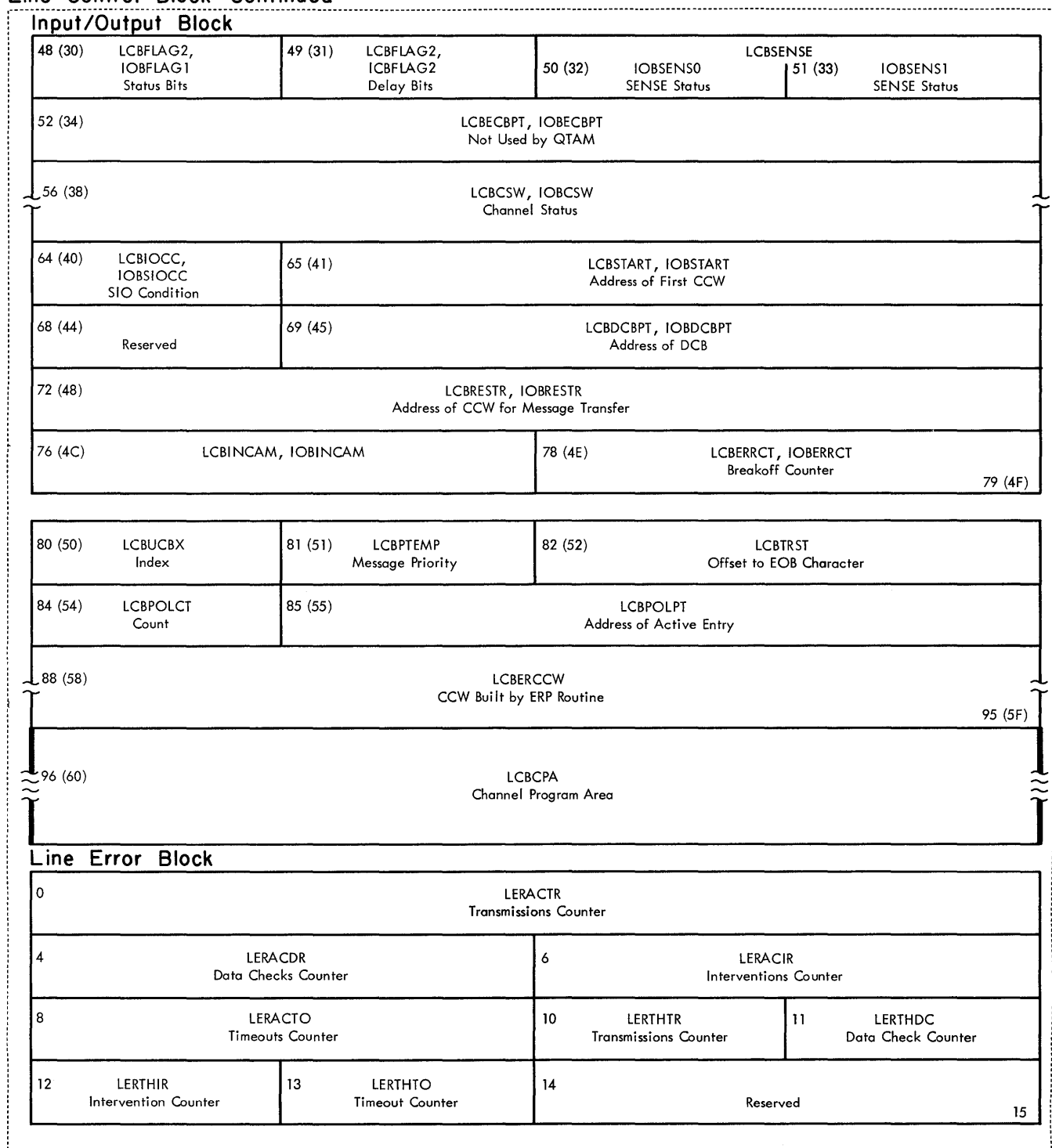


Figure 29. Line Control Block (Part 2 of 2)

LINE CONTROL BLOCK

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



LINE CONTROL BLOCK

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

LINE CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
72 (48)	4	LCBRESTR, IOBRESTR		Address of the CCW for SIO command for first message data transfer.
76 (4C)	2	LCBINCAM, IOBINCAM		
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.
. . 1	LERTHTR	Threshold Counters for Number of: transmissions.
. . . 1	LERTHDC	data checks.
1	LERTHIR	interventions required.
. 1	LERHTO	timeouts.
. . 2		Reserved

END OF LINE CONTROL BLOCK

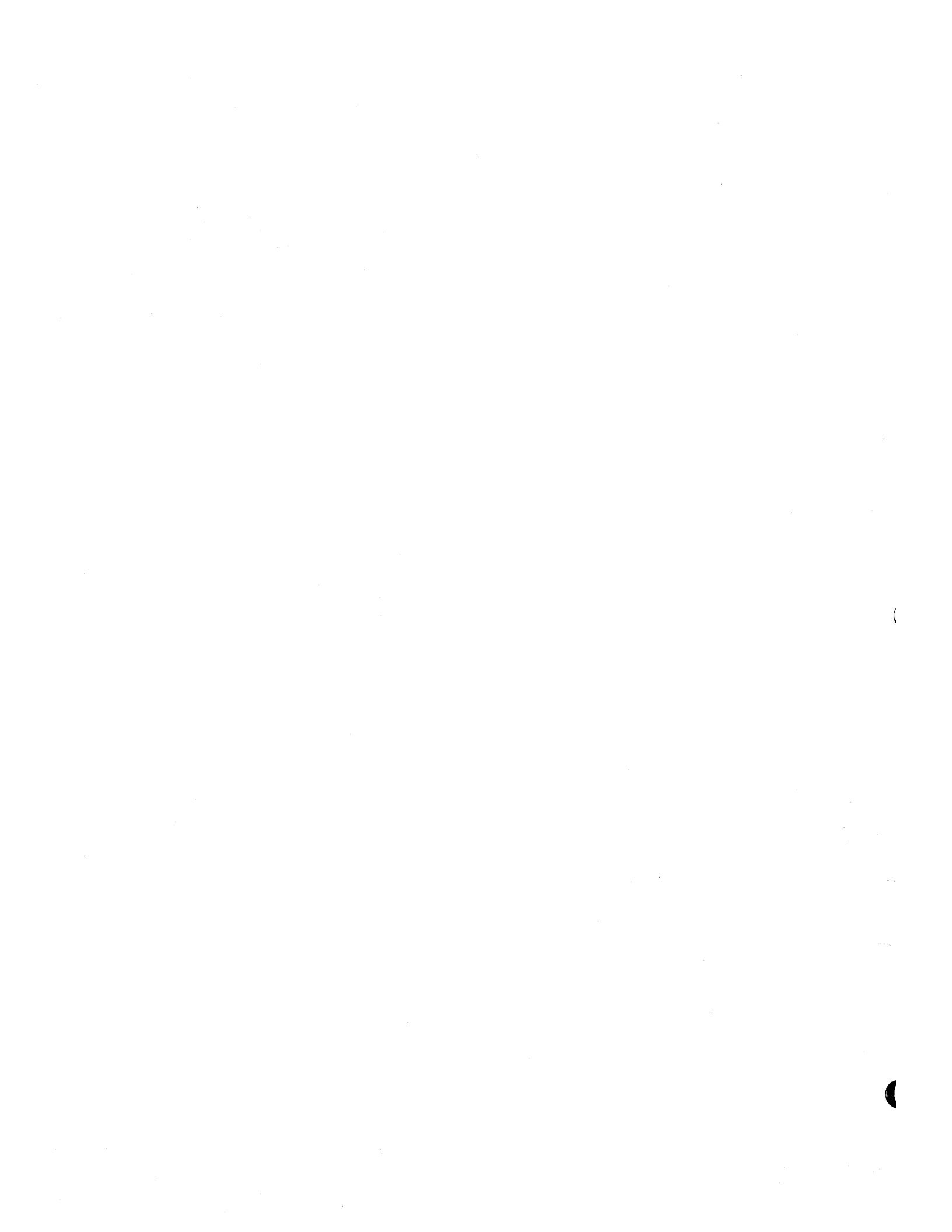
## Partitioned Data Set Directory Entries

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 30A shows the general format of an entry in a PDS directory. Following the illustration is a general description of the fields of an entry.

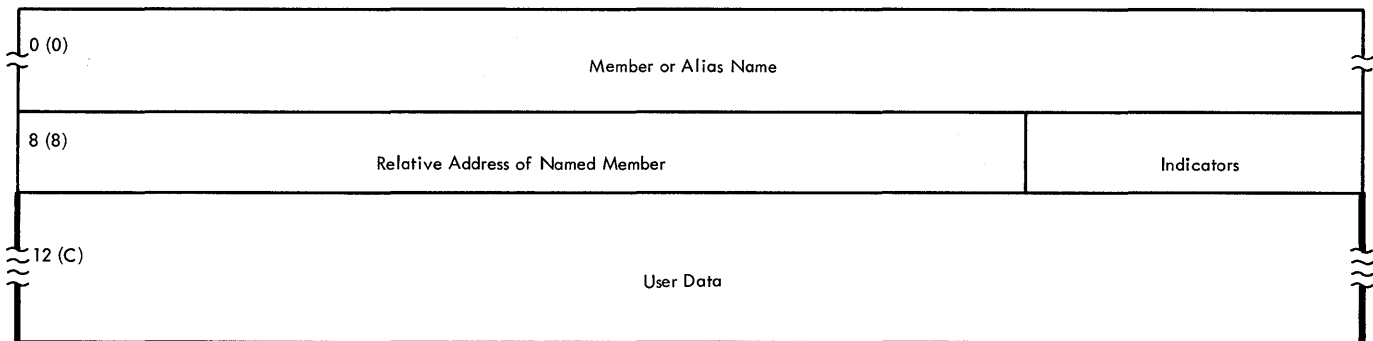


Figure 30A. PDS Directory Entry -- General Format

<u>PDS DIRECTORY ENTRY</u>			
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Description, Contents, Meaning</u>	
<u>Name</u>			
0	(0) 8	Member name of alias name.	
<u>TTR</u>			
8	(8) 3	TTR of the first block of the named member.	
<u>C</u>			
11	(B) . . . 1	Indicators.	
	1... ..	Name is an alias.	
	.xx. ....	Number of TTR's in the user data field. A maximum of three is allowed.	
	...x xxxx	Length of the user data field in half words.	
<u>User Data</u>			
12	(C) n	Variable user data as provided as input to the STOW macro instruction. Up to three pointers to locations within the member may be provided. The pointers must be four bytes long and must appear at the beginning of the user data field. Their format is as follows:	
		TT - 2 bytes - Relative track from the beginning of the data set.	
		R - 1 byte - Block number on that track.	
		N - 1 byte - If the TTR points to a note list, this byte indicates the number of entries in the note list. If the TTR does not point to a note list, this byte contains zeros.	
The 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 30B 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

**All Load Modules**

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

**Load Modules - Scatter**

	33 (21) Scatter List Size	35 (23) Translation Table Size
Continued	37 (25) ID of ESD for First Text Block Control Section	39 (27) ID of ESD
Continued	40 (28)	

**Load Modules With Alias Names and RENT or REUS Attributes**

	33 (21) Entry Point for Member Name
36 (24)	Member Name of a Load Module
	43 (2B)

**Load Modules - Scatter, With Alias Names and RENT or REUS Attributes**

	40 (28) Entry Point for Member Name
44 (2C)	Member Name of a Load Module
	51 (33)

Figure 30B. PDS Directory Entry -- Format 1



PDS DIRECTORY ENTRY

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

PDS DIRECTORY ENTRY

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 -- 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 -- 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 30C 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 (18) Length of First Text Block
Continued	29 (1D) Entry-Point Address	
32 (20) First Text Block Origin		34 (22)

**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 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 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 30C. PDS Directory Entry -- Format 2

PDS DIRECTORY ENTRY

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

PDS DIRECTORY ENTRY

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 -- 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 -- 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 --

IRB, LRB, LPRB, PRB, SIRB, SVRB:  
Figure 31A and following text

- MVT Configuration --

IRB: Figure 31B and following text

PRB: Figure 31C and following text

SIRB: Figure 31D and following text

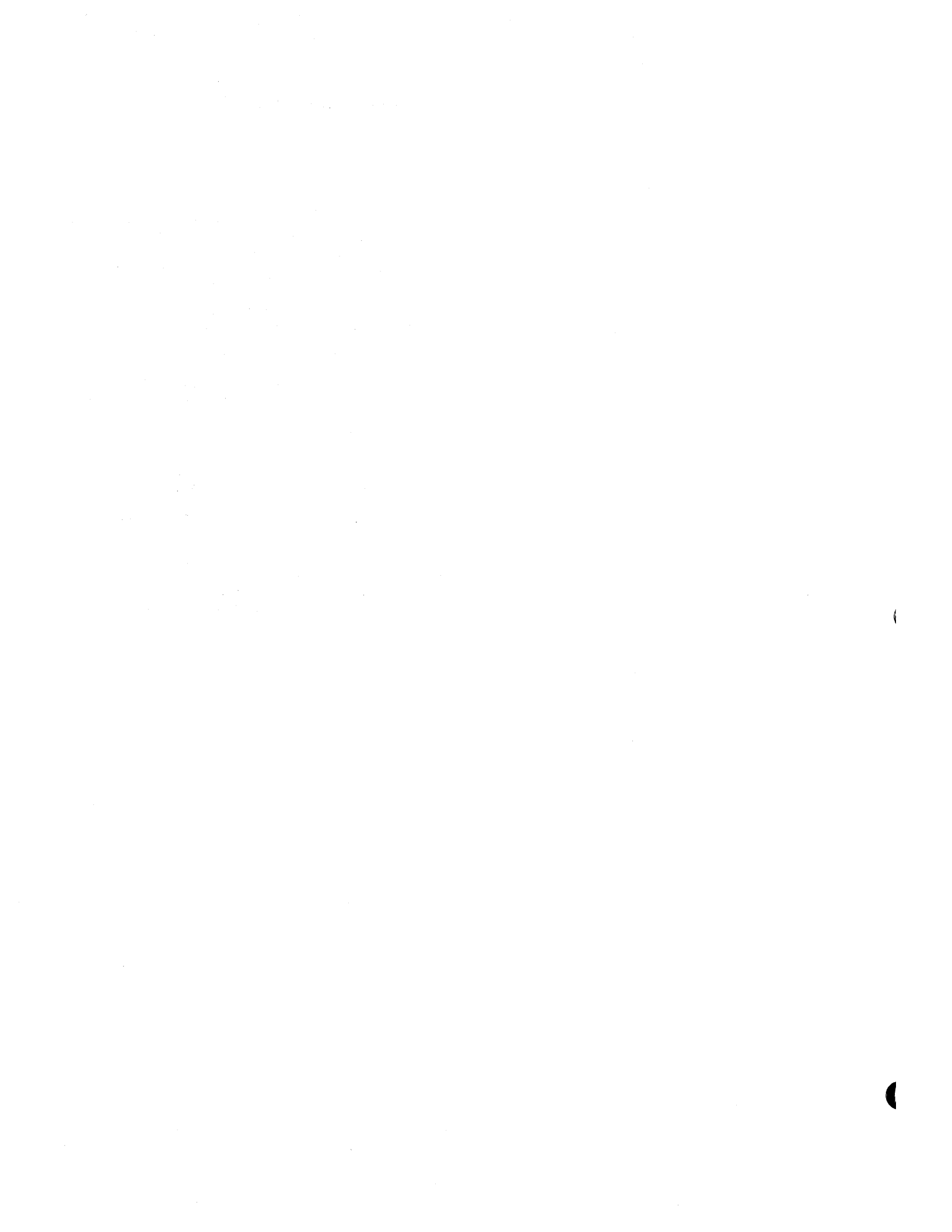
SVRB --

Resident SVC Routines:

Figure 31E and following text

Transient SVC Routines:

Figure 31F and following text



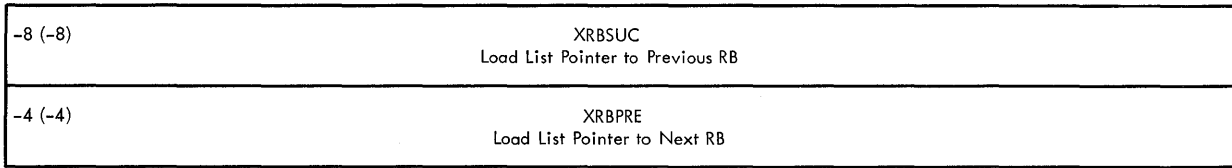


## Request Block—PCP, MFT Configurations

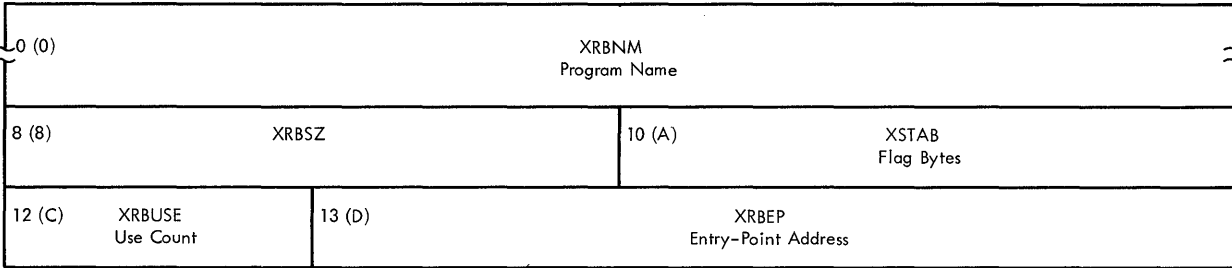
Request blocks used by the PCP and MFT configurations of System/360 Operating System are described and illustrated here. Figure 31A shows the different formats; field descriptions follow the illustration.

REQUEST BLOCK -- PCP, MFT

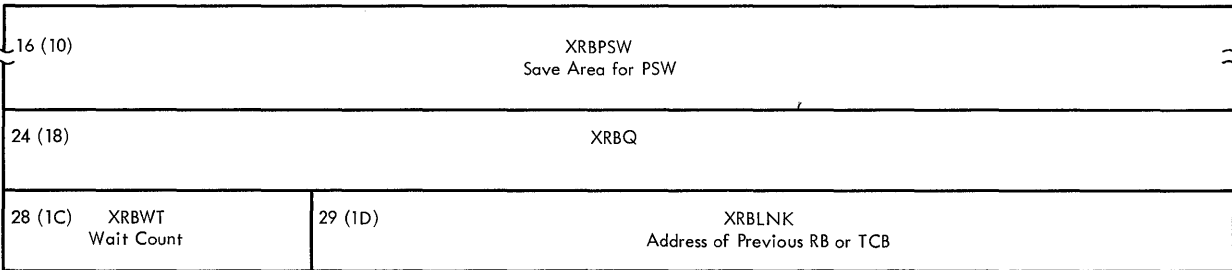
**LPRB, LRB**



**IRB, PRB, SIRB, SVRB**

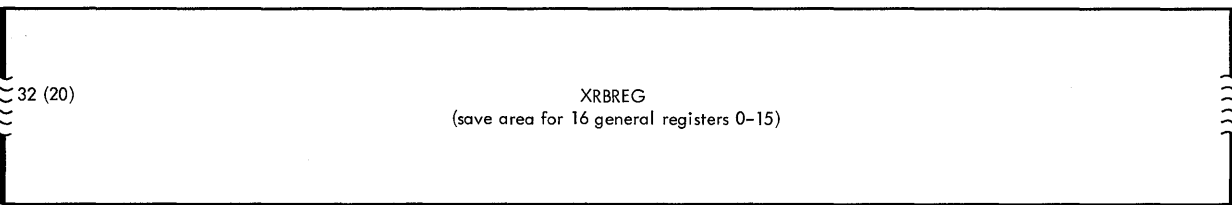


**End of LRB**

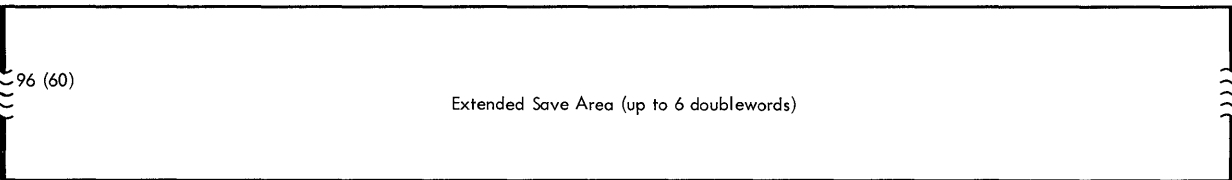


**End of LPRB**

**End of PRB**



**End of IRB, SIRB**



**End of SVRB**

**Figure 31A. Request Blocks -- PCP, MFT**

REQUEST BLOCK -- PCP, MFT

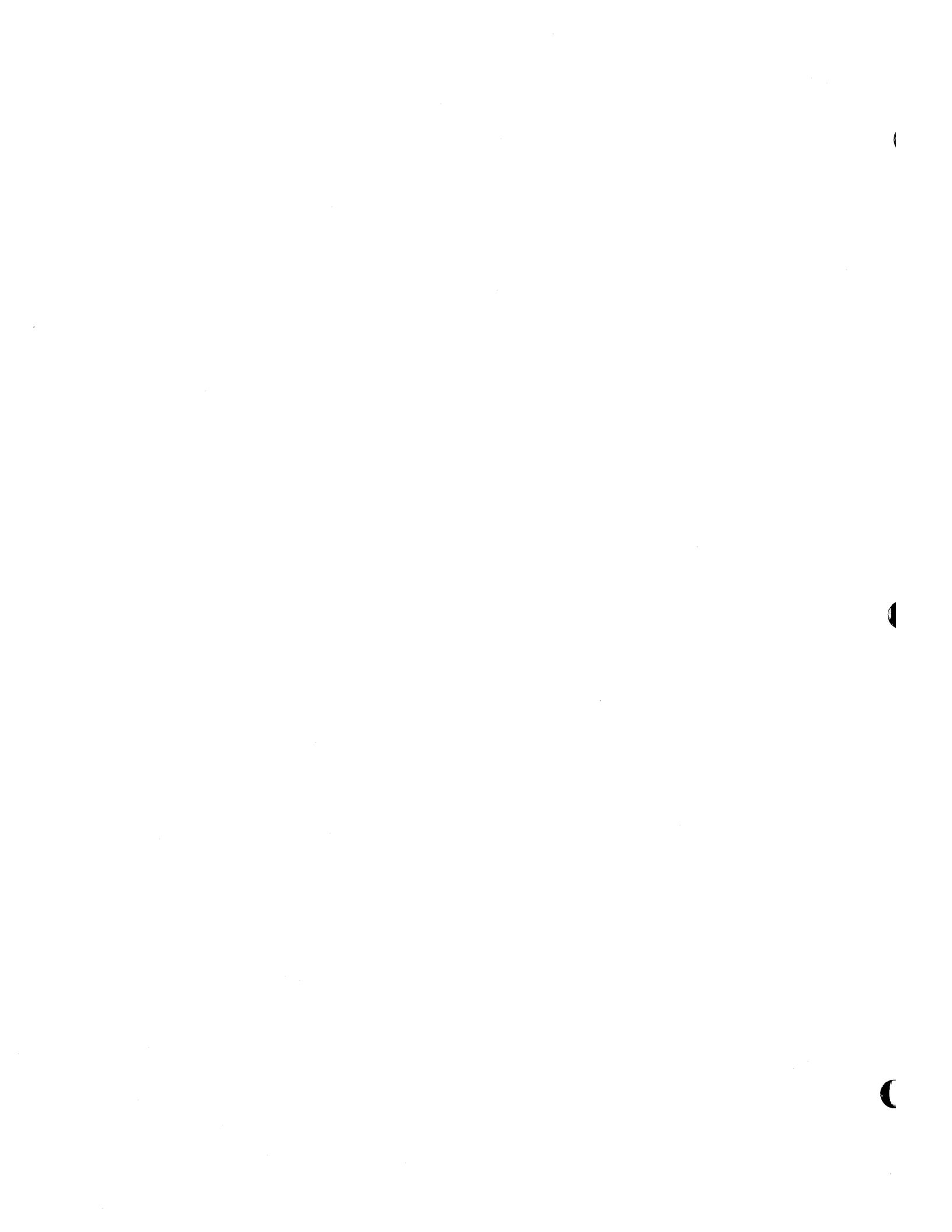
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
-8 (-8)	4	XRBSUC	Load list pointer: If this RB is for the first program loaded, this field is zero. Otherwise, this field contains the address of the XRBSUC field in the RB for the program loaded just prior to the program represented by this RB.
-4 (-4)	4	XRBPPE	Load list pointer: If this RB is for the most recently loaded program, this field contains the address of the TCBLLS field in the TCB. Otherwise, this field contains the address of the XRBSUC field in the RB for the program loaded immediately after the program represented by this RB.
0 (0)	8	XRBNM	Contents of this field depend on the use of this request block.  The use of this request block is shown by bits 0-3 of byte 1 of the XSTAB field at offset +10(dec.), +A(hex.).  <u>IRB</u> For timer, 1st byte contains flags; for all other uses, contains no meaningful information.  <u>LRB</u> Program name.  <u>LPRB</u> Program name.  <u>PRB</u> Program name.  <u>SIRB</u> 8 character name of the error routine currently occupying the 400 byte I/O supervisor transient area.  <u>SVRB</u> Type 2 SVC: No meaningful information. Type 3 or 4 SVC: Bytes 0 - 3: TTRN address , on the SVC library, of the load module. N, the concatenation number, is 0. Bytes 4 - 7: Four digit number of the form ysss. y - Number of the current phase of the routine. (First or only phase: y = 0.) sss - SVC number in unpacked decimal (signed) form.
8 (8)	2	XRBSZ	The number of contiguous double words occupied by the RB, the program (if applicable), and associated supervisor work areas.

REQUEST BLOCK -- PCP, MFT

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 the LRB, LPRB, PRB, IRB, SIRB, and SVRB. These bits have the following definition:
		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
		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.
		1101 ....	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. The address of the program extent list is at RB+32.
		.... ...1	Refreshable module.
		Byte 2	
		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.
		.... 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.
12	(C) 1	XRBUSE	Use count (the number of loads via the LOAD macro instruction less the number of deletes via the DELETE macro instruction).

REQUEST BLOCK -- PCP, MFT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
13	(D) . 3	XRBEF	Entry point address.
16	(10) 8	XRBPST	User's old PSW.
24	(18) 4	XRBO	<u>IRB</u> : Address of a 12 byte or 16 byte request element.  <u>LPRB</u> : Address of an LPRB describing an entry identified via the IDENTIFY macro instruction.  <u>PRB</u> : Address of an LPRB describing an entry identified via the IDENTIFY macro instruction.  <u>SIRB</u> : Address of a 12 byte or 16 byte request element.  <u>SVRB</u> : For type 3 and type 4 SVCs this field will contain the size of the program in bytes.
28	(1C) 1	XRBT	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.
32	(20) 64		<u>LRB, LPRB, PRB</u> : Address of the program extent list if the program was hierarchy block loaded. (See also bit 6 of byte 10). <u>IRB, SARB, SVRB</u> : Save area for 16 general registers (0-15).
96	(60) nx8		<u>SVRB</u> : An extended save area, up to 6 doublewords, requested for SVC routine.

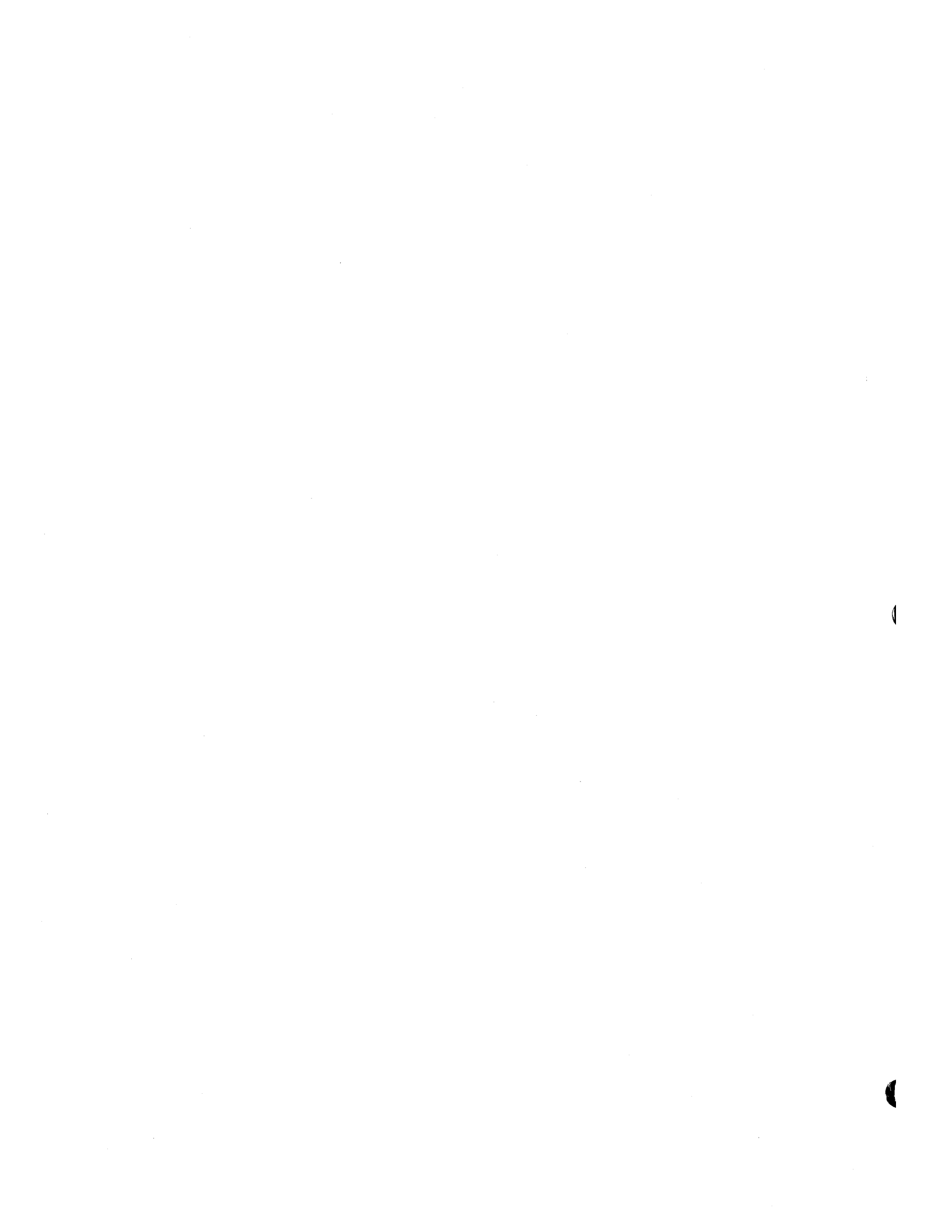


## Request Blocks—MVT Configuration

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 31B shows the format of an IRB used in MVT. Descriptions of the fields follow the illustration.

**INTERRUPTION REQUEST BLOCK -- MVT**

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

**Link Field Segment Alternates**

**3-Byte Link-Field Segment**

24 (14)	RBUSE ATTACH Use Count	25 (15)	RBIQE List Origin for IQE	27 (18)
---------	---------------------------	---------	------------------------------	---------

**2-Byte Link-Field Segment**

24 (14)	Reserved	26 (16)	RBIQE List Origin for IQE	27 (17)
---------	----------	---------	------------------------------	---------

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

(1) These 2 fields are present only if requested

**Figure 31B. Interruption Request Block -- MVT**

INTERRUPTION REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 1	RBTMFLD	Indicators for the timer routines. When there are no timer routines, this field is zero.
		1... ..	Timer element not on queue.
		.1.. ....	Local time-of-day option is used.
		..00 ....	Time interval requested in timer units.
		..01 ....	Time interval requested in binary form.
		..11 ....	Time interval requested in decimal form.
		.... 1...	Interval has expired.
		.... .000	Task request.
		.... .100	Task request with exit specified.
		.... .001	Wait request.
		.... .011	Real request.
		.... .111	Real request with exit specified.
1	(1) . 3	RBPPSAV	Address of the problem program register save area.
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains right-half of user's old PSW; else contains zeros.
8	(8) 1	RBWCSA	Save area containing number of requests waiting at time of termination (wait count save area).
9	(9) . 1	RBSIZE	Size of this request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00.. ....	Program request block (PRB).
		01.. ....	Interrupt request block (IRB).
		10.. ....	System interrupt request block (SIRB).
		11.. ....	Supervisor request block (SVRB).
		..x. ....	(Reserved bits)
		...1 ....	SVRB for transient SVC.
		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 asynchronously executed routine.
16	(10) 8	RBOPSW	User's old PSW.

INTERRUPTION REQUEST BLOCK -- MVT

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

## Program Request Block—MVT

The program request block (PRB) is used by the supervisor for maintaining information concerning a program needed to perform a task. Figure 31C shows the format of a PRB used in MVT. Descriptions of the fields follow the illustration.

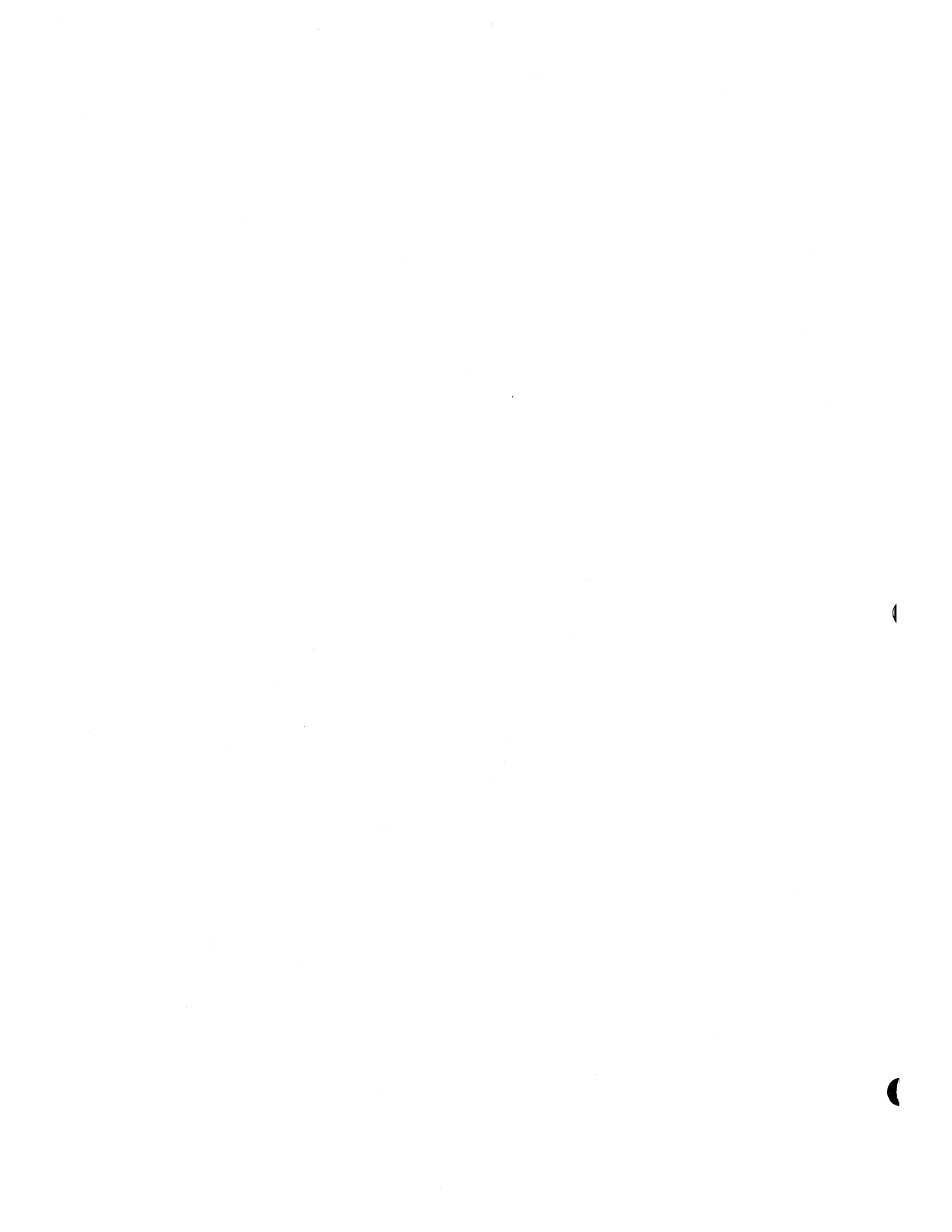
PROGRAM REQUEST BLOCK -- MVT

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

Figure 31C. Program Request Block -- MVT

PROGRAM REQUEST BLOCK MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4		Reserved
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains the right half of the user's old PSW: else contains zeros.
8	(8) 1	RBWCSA	Save area containing number of requests waiting at time of termination (wait-count save-area).
9	(9) . 1	RBSIZE	Size of this request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00.. ....	Program request block (PRB).
		01.. ....	Interruption request block (IRB).
		10.. ....	System interruption request block (SIRB).
		11.. ....	Supervisor request block (SVRB).
		..x. ....	(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 x...	(Reserved bits)
		.... .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 next request block (RB) on RB queue or address of the TCB if this is the first request block.





# 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 31D shows the format of an SIRB used in MVT. Descriptions of the fields follow the illustration.

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

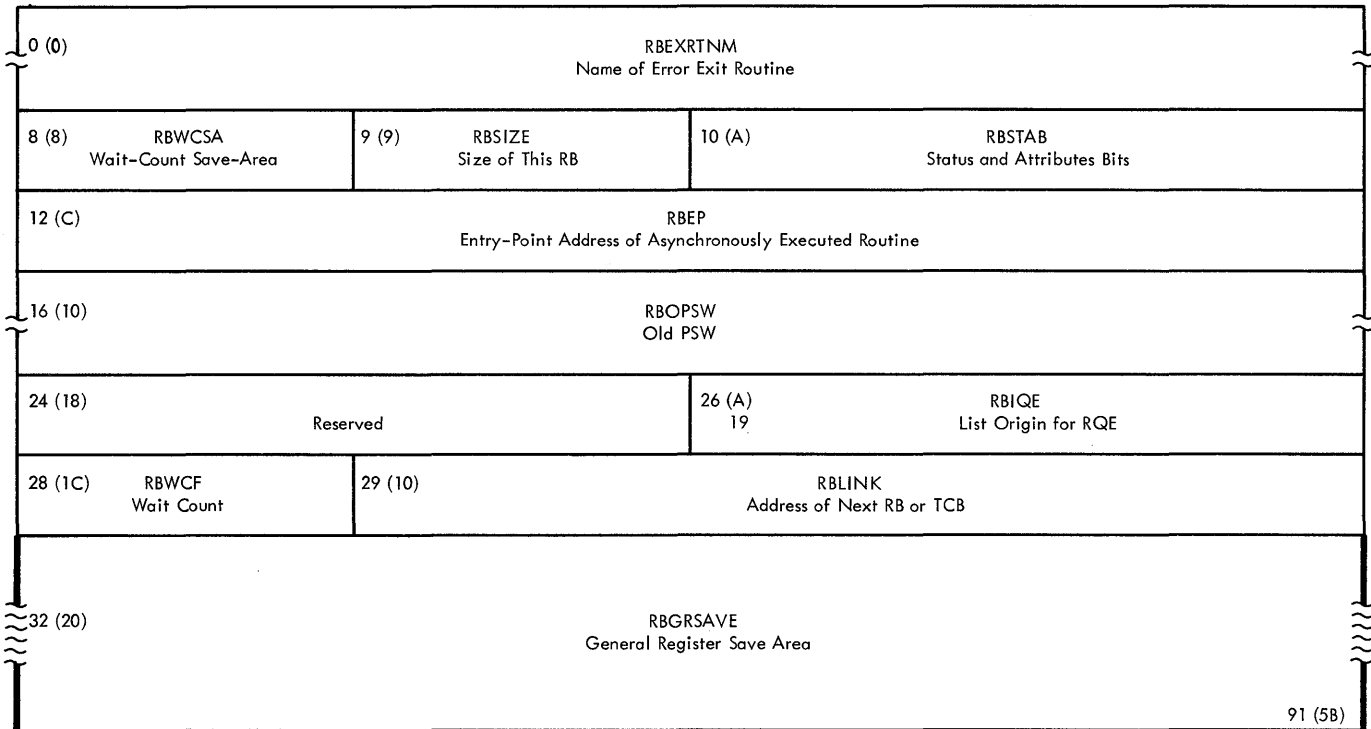
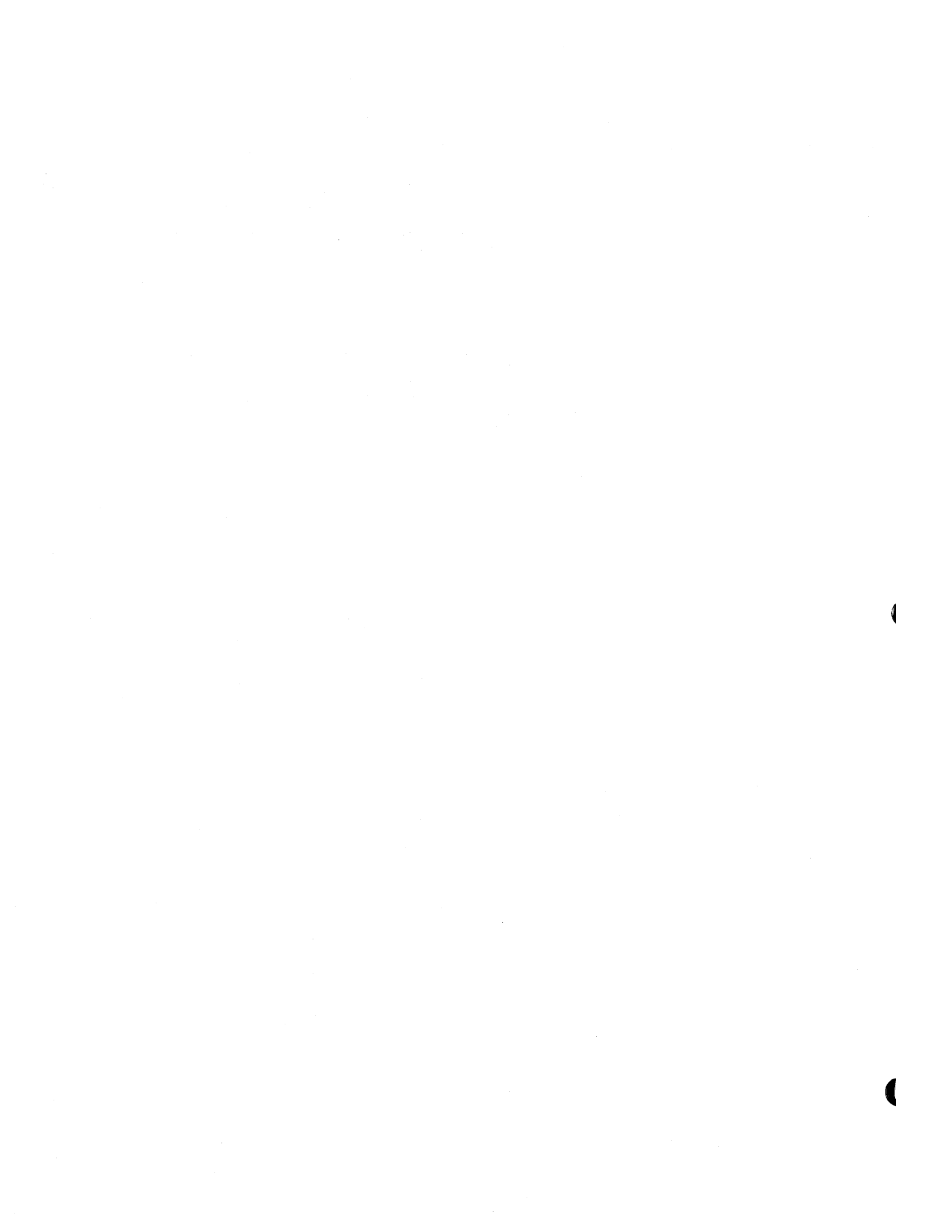


Figure 31D. System Interruption Request Block -- MVT

SYSTEM INTERRUPTION REQUEST BLOCK -- MVT

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 8	RBEXRTNM	One to eight characters of the name of the error exit routine. First four characters are 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.. ....	Interrupt 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 next request block (RB) or address of the TCB when this is the first request block.
32	(20) 64	RBGRSAVE	General register save area used by the supervisor; register sequence 0 to 15.

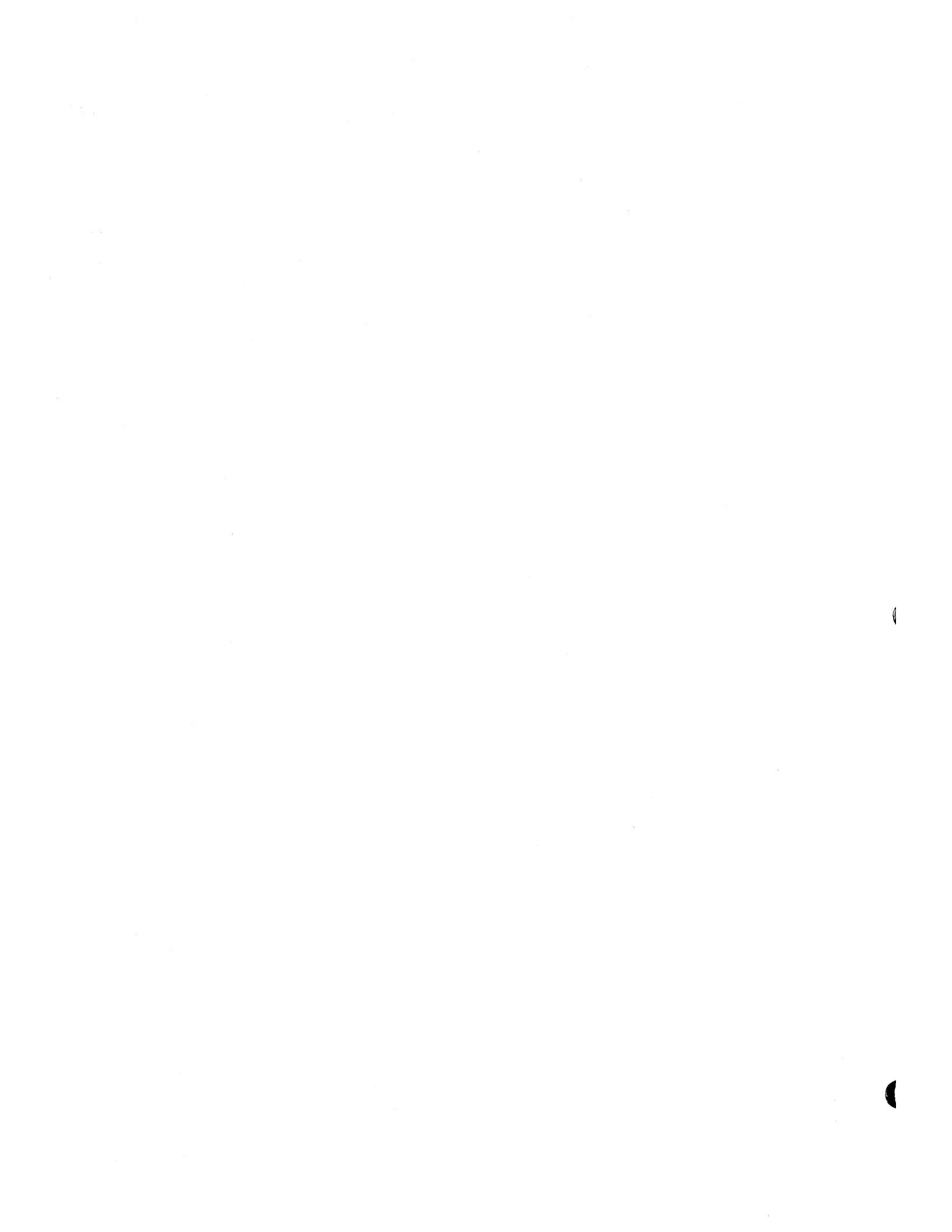


## Supervisor Request Blocks—MVT

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 31E shows its format used in MVT; field descriptions follow the illustration.

SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES

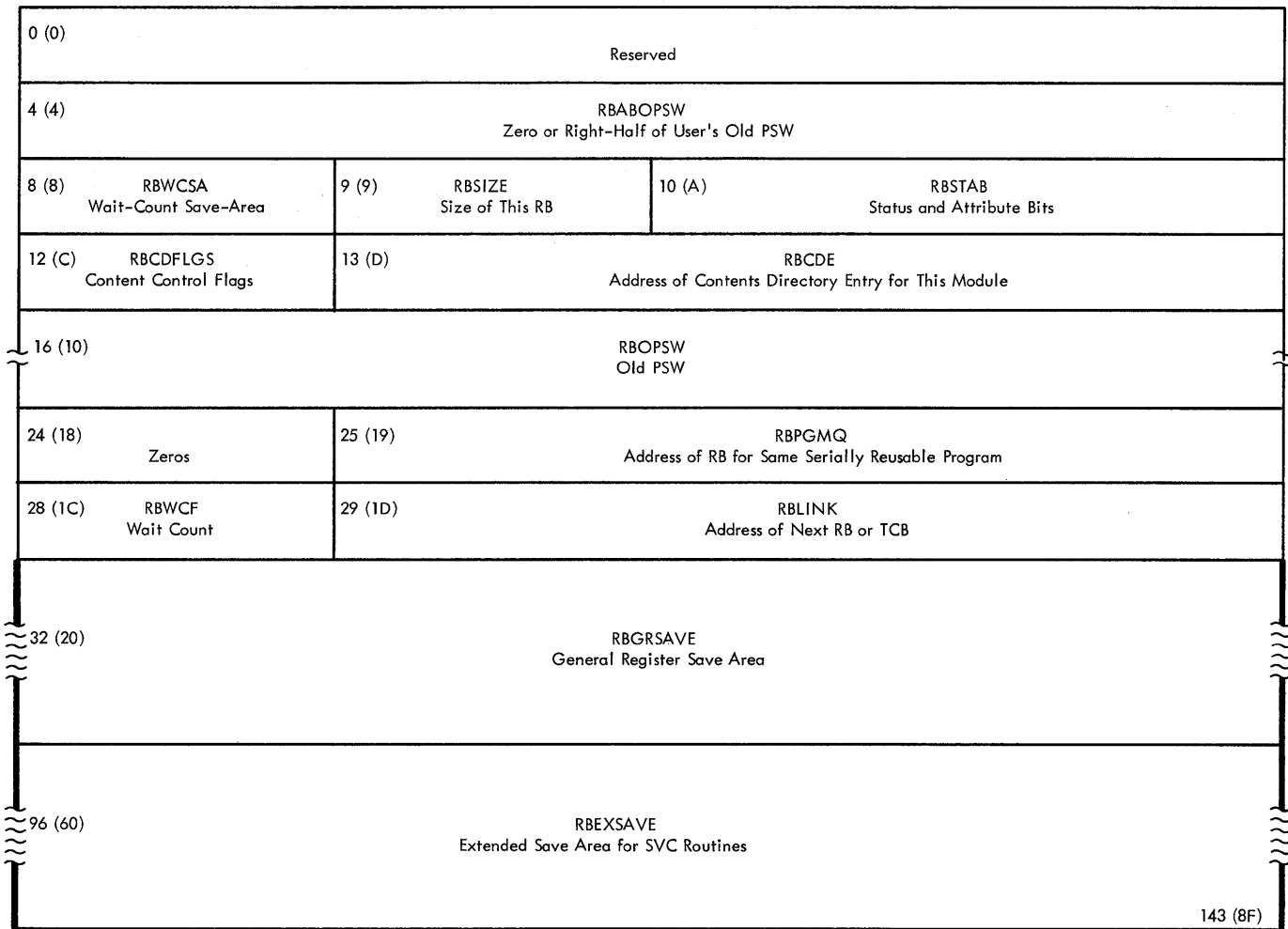
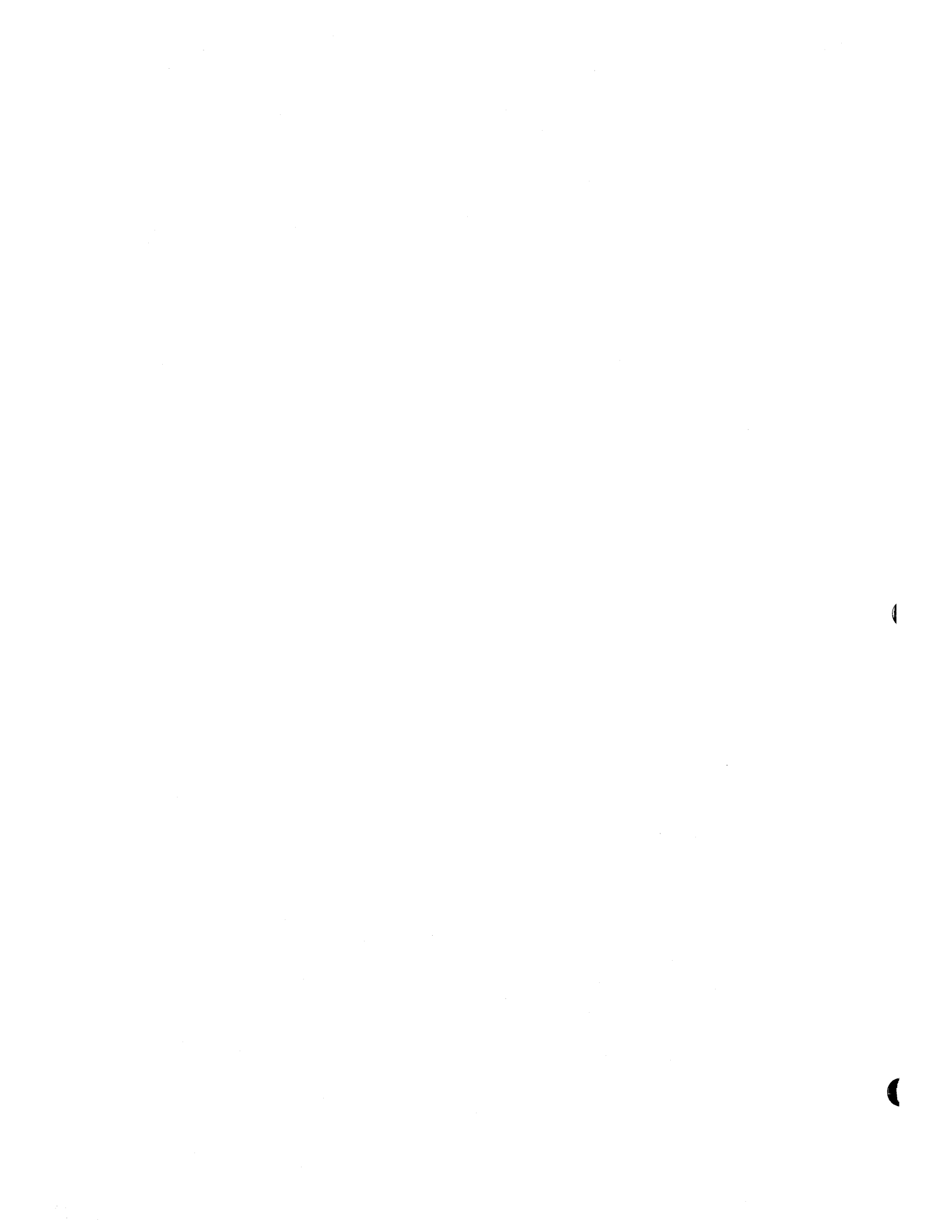


Figure 31E. Supervisor Request Block -- Resident SVC Routines



SUPERVISOR REQUEST BLOCK -- MVT -- RESIDENT SVC ROUTINES

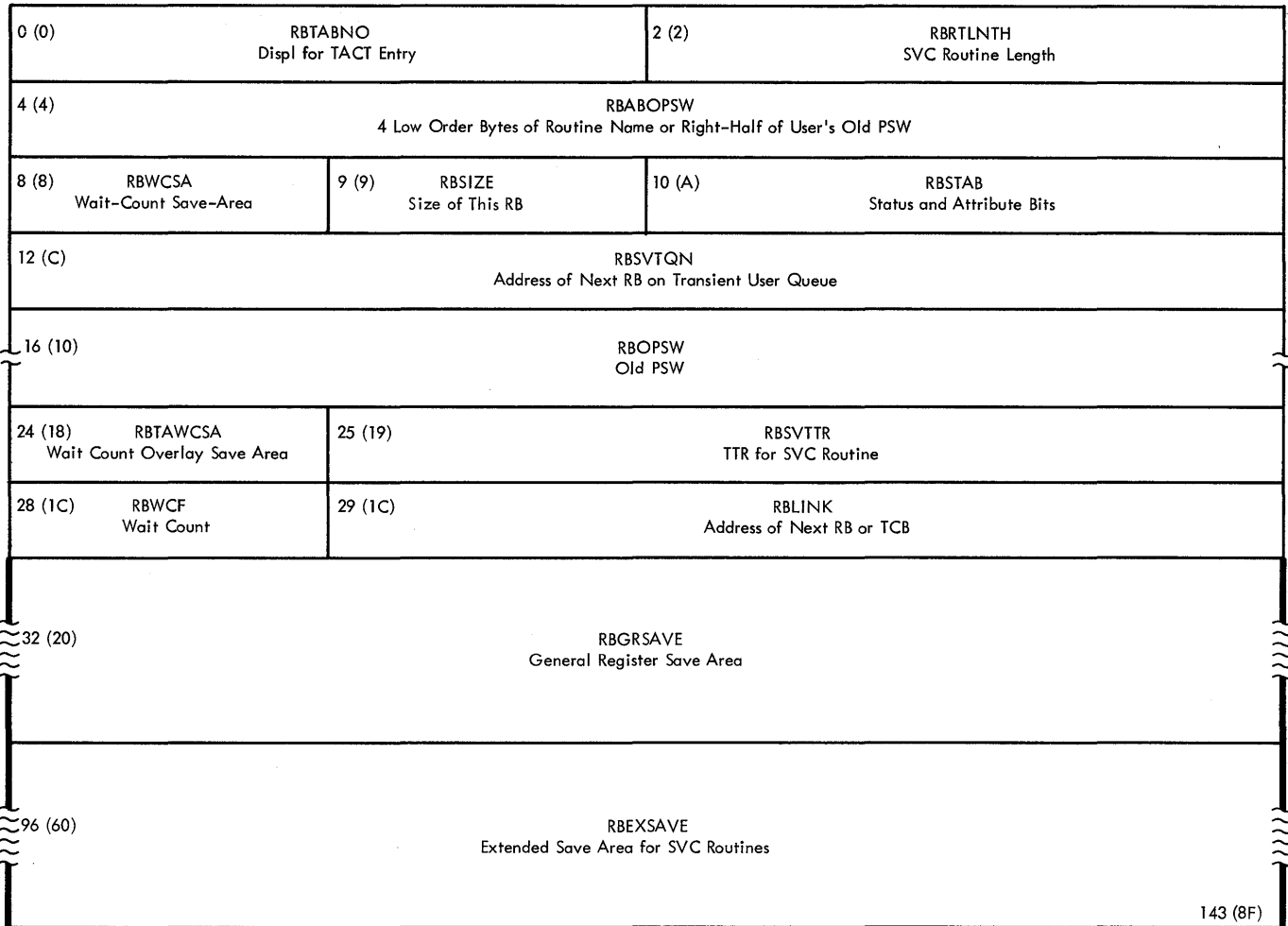
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 4		Reserved
4	(4) 4	RBABOPSW	After execution of the ABTERM routine, contains right-half of user's old PSW; else contains zeros.
8	(8) 1	RBWCSA	Number of requests waiting at time of termination (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).
		..x. x.xx	(Reserved bits)
		.... .1..	A checkpoint may be taken in a user exit from this SVC routine.
		...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 ofr 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 x....	(Reserved bits)
		.... .1..	SYNC macro instruction requested.
		.... ..1.	XCTL macro instruction requested.
		.... ...1	Load macro instruction requested.
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 next request block, or Address of the TCB, when this is the first request block.
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 31F shows its format used in MVT; field descriptions follow the illustration.

**SUPERVISOR REQUEST BLOCK -- MVT -- TRANSIENT SVC ROUTINES**



**Figure 31F. Supervisor Request Block -- MVT -- Transient SVC Routines**

SUPERVISOR REQUEST BLOCK -- MVT TRANSIENT SVC ROUTINE

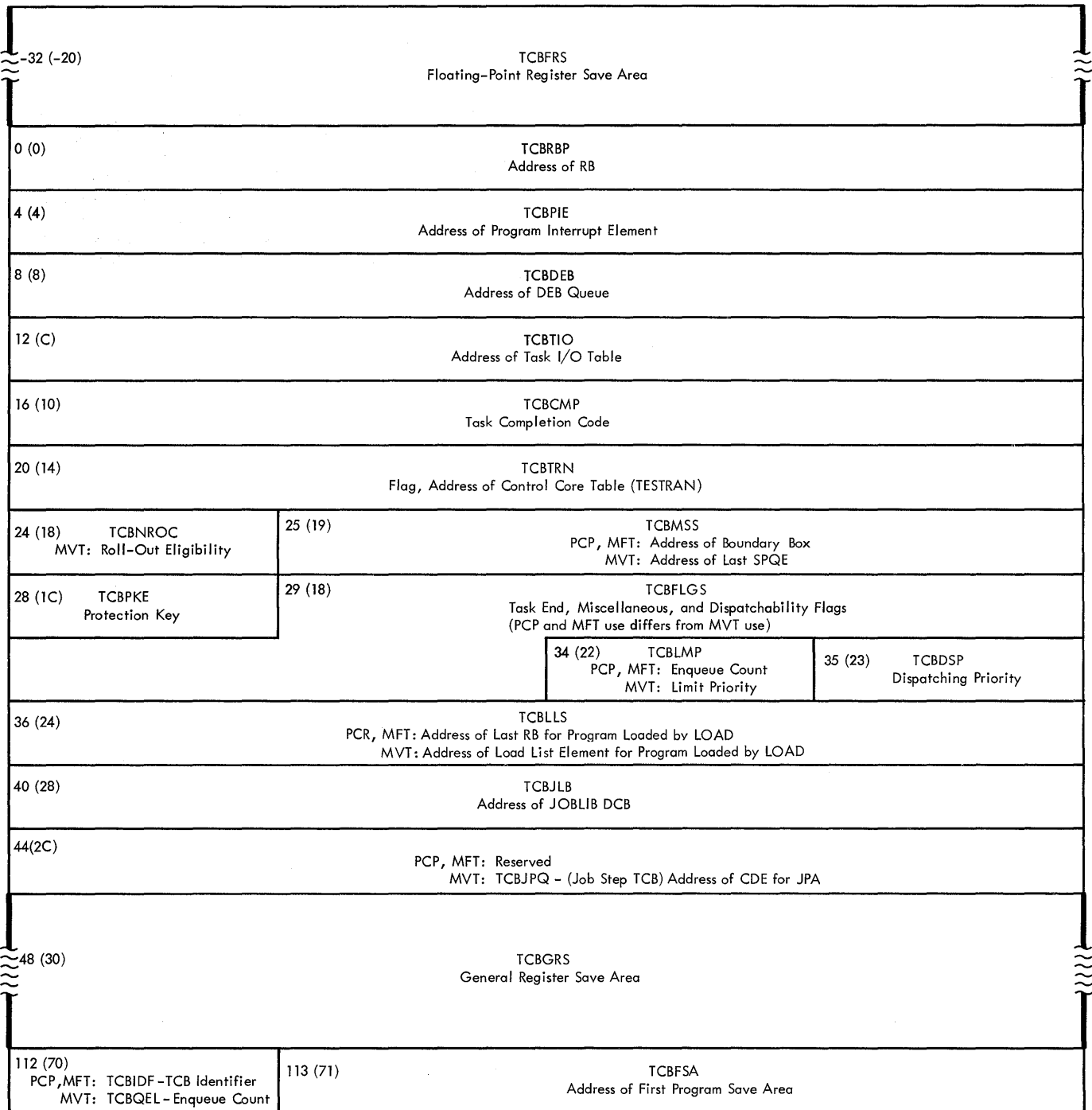
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 2	RBTABNO	Displacement from beginning of transient area control table (TACT) to entry for module represented by this SVRB.
2	(2) . . 2	RBRTLNTH	Length of SVC routine in bytes.
4	(4) 4	RBABOPSW	After execution of transient area handler routine: Four low-order bytes of name of requested routine.  After execution of ABTERM routine: Right-half of old PSW.
8	(8) 1	RBWCSA	Number of requests waiting at time of termination (wait-count save-area).
9	(0) . 1	RBSIZE	Size of request block in doublewords.
10	(A) . . 2	RBSTAB	Status and attribute bits.
		Byte 1	
		00.. .....	Program request block (PRB).
		01.. .....	Interruption request block (IRB).
		10.. .....	System interruption request block (SIRB).
		11.. .....	Supervisor request block (SVRB).
		..x. x.xx	(Reserved bits)
		...1 .....	SVRB for transient SVC routines.
		.... .1..	A checkpoint may be taken in a user exit from this SVC routine.
		Byte 2	
		1... ...	RBLINK field points to TCB.
		.1.. .....	Program is active (applies to IRB or SIRB).
		..xx .....	(Reserved bits)
		.... 00..	Request queue element is not to be returned.
		.... 01..	IRB has queue elements for asynchronously executed routines that are RQEs.
		.... 11..	IRB has queue elements for asynchronously executed routines that are IQEs.
		.... ..1.	Request block storage can be freed at exit.
		.... ...0	Wait for a single event or all of a number of events.
		.... ...1	Wait for a number of events that is less than the total number of events waiting.
12	(C) 4	RBSVTQN	Address of next request block on queue of transient routines.
16	(10) 8	RBOPSW	User's old PSW.
24	(18) 7	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 next request block, or Address of the TCB, when this is the first request block.
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.



## 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. Figure 32 shows the format of the TCB. Descriptions of the fields follow the illustration.

**TASK CONTROL BLOCK**



•Figure 32. Task Control Block (Part 1 of 2)



**TASK CONTROL BLOCK**

116 (74)	TCBTCB Address of Next Lower Priority TCB
120 (78)	TCBTME Address of Timer Element
124 (7C)	PCP: Reserved MFT: TCBPIB, Partition Type Address of PIB MVT: TCBJSTCB - Address of 1st TCB for Job Step
128 (80)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBNTC - Address of Previous TCB on Subtask Queue
132 (84)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBOTC - Address of Originating TCB
136 (88)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBLTC - Address of Last TCB on Subtask Queue
140 (8C)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBIQE - Address of IQE for ETXR Routine
144 (90)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBECEB - Address of ECB Posted on Task Completion
148 (94)	PCP, MFT, MVT: Reserved <sup>(a)</sup>
152 (98)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBPQE - Address of Region Dummy PQE - 8
156 (9C)	PCP, MFT: Reserved <sup>(a)</sup> MVT: TCBAQE - Address of Allocated Queue Element
160 (A0)	TCBNSTAE STAE Flags Address of Current STAE Control Block
164 (A4)	PCP, MVT: Reserved MFT: TCBTCT - CPU Time
168 (A8)	TCBUSER User Field
	171 (AB)

(a) - Bytes 128-159 are overlayed by other blocks in PCP and MFT.

• **Figure 32. Task Control Block (Part 2 of 2)**

TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
-32 (-20)	32	TCBFRS		Floating point register save area.
0 (0)	4	TCBRBP		Address of the RB for executing program.
4 (4)	4	TCBPIE		Address of the Program Interrupt Element (PIE).
8 (8)	4	TCBDEB		Address of the queue of DEBs.
12 (C)	4	TCBTIO		Address of the Task I/O Table (TIOT).
16 (10)	4	TCBCMP		Task completion code.
20 (14)		TCBTRN		A byte used for flags as described:
20 (14)	1	...x xxxx .1.. .... ..1. ....		(Reserved Bits) Suppress taking checkpoints for this step. Job step TCB-MFT, MVT: This is a graphics foreground job or the graphic job processor.
		1... ....		Both TESTRAN and decimal simulator programs being used on a Mod 91 machine.
21 (15)	. 3			TESTRAN: Address of control core table.
24 (18)	1	TCBNROC		MVT 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		<u>PCP, MFT:</u> Address of the boundary box.
				<u>MVT:</u> 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. Storage protection key Must be zeros. Must be zeros.
		xxxx .... .... 0000		
29 (1D)	. 5	TCBFLGS		Flag byte fields.
				The use of this field in PCP and MFT differs from its use in MVT.
				<u>PCP, MFT Use:</u>
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...		MFT: 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.

TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Diq.</u>	<u>Field Description, Contents, Meaning</u>
		TCBFLGS (Continued)		
				<u>PCP, MFT Use (Continued):</u>
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			MFT: This task is a member of a time-sliced group.
31 (1F)	Byte 3			
	x..x ...x			(Reserved bits)
	.1.. .....			MFT: Reserved.
	..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)	Bytes 4-5			Reserved
				<u>MVT Use:</u>
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 3 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.

TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
		TCBFLGS (Continued)		
				<u>MVT Use (Continued):</u>
30	(1E)	Byte 2		Operands of ABEND macro instruction have been saved in TBCMP field.
		1... ..		Initiator TCB:
		.1.. ..		Second job step interval has expired.
		..1. ....		Job Step TCB:
		....1 ....		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		All PSWs for this task in supervisor state.
		1... ..		Job Step TCB:
		.1.. ..		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.
		.... .1..		(See also bit 7.)
		.... ..1.		Job step TCB:
		.... ...1x		No abnormal termination dumps can be provided within this job step.
		...x x.x1		CLOSE has been issued during ABEND processing. (See also bit 7.)
				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.. ..		Machine check occurs. All tasks except current task placed in wait state.
		..1. ....		Supply of I/O request queue elements exhausted.
		...x xx..		(Reserved bits)
		.... ..1.		M65 Multiprocessing:
		.... ...1		Task has been set non-dispatchable by one CPU to prevent any CPU from working on it.
				ABEND routine was entered by this task while DCB for SYSABEND was being opened for another task.
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.
		.... ...x		Reserved

TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
34	(22) . . 1	TCBLMP		<u>PCP, MFT:</u> Number of resources for which this task is enqueued.  <u>MVT:</u> Limit priority.
30	(23) . . . 1	TCBDSP		Dispatching priority for this task.
36	(24) 4	TCBLLS		<u>PCP, MFT:</u> Address of the most recently added RB on the list of programs loaded via the LOAD macro instruction.  <u>MVT:</u> Address of load list element (LLE) for program loaded via the LOAD macro instruction.
40	(28) 4	TCBJLB		Address of a JOBLIB DCB.
44	(2C) 4			<u>PCP, MFT:</u> Reserved
44	(2C) 4	TCBJPQ		<u>MVT:</u> Job step TCB:
44	(2C)	Byte 1 1... .. .xxx xxxx		Purge flag. (Reserved bits)
45	(2D)	Bytes 2-4		Address of last entry in contents directory for job pack area (JPA) control queue.
44	(2C) 4			Other TCBS: Zero.
48	(30) 64	TCBGRS		General register save area.
112	(70) 1	TCBIDF		(One of these:) <u>PCP, MFT:</u> TCB identifier field.
		TCBQEL		<u>MVT:</u> 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			PCP: Reserved

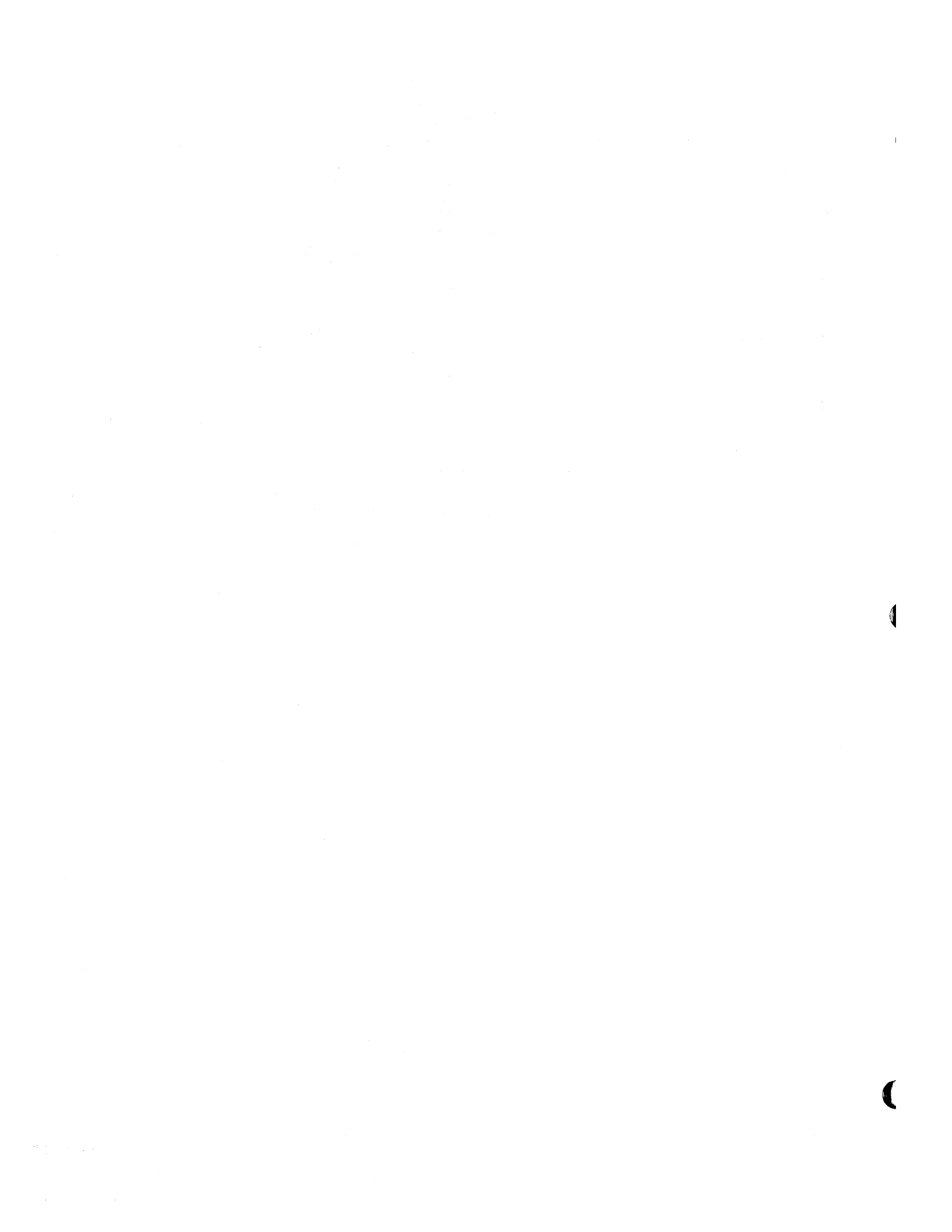
TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
				<u>MFT:</u>
124	(7C)	TCBPIB		A field used for two items of information.  Partition type.
124	(7C) 1		00.. .... 01.. .... 10.. .... 11.. .... ..1. .... ..0. .... ...x xxxx	System task partition. Reader partition. Writer partition. Processing program partition. Large partition. Small partition. (Reserved bits)
125	(7D) . 3			Address of the partition information block (PIB).  MVT:
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.  PCP, MFT: Reserved (See Note A)
128	(80) 4	TCBNTC		MVT: Address of the previous TCB on the originating task's subtask queue. The TCB for the last subtask has zeros in this field.  PCP, MFT: Reserved (See Note A)
132	(84) 4	TCBOTC		MVT: Address of the TCB for the originating task.  PCP, MFT: Reserved (See Note A)
136	(88) 4	TCBLTC		MVT: Address of the last TCB on the subtask queue for this task. The TCB for the last subtask has zero in this field.  PCP, MFT: Reserved (See Note A)
140	(8C) 4	TCBIQE		MVT: Address of an interruption queue element (IQE) for scheduling the ETXR routine on the originating task.  PCP, MFT: Reserved (See Note A)
144	(90) 4	TCBECB		MVT: Address of the ECB that will be posted by the supervisor's task termination routines when normal or abnormal termination occurs.  PCP, MFT: Reserved (See Note A)
148	(94) 4	TCBSTAE		Reserved (See Note A)  PCP, MFT: Reserved (See Note A)

TASK CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
152	(98) 4	TCBPQE		MFT: Address of the region dummy partition queue element minus 8 (DPQE-8).  PCP, MFT: Reserved (See Note A)
156	(9C) 4	TCBAQE		MVT: Address of an allocated queue element (AQE).  PCP, MFT: Reserved (See Note A)
160	(A0) 1 . 3	TCBNSTAE		Flags internal to STAE routine. Address of the current STAE control block.
164	(A4) 4	TCBTCT		PCP, MVT: Reserved. MFT: CPU time used by the step, in 26 micro-second time units.
168	(A8) 4	TCBUSER		A field available to the user.

Note A: Bytes 128-159 are overlaid by other system control blocks in PCP and MFT to conserve main storage space.

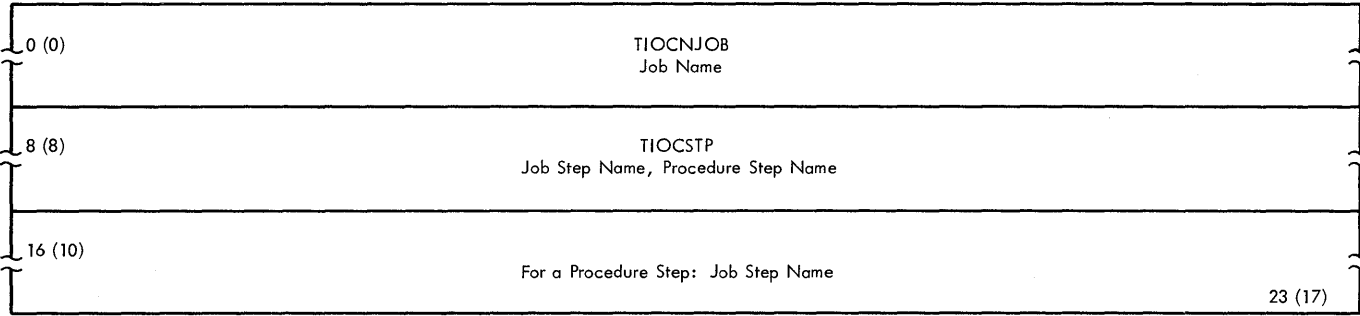




## Task Input/Output Table

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 33 shows the format of a TIOT. Descriptions of the fields follow the illustration.

TASK INPUT/OUTPUT TABLE



**DD Entry**

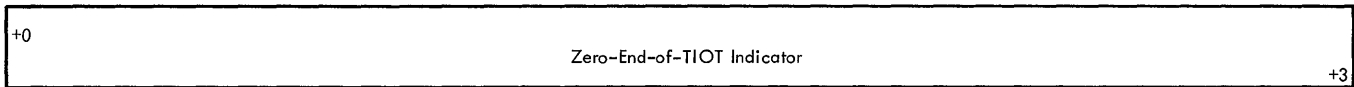
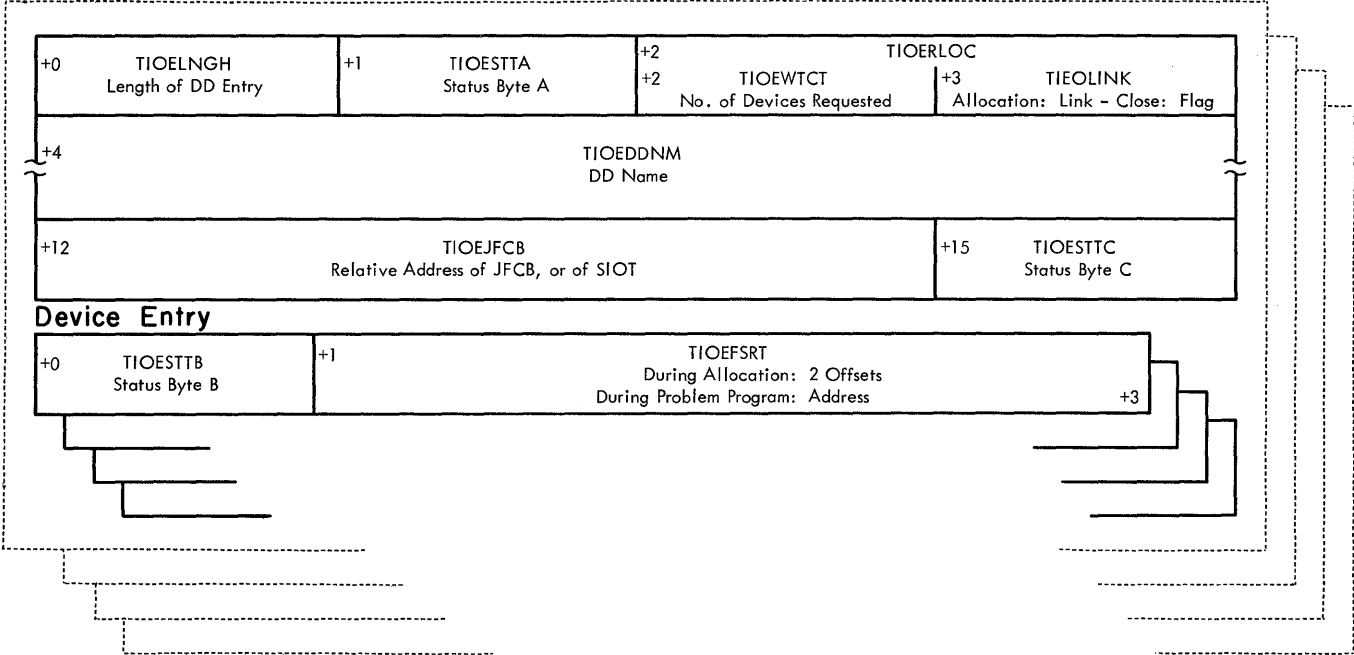


Figure 33. Task Input/Output Table

TASK INPUT/OUTPUT TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 8	TIOCNJOB	Job name.
8	(8)	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	TIOESTA	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 .... JOB LIB indicator. .... 1... DADSM allocation necessary. .... ..1. Keep, catalog, uncatalog. .... ...1 Data set to be deleted.
		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)

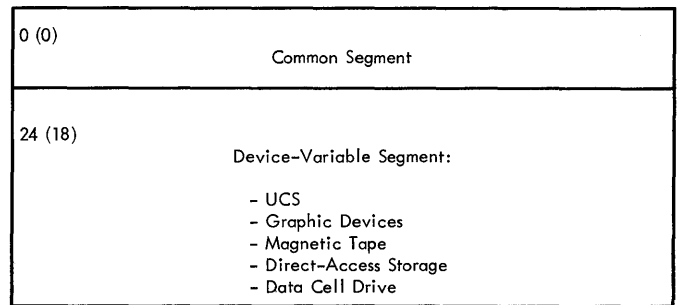
TASK INPUT/OUTPUT TABLE

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DD Entry (Continued)</u>			
+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... ..	Data set to be passed.
<u>DEVICE ENTRIES</u>			
		<u>During allocation:</u>	1 device entry for each device required, or for each public device eligible.
		<u>During problem program:</u>	1 device entry for each allocated device.
+0	1	TIOESTTB	Status byte B -
		1... ..	During allocation and during problem program: Data set is on device.
		.1... ..	Data set will use device.
		..1... ..	Device violates separation.
		...1... ..	Volume serial present.
		.... 1... ..	Setup message required.
		.... .x... ..	Disposition:
		.... .1... ..	Retain unloaded volume if unload required.
		.... .0... ..	Delete unloaded volume if unload required.
		.... ..1... ..	Unload required.
		.... ....1... ..	Verification required.
+1	. 3	TIOEFSRT	Bits 0 - 11:
		<u>During allocation</u>	Offset, in the UCB look-up table, to an address for a device required or eligible for this data set. For other than a 2321, the UCB look-up table has addresses of UCBs. For a 2321 data cell drive, its addresses are those of the descriptions in the UCB of cells in bins.
			Bits 12 - 23:
			Offset, in the step volume table (VOLT), to the volume serial number for the volume required or eligible for this data set.
		<u>During problem program:</u>	Devices other than 2321: Address of the UCB.
			2321 data cell drive: Address of the description in the UCB of the cell in the bin. (The description of the cell in bin 0 begins at UCB + 56.)
<u>END-OF-TIOT INDICATOR</u>			
	4		Binary Zeros.

# Unit Control Block

There is a unit control block (UCB) for each device attached to the system. It describes the characteristics of the device to the I/O supervisor and is used by the job scheduler during allocation of the device. Figure 34 shows the format of the UCB. Descriptions of the fields follow the illustrations. The field descriptions of the UCB are followed by a diagram and detailed descriptions of the UCBTYP field of the UCB.

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.



UNIT CONTROL BLOCK

**M65MP Prefix**

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

**Common Segment**

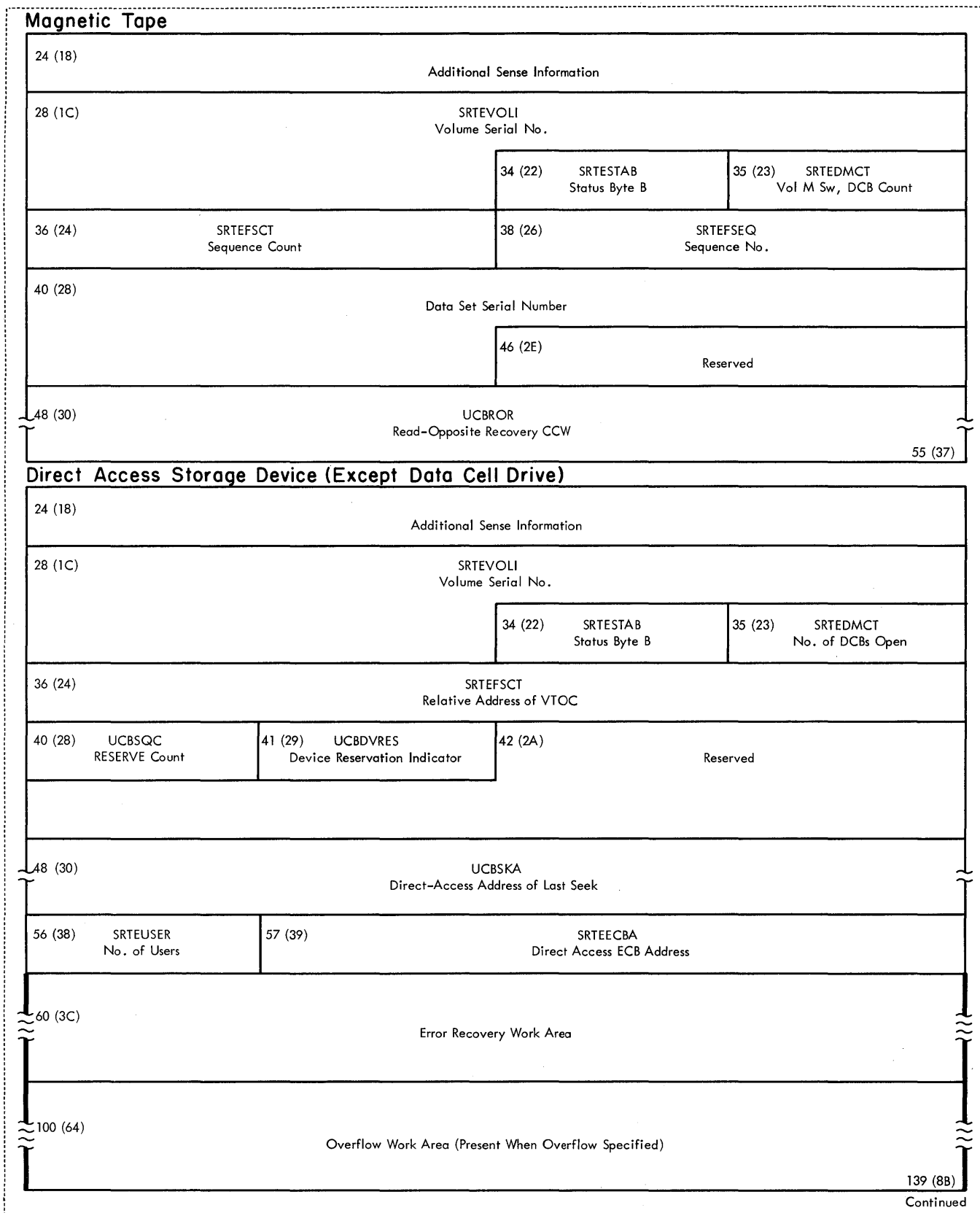
0 (0)	SRTEJBNR Internal Job No.	1 (1)	SRTECHAN Allocation Channel Mask	2 (2)	UCBID Identifier	3 (3)	SRTESTAT Status Byte A
4 (4)	UCBCHA Channel Address	5 (5)	UCBUA Unit Address	6 (6)	UCBFL1 Flag Byte 1	7 (7)	UCBDTI Index to Device Table
8 (8)	UCBETI Error Routine Key	9 (9)	UCBSTI Statistics Table Index	10 (A)	UCBLCI Channel 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)	UCBUSID UCS Image Name							
28 (1C)	UCBUSOP UCS Image Format	29 (1D)	Reserved					31 (1F)
<b>Graphic Device</b>								
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 34. Unit Control Block (Part 1 of 3)

UNIT CONTROL BLOCK



•Figure 34. Unit Control Block (Part 2 of 3)

UNIT CONTROL BLOCK

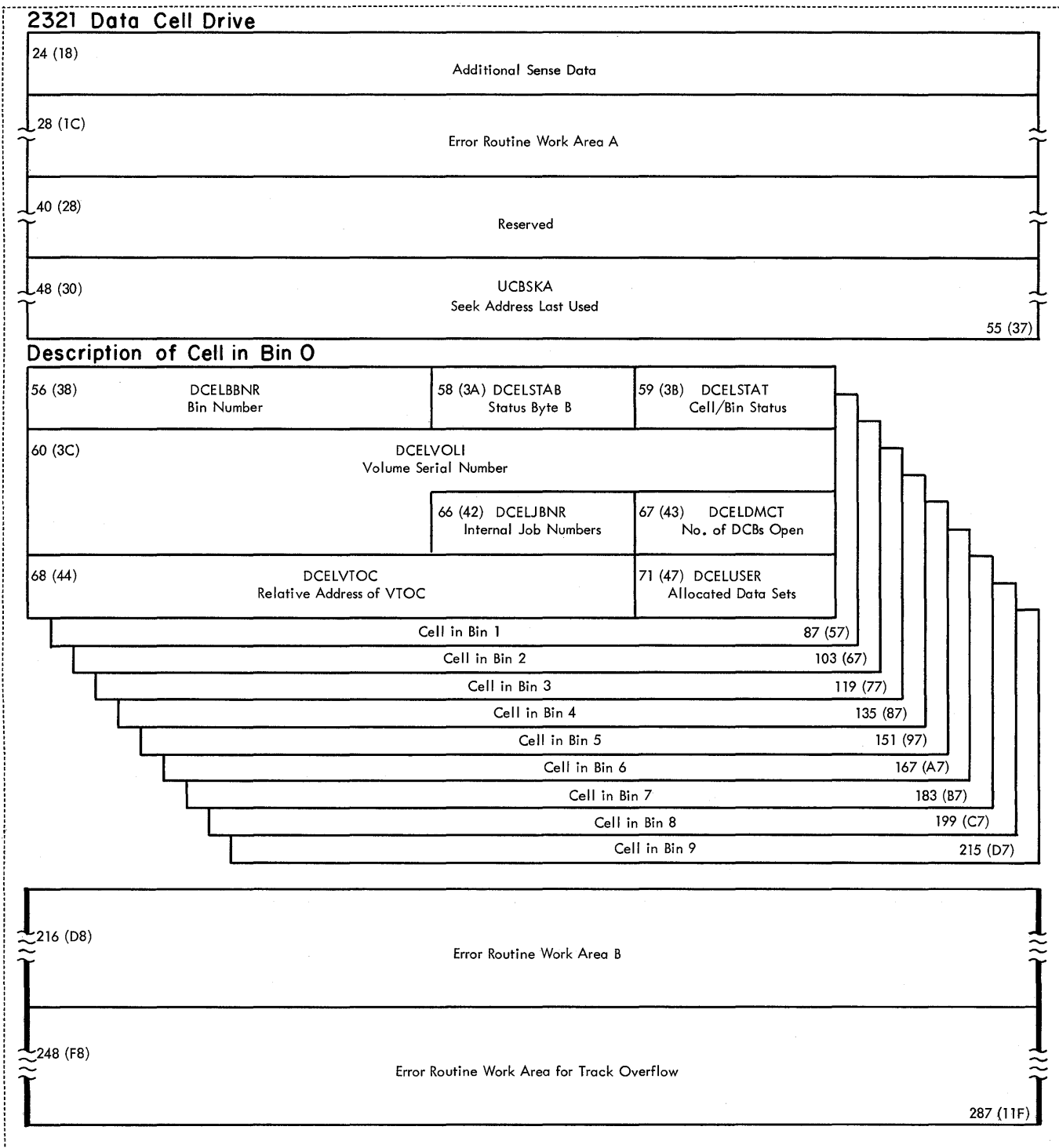


Figure 34. Unit Control Block (Part 3 of 3)



UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>PREFIX SEGMENT</u>			
			Present only if M65MP was specified in the system generation (SYSGEN) process.
-4	(-4)	UCBFL3	Model 65 Multiprocessing flags.
		Byte 1	
		xx.. .x..	(Reserved bits)
		...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.
		.... ..1.	CPU B has no path to this device.
		.... ...1	CPU A has no path to this device.
-3	(-3)	Bytes 2-4	Reserved
<u>SEGMENT COMMON TO ALL DEVICES</u>			
0	(0) 1	SRTEJBNR	Internal job identification.
1	(1) . 1	SRTECHAN	Allocation channel mask.
2	(2) . . 1	UCBID	UCB identification - Hex FF.
3	(3) . . . 1	SRTESTAT	Status byte A.
		x... ....	Device status flag:
		0... ....	Device is offline.
		1... ....	Device is online.
		.1.. ....	Device is to be changed from online to offline status.
		..1. ....	Reserved, that is, 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..	Permanently resident, that is, the mount status of the volume on this device, is permanently resident. (See note A.)
		.... ..1.	One of these:
			This is the systems residence device.
			This is the primary console.
		.... ...1	One of these:
			Standard labels have been verified for this tape volume.
			This is the alternate console.
Note A: If the mount status is neither reserved nor permanently resident, then it is removable.			
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.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>SEGMENT COMMON TO ALL DEVICES (Continued)</u>			
6	(6) . . 1	UCBFL1	Flag byte 1.
		1... ..	Busy - Device status.
		.1.. ..	Not-ready - Device status.
		..x. ....	Post flag.
		..0. ....	No channel program is being executed using this device.
		..1. ....	A channel program using this device has not yet been posted as having completed.
		...1 ....	After a channel end status a separate device end status occurred with an error indication. (IOB-Intercept flag.)
		.... 1...	Busy - Control unit status.
		.... .xx.	Direct access storage devices:
		.... .01.	Stand-alone channel program of I/O supervisor is being or was executed. (Arm seeking.)
		.... .11.	User's channel program is being executed. (Data transfer.)
		.... .01.	Telecommunications devices: 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.
		.... xxxxx	I/O Supervisor path mask. (Used where there are two or more paths to a device):
		.... 1...	Primary path to the device is inoperative.
		.... .1..	Optional path 1 to the device is inoperative.
		.... ..1.	Optional path 2 to the device is inoperative.
		.... ...1	Optional path 3 to the device is inoperative.

UNIT CONTROL BLOCK

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

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

UCS Segment

This segment is present if the system generation process specifies the universal character set (UCS) feature. Else, no device-variable segment is present for unit record devices.

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

GRAPHIC DEVICES

Sense

24	(18) 2		Additional Sense information.
----	--------	--	-------------------------------

Use Count

26	(1A) . . 1		Number of DCBs that are currently open for this device.
----	------------	--	---

GCB

27	(1B) . . . 1		Graphic control byte used for attention handling.
----	--------------	--	---

Task Entry Address

28	(1C) 4		Address of task entry (TE) block.
----	--------	--	-----------------------------------

Restart Address

32	(20) 4		Last start address.
----	--------	--	---------------------

Device Index

36	(24) 1		Device or devices on a control unit to which buffer sections are assigned.
----	--------	--	--

Buffer Table Address

37	(25) . 3		Address of buffer table.
----	----------	--	--------------------------

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>MAGNETIC TAPE DEVICES</u>			
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.
		.x.. .xxx	(Reserved bits)
		..1. ....	Additional volume label processing.
		...1 ....	Private - Volume use status.
		.... 1....	Public - Volume use status.
35	(23) . . . 1	SRTEDMCT	Volume mount switch. This switch shows whether a volume has been mounted and whether the volume label found on the volume has been verified to be the type specified by the DD statement parameter. (DD Stat. Parm.)
			DD Stat. <u>Parm.</u>
		0... ..	Any Scheduler: 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.)
		1... ..	SL Open routine: 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.
		1... ..	NL Open routine: Standard volume label has been found. (A mount message has been issued.)
		0... ..	No standard volume label has been found.
		0... ..	BLP Open routine: Volume label has not been processed.
		.xxx xxxx	Number of DCBs open for this volume.
36	(24) 2	SRTEFSCT	Data set sequence count.
38	(26) . . 2	SRTEFSEQ	Data set sequence number.
40	(28) 6		Data set serial number.
46	(2E) . . 2		Reserved for future use.
48	(30) 8	UCBROR	CCW for opposite-direction recovery.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>DIRECT ACCESS STORAGE DEVICE (EXCEPT DATA CELL DRIVE)</u>			
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	Number of DCBs open for this volume.
36	(24) 4	SRTEFSCT	Relative address of VTOC for this volume, in form TTR0.
40	(28) 1	UCBSQC	Number of RESERVE macro instructions issued.
41	(29) . 1	UCBDVRES	Device reservation indicator. In a system that includes the shared DASD option, this indicator is set equal to the contents of the UCBSQC field after a successful completion of an SIO instruction for a direct access storage device (DASD).
42	(2A) . . 6		Reserved.
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) 40		Error recovery storage and work area.
100	(64) 40		Track overflow work area. If track overflow is installed these additional bytes are always a part of a UCB.
<u>2321 DATA CELL DRIVE</u>			
24	(18) 4		Additional Sense information.
<u>Error Routine Work Area</u>			
28	(19) 12		A work area for the error routine.
40	(28) 8		Reserved
48	(30) 8	UCBSKA	Address for last Seek, in the form MBBCCHHR.
(2321 DATA CELL DRIVE SEGMENT CONTINUES)			

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
<u>2321 DATA CELL DRIVE (Continued)</u>			
<u>Description of cell in bin 0</u>			
56	(38) 2	DCELBBNR	Bin number.
58	(3A) . . 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.
59	(3B) . . . 1	DCELSTAT	Cell/Bin Status.
		1... ..	Bin is online and a normal cell is mounted in it.
		0... ..	Bin is offline or a ballast cell is mounted in it.
		.x.. ..xx	(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.			
60	(3C) . 6	DCEVOLI	Volume serial number.
66	(42) . . 1	DCELJBNR	Internal job number.
67	(43) . . . 1	DCELDMCT	Number of data sets opened for this cell.
68	(44) 3	DCELVTOC	Address of VTOC, in form TTR.
71	(47) . . . 1	DCELUSER	Number of data sets allocated to this cell.

End of Description of cell in bin 0.

UNIT CONTROL BLOCK

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
			<u>2321 DATA CELL DRIVE (Continued)</u>
72	(48) 16		<u>Description of Cell in Bin 1</u> (Same format as description of cell in bin 0).
88	(58) 16		<u>Description of Cell in Bin 2</u> (Same format as description of cell in bin 0).
104	(68) 16		<u>Description of Cell in Bin 3</u> (Same format as description of cell in bin 0).
120	(78) 16		<u>Description of Cell in Bin 4</u> (Same format as description of cell in bin 0).
136	(88) 16		<u>Description of Cell in Bin 5</u> (Same format as description of cell in bin 0).
152	(98) 16		<u>Description of Cell in Bin 6</u> (Same format as description of cell in bin 0).
168	(A8) 16		<u>Description of Cell in Bin 7</u> (Same format as description of cell in bin 0).
184	(B8) 16		<u>Description of Cell in Bin 8</u> (Same format as description of cell in bin 0).
200	(C8) 16		<u>Description of Cell in Bin 9</u> (Same format as description of cell in bin 0).
			<u>Work Areas</u>
			<u>Error Routine Work Area</u>
216	(D8) 32		A work area used by the error routine.
			<u>Error Routine Work Area for Track Overflow</u>
288	(120) 40		A work area for the error routine, present and used only if track overflow has been specified.





## 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 35 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.

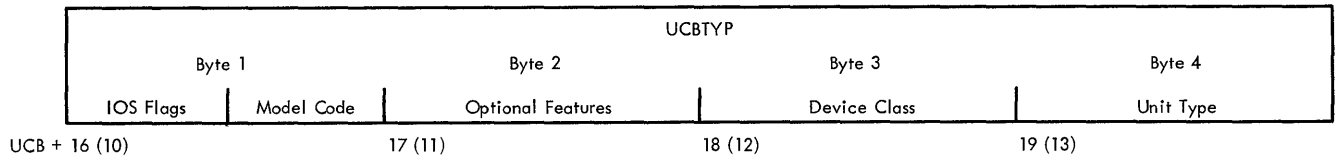
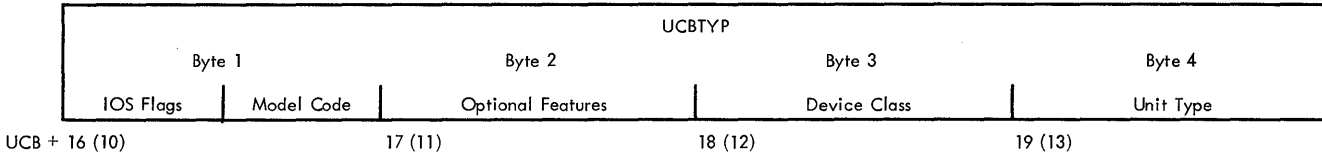


Figure 35. The UCBTYP Field

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
<u>ENTRY</u>				
<u>Devices Other Than Graphic Devices</u>				
16	(10) 1 Byte 1	xxxx .... x... .... .1.. .... ..1. .... ..0. .... ...1 ....		I/O Supervisor flags.  (Reserved bit) Overrunable device. Burst mode. Byte mode. Data chaining.
<u>Graphic Devices</u>				
		xxxx .... 0001 .... 0011 .... .... xxxx	1- 3-	Device class. 1053, 2260 2250 Model code. See following description of UCBTYP field by device class.
17	(11) . 1 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.

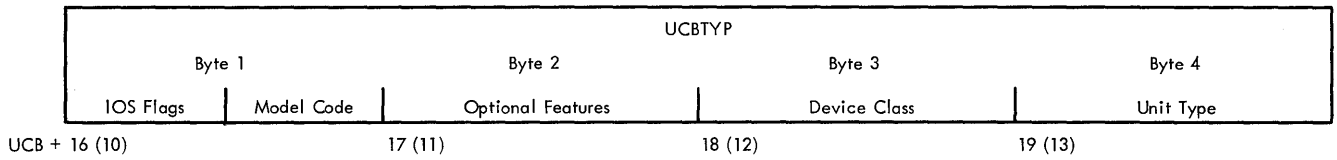
DESCRIPTION OF THE UCBTYP FIELD BY DEVICE CLASS:

UNIT RECORD DEVICE CLASS



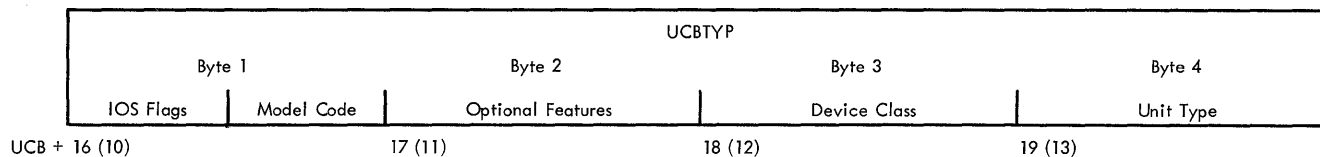
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1 Byte 1	xxxx ....		I/O Supervisor flags.
		x... ....		(Reserved bit)
		.1. ....		Overrunable device.
		..1. ....		Burst mode.
		..0. ....		Byte mode.
		...1 ....		Data chaining.
		.... xxxx		Model Code.
		.... 0000		With 1442, 2520 Read Punch.
		.... 0001	-1	Punch only.
17 (11)	. 1 Byte 2			Optional Features.
		1... ....		Universal character set (UCS).
		.xxx xxx.		(Reserved bits)
		.... ...1		Card image (binary mode).
18 (12)	. . 2 Byte 3			Device Class.
			08	Unit record.
19 (13)	. . . 3 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.
			20	1052 Printer-Keyboards.
			21	2150 Console.

**MAGNETIC TAPE DEVICE CLASS**



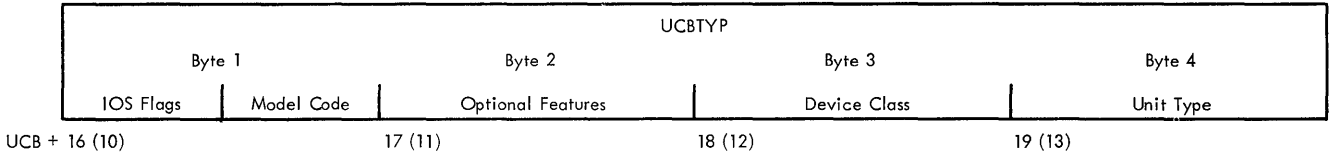
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1	xxxx ....		I/O Supervisor flags.
Byte 1		0... ....		(Reserved bit)
		.1. ....		Overrunable device.
		..1. ....		Burst mode.
		..0. ....		Byte mode.
		...1 ....		Data chaining.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

DIRECT ACCESS STORAGE DEVICE CLASS



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16	(10) 1	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			Optional Features.
	Byte 2	1... .....		Scan feature.
		.1.. .....		Track overflow.
		..1. ....		This device can be shared between two or more CPUs.
		...x xxxxx		(Reserved bits)
18	(12) . . 1			Device class.
	Byte 3		20	Direct access storage device.
19	(13) . . 1			Unit type.
	Byte 4		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

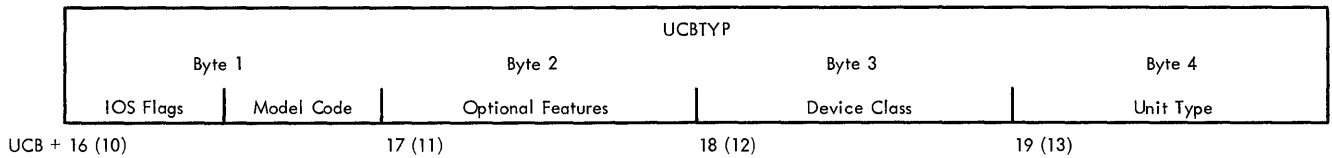


<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16	(10) 1 Byte 1	J-	Device Class 1- 1056,2260 3- 2250 -K Model Code -1 Model 1. -2 Model 2. -3 Model 3.
17	(11) . 1 Byte 2		Optional Features <u>Model</u> <u>Optional Features</u> 0- 1,2,3 No optional features. 1- 1,2,3 Programmed Function Keyboard only. 2- 1,2 Light Pen only. 3- 1,2 Programmed Function 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

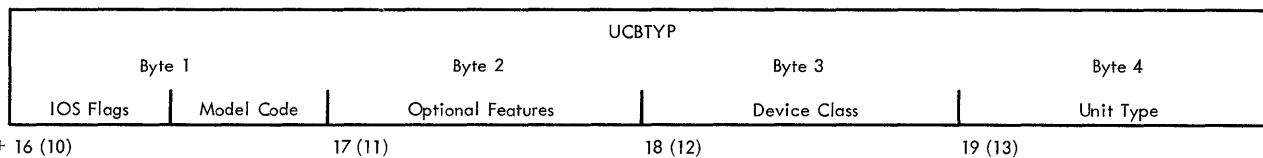
<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
17	(11) (cont) Byte 2		<u>Model</u> <u>Optional Features</u>
		-0	1    No optional features.
		-1	1    4K Buffer only.
		-2	1    8K Buffer only.
		-3	1    Character Generator only.
		-4	1    4K Buffer 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	10	Device Class Graphics
19	(13)    . . . 1 Byte 4	02	Unit Type 2250 Graphic Display Unit.

GRAPHICS DEVICE CLASS  
2260 Display Station



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

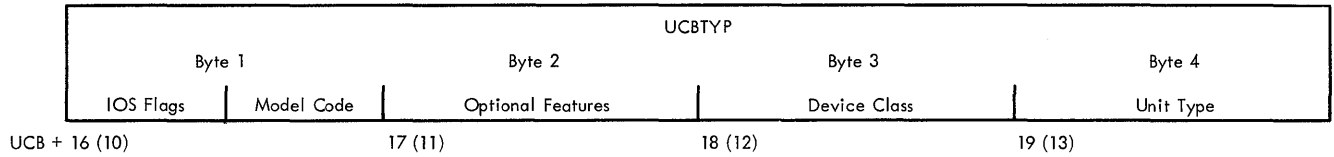
GRAPHICS DEVICE CLASS  
Other Than 2250 or 2260



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16 (10)	1 Byte 1	J-	Device Class.
		1-	1053, 2260
		3-	2250
		-K	Model Code
		-0	2280 Film Recorder.
		-0	2282 Film Recorder Scanner.
		-4	1053 Printer, Model 4.
17 (11)	. 1 Byte 2		Optional Features
			<u>Device</u>
		00	1053 No optional features.
		00	2280 No optional features.
		00	2282 No optional features.
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.



COMMUNICATION EQUIPMENT DEVICE CLASS



<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
16	(10) 1 Byte 1	xxxx .....		I/O Supervisor flags
		x... .....		(Reserved bit)
		.1.. .....		Overrunable device.
		..1. ....		Burst mode.
		..0. ....		Byte mode.
		...1 .....		Data chaining.
		.... xxxxx		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
				<u>Type</u> <u>Model</u>
		.... 0001	-1	1- 1050
				2- 1030
				3- 1050
				4- 83B3
				5- TWX
				8- 2260
				9- S/360
		.... 0010	-2	1- 1060
				4- 115A
				9- 1130
		.... 0011	-3	9- 2780
		.... 0100	-4	1- 2740
		.... 0110	-6	1- WTA
17	(11) . 1 Byte 2			Optional features.
		1... .....		Automatic calling.
		.1.. .....		Automatic polling.
		..1. ....		Checking.
		...1 .....		Automatic answering.
		.... 1...		Station control.
		.... .1..		Transmit control.
				Binary
		.... ..xx		<u>Value</u>
				0    SADZER
				1    SADONE
				2    SADTWO
				3    SADTHREE

COMMUNICATION EQUIPMENT DEVICE CLASS

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Bit and State</u>	<u>Hex. Dig.</u>	<u>Field Description, Contents, Meaning</u>
18	(12)	. . 1 Byte 3	40	Device Class. 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 36 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 if they are present, and is recorded in EBCDIC.

VOLUME LABEL

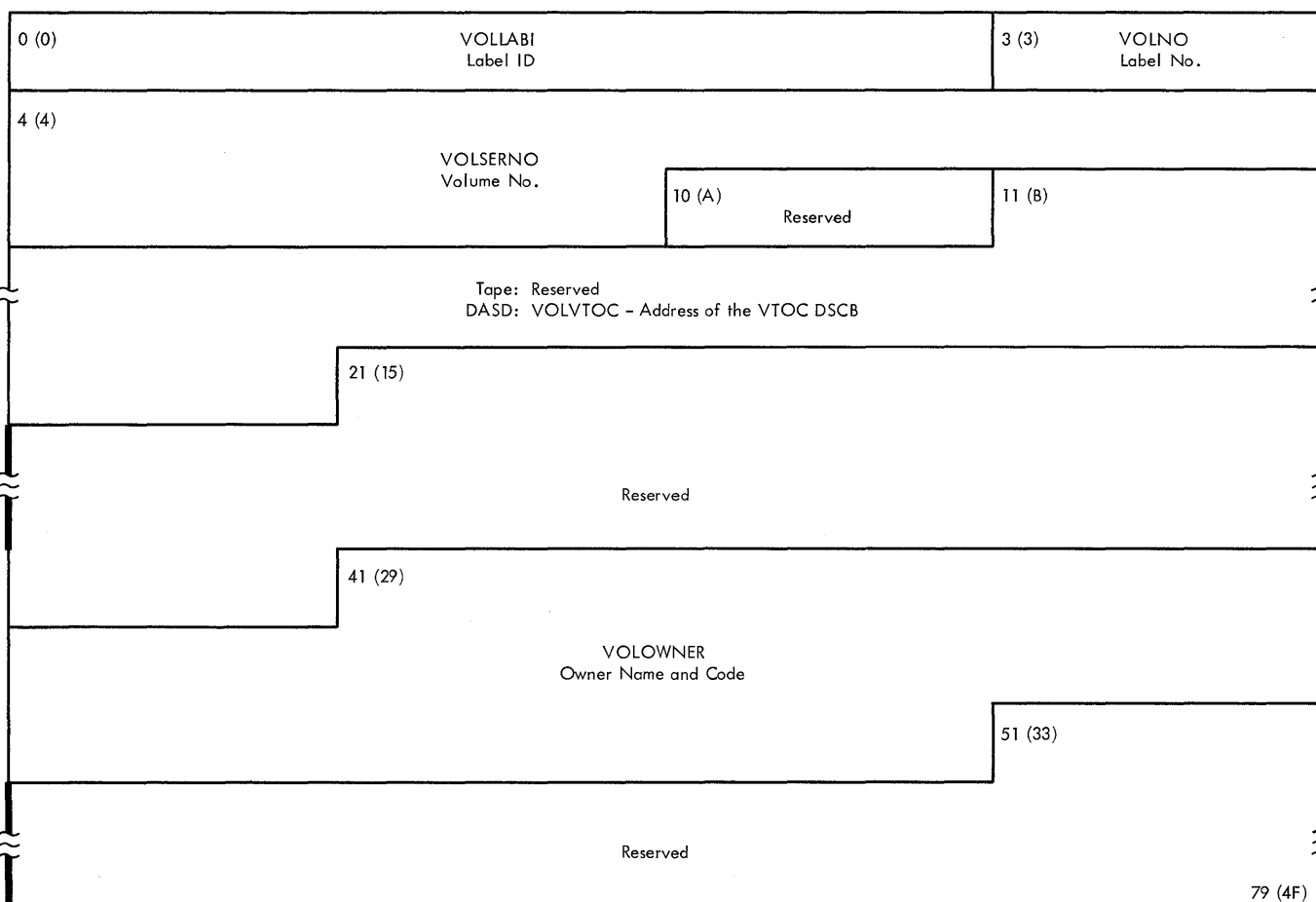
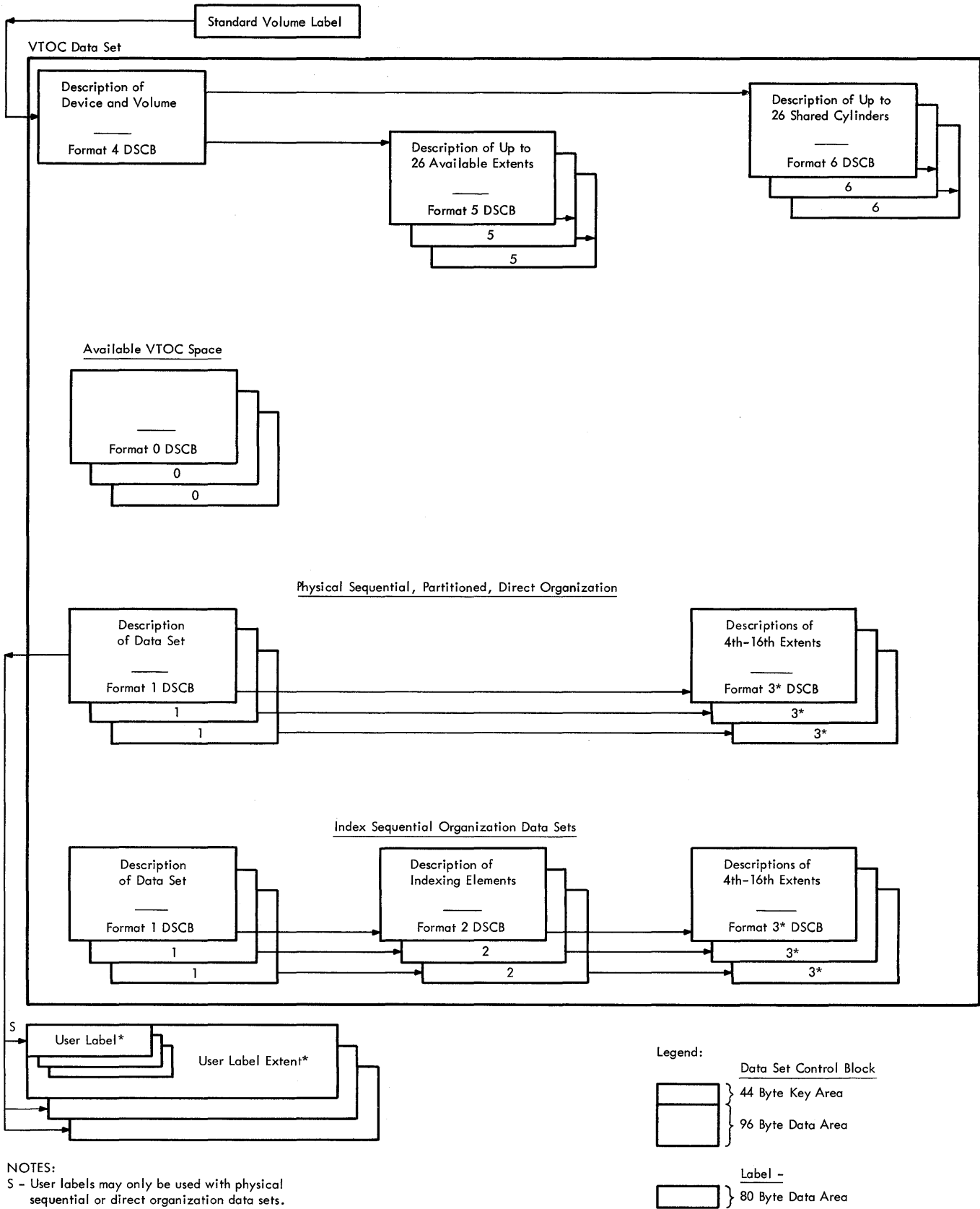


Figure 36. Volume Label

<u>Offset</u>	<u>Bytes and Alignment</u>	<u>Field Name</u>	<u>Field Description, Contents, Meaning</u>
0	(0) 3	VOLLABI	Label identifier - VOL.
3	(3) . . . 1	VOLNO	Volume label sequence number.
4	(4) 6	VOLSERNO	Volume serial number.
10	(A) . . 1		Reserved - must be recorded as EBCDIC zero.
11	(B)	VOLVTOC	Magnetic Tape: Reserved - must be recorded as blanks.
11	(B) . . . 5		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	Owner name and address code for the owning installation.
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 37. A description follows the illustration. (The DSCBs are describes separately, under that heading, in this publication.)



• Figure 37. Volume Table of Contents

## VOLUME TABLE OF CONTENTS

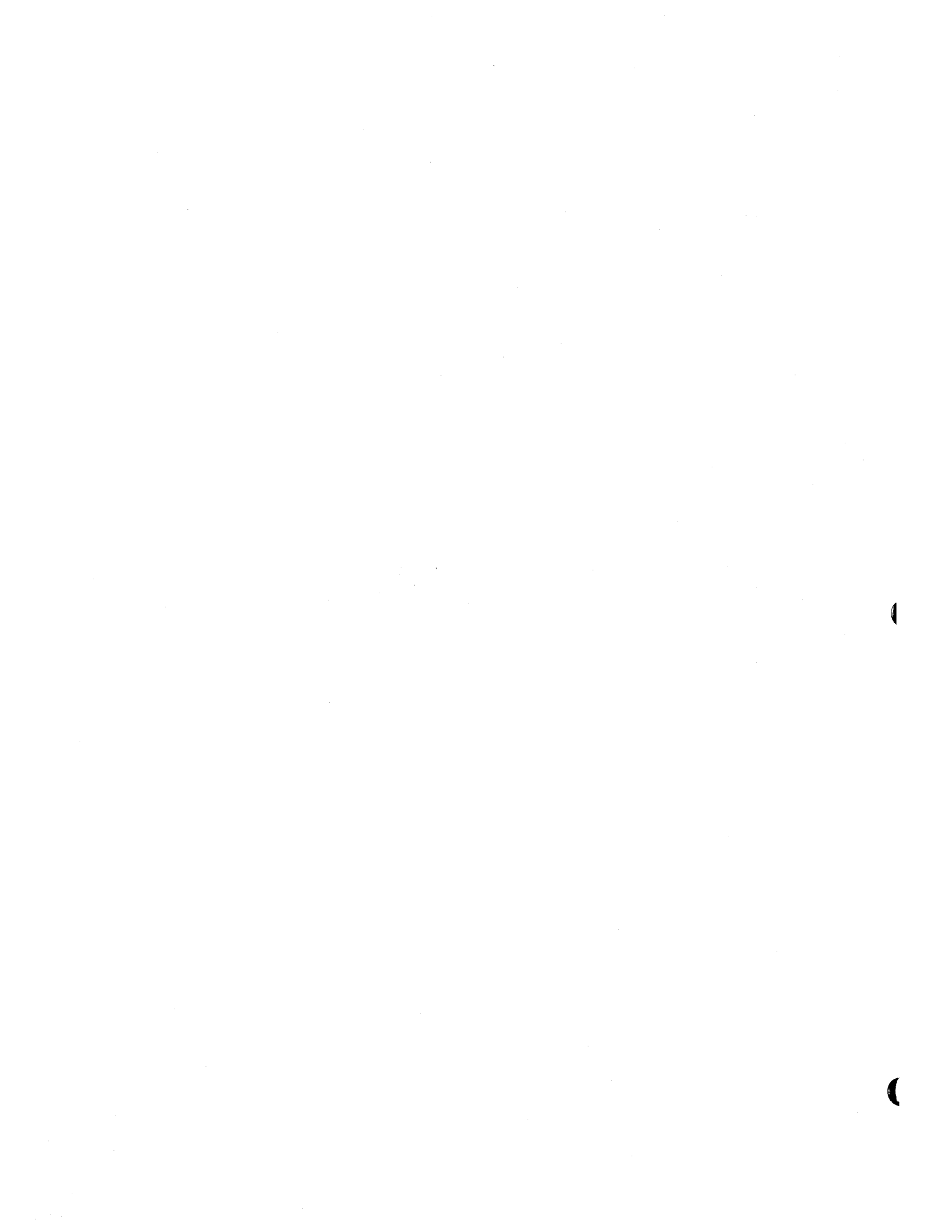
The volume table of contents (VTOC) is a data set consisting of control blocks that describe the contents of a direct access storage device volume. (The data set has a single extent; its address is found in the standard volume label. See figure 36.) On secondary storage, the control blocks that make 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 accommodate 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 also a format 2 DSCB if the data set has index sequential organization. Format 1 DSCBs are found by using a Search (Equal) command with an argument of the DSNAME operand; they are not chained to one another nor to the format 4 DSCB. If the data set has more than three extents, a format 3 DSCB is chained from the format 1 DSCB, or the format 2 DSCB in the case of index sequential organization. Any space remaining in the VTOC extent carries format 0 DSCBs.

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





# Index

Access method blocks and segments		Common block segments	
data control block .....	35,48,59,74	data control block .....	31,44,56,72,79
data event control		data extent block .....	89,96,97
block .....	101,103,107,111,113	Communication vector table .....	11
data extent block .....	91	CVT	
input/output block .....	171,174	(see communication vector table)	
Appendage table block segment		CVT user field .....	19
data extent block .....	88		
Basic block segments		DADSM Interlock - UCB	Deleted
(see common block segments)		Data cell drive segment, field, flag	
BBCCHH (see MBBCCHHR)		data control block .....	28,44
BDAM		unit control block .....	265
(see access method block segments)		UCBTYP field .....	265
Binary Synchronous communication		DASD (direct access storage device) message	
DCB-BTAM .....	74	queue block segment (extension, interface)	
DECB-BTAM .....	117	data control block .....	65
BISAM		data extent block (destination queue)	91
(see access method block segments)		Data control block .....	21
Block segments (see the following:)		BDAM .....	53
access method block segments		BISAM .....	39
appendage table block segment		BPAM .....	23
basic block segment		BSAM .....	23
buffer request block segment		BTAM .....	69
common block segments		EXCP access method .....	23
device-dependent block segments		GAM .....	77
DASD message queue block segments		QISAM .....	39
foundation extension segment		QSAM .....	23
foundation prefix segment		QTAM .....	61
foundation segment		Data event control block .....	99
line control block segment		BDAM .....	107
line error block segment		BSAM .....	101
line group block segment		BTAM .....	113
MFT block segments, field uses		ISAM .....	103
MVT block segments, field uses		QTAM .....	111
polling list origin block segment		Data extent block .....	81
processing message queue block segment		appendage table .....	88
queue control block segment		ordinary .....	83
receive scheduler sub-TCB block segment		QTAM .....	93
scheduling-dependent block segment		Data set control blocks	
subroutine identification block segment		formats 0, 1, 2, 3, 4, 5, 6 .....	121
BPAM		Data set label	
(see access method block segments)		direct access storage	
BSAM		(see data set control block)	
(see access method block segments)		magnetic tape .....	145
BSC		label 1 (FL1) .....	147
(see binary synchronous communication)		label 2 (FL2) .....	151
BTAM		DCB	
(see access method block segments)		(see data control block)	
Buffer request block segment		DD entry	
data extent block-QTAM .....	97	(see task input/output table)	
		DEB	
		(see data extent block)	
		DEC	
		(see data event control block)	
CCHH		DECB	
(see MBBCCHHR)		(see data event control block)	
CCHH of defective track		Destination queue block segment	
input/output block .....	173	(see DASD message queue block segment)	
Chained channel-program scheduling		Device classes	
(see scheduling-dependent block segment)		unit control block (UCBTYP field) ..	265
Checkpoint data set (QTAM)			
data control block .....	61,65		

Device-dependent block segments		JFC	
data control block .....	28,44,56,79	(see job file control block)	
data extent block .....	90	JFCB	
data set label .....	121,145	(see job file control block)	
input/output block .....	174	Job file control block .....	177
UCBTYP field .....	267	Job file control block extension .....	187
unit control block .....	259		
Device entry		Label processing	
(see task input/output table)		task input/output table .....	251
Device name table .....	155	LCB	
Device optional path status		(see line control block)	
unit control block .....	259	LERB	
Directory entry		(see line error block segment)	
(see partitioned data set directory		Line control block .....	189
entry)		Line control block segment	
DNT		data extent block .....	98
(see device names table)		Line DECB	
DSCB		(see data event control block -- QTAM)	
(see data set control block)		Line error block segment	
DS1, DS2, DS3, DS4, DS5, DS6		line control block .....	189,194
(see data set control block)		Line group block segment (extension,	
		interface)	
Error routine key		data control block-QTAM .....	61,64,67
unit control block .....	258	LPRB	
ECB		(see request blocks (PCP, MFT))	
(see event control block)		LRB	
Event control block .....	159	(see request blocks (PCP, MFT))	
EXCP access method			
(see access method block segments)		MBBCCHHR .....	7
		Message queue block segment	
		(see processing program message queue;	
		DASD message queue)	
		MFT .....	7
		MFT segments, field uses	
		communication vector table .....	16
		task control block .....	242
		Multiprogramming with a fixed number of	
		tasks (MFT)	
		(see MFT)	
		Multiprogramming with a variable number of	
		tasks (MVT)	
		(see MVT)	
		MVT .....	7
		MVT segments, field uses	
		communication vector table .....	16
		task control block .....	242
		Normal channel-program scheduling	
		(see scheduling dependent block segment)	
		Partition information	
		task control block .....	246
		Partitioned data set directory entry ..	195
		PCP .....	7
		PDS	
		(see partitioned data set directory	
		entry)	
		Polling list origin block segment	
		(see line group block segment -	
		extension)	
		PRB	
		(see request blocks)	
		Primary control program	
		(see PCP)	

Processing program message queue block segment (extension, interface)		Tape volume serial number communication vector table .....	17
data control block .....	65,67	TCB	
data extent block .....	93	(see task control block)	
PURGE (SVC16) - Quiesce count		TIOT	
data extent block .....	89	(see task input/output table)	
QISAM		Task control block .....	239
(see access method block segment)		Task input/output table .....	249
QSAM		Terminal models	
(see access method block segments)		UCBTYP field .....	266
QTAM		Time-slicing	
(see access method block segments)		communication vector table .....	19
Queue control block segment		task control block .....	242
data extent block .....	96	UCB	
RB		(see unit control block)	
(see request block (MVT))		UCBTYP field, detail description .....	265
Receive scheduler sub-TCB block segment		UCS segment	
line control block .....	194	job file control block .....	184
Refreshable module		unit control block .....	259
PDS directory entry .....	203	Unit control block .....	253
request block .....	213	User field	
Request blocks .....	207	communication vector table .....	17
MVT (IRB, PRB, SIRB, SVRB) .....	215	VOL	
PCP, MFT (IRB, LPRB, LRB, PRB, SIRB, SVRB) .....	209	(see volume label)	
Rollout flags		Volume label .....	275
task control block .....	242	Volume label processing	
Shared DASD		unit control block .....	262
communication vector table .....	17	Volume mount switch	
task control block .....	244	unit control block .....	262
unit control block .....	261,269	Volume serial number	
Scheduling dependent block and segment		communication vector table .....	17
input/output block .....	172	Volume table of contents .....	277
interruption control block .....	161	relative address - UCB .....	262
Seek queue - UCB Deleted		VTOC	
SIRB		(see volume table of contents)	
(see request blocks)		W1	
SRT		(see input/output block)	
(see unit control block)		XRB	
Subroutine identification block segment		(see request block (PCP, MFT))	
data extent block .....	92	2260	
SVRB		UCBTYP field .....	271
(see request blocks)		2848	
System resource table -- SRT		UCBTYP field .....	271
(see unit control block)		2780	
SYS1.LOGREC		UCBTYP field .....	273
DCB .....	28		





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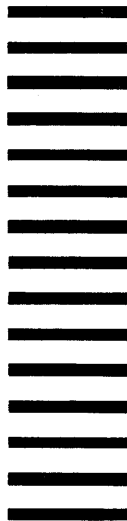
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