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IBM System/34 System Data Areas and Diagnostic Aids Manual

Program Number 5726-SS1

Eighth Edition (January 1982)

This is a major revision of, and obsoletes, LY21-0049-6. Additions were made to support SSP improvements, enhanced support of ASSEMBLER, BASIC, COBOL, and DFU, and communications. Miscellaneous changes and corrections were also made. Changes or additions to the text are indicated by a vertical line to the left of the change or addition.

This edition applies to release 9, modification level 0 of the IBM System/34 System Support Program Product, Program 5726-SS1; and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Changes are periodically made to the information herein; these changes will be reported in technical newsletters or in new editions of this publication.

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This manual is designed to aid IBM personnel responsible for supporting the IBM System/34 by providing:

- An overview of the System/34 System Support Program Product organization
- Descriptions of the data areas within the system
- Descriptions of how to use the diagnostic aids available for diagnosing system malfunctions

This manual is intended to be a quick reference aid. Although it is revised periodically, it might not reflect the current level of documentation. Consult the source listings if you are in doubt about any material contained in this manual.

For all data areas shown in this manual, the field displacements (displ) point to the leftmost byte of the field and are expressed in hexadecimal. The field lengths (lng in bytes or words) are in decimal.

In this manual, *sector address* refers to SS addressing; *relative sector address* refers to displacement from the start of a specified area. Addresses are assumed to be real unless otherwise specified.

In the description columns, unless otherwise specified, references to displacements, lengths (such as record length), and number of items (such as number of records) are in hex notation. Unused bits in listings are generally not shown in the description columns.

Note: Service numbers for the System/34 programs are as follows:

Program product	Program name	Service number
5726-AS1	Assembler	2261559
5726-BA1	BASIC	2261539
5726-CB1	COBOL	2261569
5726-EM1	3270 Device Emulation	2261529
5726-FO1	FORTRAN	2261579
5726-IG1	Ideographic Utilities	2261689
5726-RG1	RPG II	2261589
5726-SS1	SSP	2261599
	MRJE	2261619
	SRJE	2261609
	SSP-ICF	2261549
5726-UT1	Utilities:	
	DFU	2261629
	SDA	2261629
	SEU	2261629
	SORT	2261629
	WSU	2261659

Related Publications

Theory:

- *IBM System/34 5340 System Unit Theory Diagrams Manual,* SY31-0458
- *IBM System/34 Multiline Communications Adapter Theory Diagrams Manual,* SY31-0627
- *IBM System/34 5340 System Unit Ideographic FeatureTheory Diagrams Manual Supplement,* SA09-1801

Maintenance:

- *IBM System/34 5340 System Unit Maintenance Manual,* SY31-0457
- *IBM System/34 5340 System Unit Ideographic Feature Maintenance Manual Supplement,* SA09-1014

Operator information:

- *IBM System/34 Operator's Guide,* SC21-5158
- *IBM System/34 Displayed Messages Guide,* SC21-5159

Reference:

- *IBM System/34 System Support Reference Manual,* SC21-5155
- *IBM System/34 Installation and Modification Reference Manual: Program Products and Physical Setup,* SC21-7689
- *IBM System/34 Overlay Linkage Editor Reference Manual,* SC21-7707
- *IBM System/34 Functions Reference Manual,* SA21-9243
- *IBM System/34 Data Communications Reference Manual,* SC21-7703
- *IBM System/34 Data File Utility Reference Manual,* SC21-7656
- *IBM System/34 Source Entry Utility Reference Manual,* SC21-7657
- *IBM System/34 Sort Reference Manual,* SC21-7658
- *IBM System/34 Work Station Utility Reference Manual,* SC21-7663
- *IBM System/34 RPG II Reference Manual,* SC21-7667
- *IBM System/34 Basic Assembler and Macro Processor Reference Manual,* SC21-7705
- *IBM System/34 Command Statements and OCL Reference Summary,* GX21-7690
- *IBM System/34 Assembler Reference Summary,* GX21-7674
- *IBM System/34 1255 Magnetic Character Reader Reference Manual,* SC21-7740
- *IBM System/34 FORTRAN IV Reference Manual,* SC21-7706
- *IBM System/34 COBOL Reference Manual,* SC21-7741
- *IBM System/34 Interactive Communications Feature Reference Manual,* SC21-7751
- *IBM System/34 BASIC Reference Manual,* SC21-7835
- *IBM System/34 Ideographic Sort Reference Manual,* SC21-7850
- *IBM System/34 Character Generator Utility User's Guide and Reference Manual,* SC21-7845
- *IBM System/34 System Measurement Facility Reference Manual,* SC21-7828
- *IBM System/34 3270 Device Emulation Program Product User's Guide,* SC21-7868
- *IBM System/34 Functions Reference Ideographic Feature Supplement (5255 Display Station Model 1),* SA09-1632
- *IBM System/34 Functions Reference Ideographic Feature Supplement (5255 Display Station Model 2),* SA09-1633

Logic:

- *IBM System/34 System Support Program Logic Manual: System,* LY21-0050
- *IBM System/34 System Support Program Logic Manual: Data Communications,* LY21-0051
- *IBM System/34 Utilities Logic Manual,* LY21-0563
- *IBM System/34 RPG II Logic Manual,* LY21-0565
- *IBM System/34 Basic Assembler and Macro Processor Logic Manual,* LY21-0569
- *IBM System/34 and System/32 FORTRAN IV Logic Manual,* LY21-0568
- *IBM System/34 COBOL Logic Manual,* LY21-0572
- *IBM System/34 SSP-ICF Program Logic Manual,* LY21-0581
- *IBM System/34 BASIC Logic Manual,* LY21-0586
- *IBM System/34 3270 Device Emulation Program Logic Manual,* LY21-0580
- *IBM System/34 Ideographic Generator/Sort Program Logic Manual,* LY21-0587

IBM publications are available that describe the IBM-supplied ideographic characters and list their corresponding IBM codes. Contact your country representative for further information.

ACE	action control element
ACTLU	activate logical unit
ACTPU	activate physical unit
AF1	active format 1
AID	attention identification (key)
AM	address mark
APAR	authorized program analysis report
APE	assigned pages element
AQE	allocation queue element
ARR	address recall register
ASCII	American National Standard Code for Information Interchange
AST	active session table
ATR	address translation register
BBI	begin bracket indicator
BCI	begin chain indicator
BMR	backup mode register
BSC	binary synchronous communications
BSCA	binary synchronous communications adaptor
BSCEL	binary synchronous communications equivalence link
BUB	SSP-ICF BSC unit block
CA	common adapter
CCB	checkpoint control block
CCHS	cylinder-cylinder-head-sector (disk)
CDB	c-spec data block
CDI	change direction indicator
CE	customer engineer
CHRNX	cylinder number, head number, record number, record length indicator, number of records
CIB	compiler information block
CMD	command (key)
CMDR	command reject
CMOD	command modifier
CMR	control mode register
CP	control processor
CPI	characters per inch
CPMGR	connection point manager
CPU	central processing unit
CQS	common queue space
CRT	cathode ray tube
CSA	c-spec specification area
CSB	c-spec specification block (WSU)
CSB	communication specification block
CSI	code selection indicator
CSIPL	control storage initial program load
CUID	control unit identification
DACTLU	deactivate logical unit
DACTPU	deactivate physical unit
DAF	destination address field
DBI	data bus in
DBO	data bus out
DDSA	digital data service adapter
DES	data encryption standard
DFA	dump file analysis
DFC	data flow control
DFU	data file utility
DLE	data link escape
DM	disconnected mode
DR1	definite response 1 bit
DR2	definite response 2 bit
DSA	data specification area
DSB	data specification block
DTF	define the file
DTR	data terminal ready
DTT	define the table
EBCDIC	extended binary coded decimal interchange code
EBI	end bracket indicator
ECI	end chain indicator
ECM	event control mask
EFI	expedited flow indicator
EHT	error history table
EIB	error information block
EOB	end of block
EOM	end of message
EOT	end of transmission
EOX	end of transaction
ERAP	error recording analysis program
ERB	error request block
ERI	exception response indicator
ERP	error recovery procedure
ETB	end of transmission block
ETX	end of text
EXAM	extended translated address mapping
EXR	exception request
EXTN	extended character set
FAW	field address word
FCB	file control block
FCS	function control sequence
FCW	field control word
FDB	file data buffer
FDIOS	fixed disk input/output supervisor
FDT	field descriptor table
FFW	field format word
FI	format indicator or function interpreter
FIA	format index area
FID	format identification
FLUB	finance logical unit block
FM	function management
FMD	function management data
FMP	function management profile
FQE	free queue element
FSA	file specification area
FSB	file specification block
FSM	finite state machine
F1	format 1
F5	format 5
GFT	grant function transmission
HDR	header
HDX	half duplex data flow
HSID	half session ID
IAR	instruction address register
IED	intercept extent descriptor
IGC	ideographic character
INQ	inquiry (key)
IOB	input/output block
IOC	I/O controller
IOCH	input/output control handler
IPL	initial program load
IRS	inter record separator
ITB	intermediate text block character

JCB	job control block
JCL	job control language
JDB	job data block
K	1024 bytes
LBH	line buffer header
LCB	library control block
LCS	library control sector
LPI	lines per inch
LSID	local session identification
LSR	local storage register
LU	logical unit
LWA	line work area
MAB	memory address backup register
MAR	memory address register
MCE	message control element
MDB	message data block
MDI	map diagnostic integration
MFM	modified frequency modulation
MIA	master track index area
MIB	master track index block
MIC	message identification code
MICR	magnetic ink character recognition
MLCA	multiline communications adapter
MPF	mapping field
MRJE	MULTI-LEAVING remote job entry
MRT	multiple request terminal
MSA	message specification block
MSAR	main storage address register
MSB	message specification block
MSIPL	main storage initial program load
MSP	main storage processor
MSR	magnetic stripe reader
NAC	network access control
NAU	network addressable unit
NC	network control
NDM	normal disconnected mode
NEP	never ending program
NRM	normal response mode
NSA	nonsequence acknowledgement
OAF	origin address field
OCL	operation control language
OCR	optical character reader
OXREF	cross reference resolver where-to-go table
PC	path control
PCR	process control register
PFCB	program function control block
PI	pacing indicator
PIU	path information unit
PL	parameter list
PLO	phase lock oscillator
PMR	program mode register
PP	program product
PPSA	procedure parameter save area
PRUF	program request under format
PSA	process specification area
PSB	process specification block (WSU)
PSB	printer specification block
PSR	program status register
PTF	program temporary fix
PU	physical unit
PUPE	push/pull element
QFD	queue file descriptor
QSA	queue save area
QSB	queue save block
QSESS	quiesce sessions
RAM	random access memory
RB	request block
RCL	RAM contents list
RD	request disconnect
RECFMS	record formatted maintenance statistics
REQMS	request maintenance statistics
RFT	request function transmission
RH	request/response header
RIB	request indicator byte
RID	record identification
RIT	realtime interface table
RLD	relocation list directory
RLOCID	remote location ID
RNR	receive not ready
RQ	request
RQD	request definite response
RQE	request exception response
RQI	request initialization
RR	receive ready
RSA	routine specification area
RSB	routine specification block
RSP	response
RTI	response type indicator (+/–)
RU	request/response unit
RUF	read under format
RWS	remote work station
SBP	spool buffer pool
SC	session control
SCA	system communication area
SCB	storage control block
SCS	standard character string
SCT	subsystem control table
SDA	screen design aid
SDB	screen data buffer
SDI	sense data included indicator
SDLC	synchronous data link control
SEU	source entry utility
SFD	spool file descriptor
SLU	secondary logical unit
SMF	system measurement facility
SMS	spool master segment
SNA	systems network architecture
SNF	sequence number field
SNRM	set normal response mode
SNUB	SNA unit block
SOH	start of header
SPL	station parameter list
SPS	SNA peer support
SPUB	SNA peer unit block
SQB	sector queue block
SQE	status queue element
SQS	system queue space
SRCB	sub record control byte
SRJE	SNA remote job entry
SRT	single request terminal
SS	supervisory services
SSA	screen specification area
SSB	session specification block
SSCP	system services control point
SSP	System Support Program Product
SSQS	subsystem queue space
STSN	set and test sequence numbers
STX	start of text character
SUB	session unit block
SVC	supervisor call
SWA	system work area
TCB	task control block
TEB	termination exit block
TH	transmission header
TQE	timer queue element

TRB	timer request block
TS	transmission subsystem
TSP	transmission subsystem profile
TTC	task to task communication
TUB	terminal unit block
TWA	task work area
UDT	unit definition table
UPSI	user program status indicator
VOL	volume
VTOC	volume table of contents
WCA	work station control area
WCB	work station control block
WDB	writer descriptor block
WSB	work station specification block
WSC	work station controller
WSCF	work station control field
WSID	work station identification
WSPL	work station parameter list
WSQS	work station queue space
WSU	work station utility
WTO	write to operator
WTOR	write to operator request
XID	exchange ID
XR1	index register 1
XR2	index register 2
XSCR	extended subsystem configuration record
XSUB	translated session unit block

Section 1. System Overview

The IBM System/34 SSP (System Support Program Product) consists of several major components. Figure 1-1 and Figure 1-2 show the logic documentation overview. Figure 1-3 shows an example of control flow between these major components from MSIPL to end of job.

IBM System/34 System Data Areas and Diagnostic Aids Manual, LY21-0049

- System Information
- Data Areas
- Diagnostic Aids
- Troubleshooting Aids

IBM System/34 System Support Program Logic Manual: System, LY21-0050

Component/Function	Diagram	Chapter
Starting the System	1 0	1
Processing Commands	2 0	2
Starting a Job	3 0	3
Running a Job	4.0	4
Terminating a Job	5.0	5
System Service Programs	6 0	6
System Maintenance Programs	7.0	7
Overlay Linkage Editor	8.1, 8.2	8
System Utility Programs	9.0	9 through 37
1255 Program Logic	C.1	App. C
Multinational Character Set Conversion Utility	D.1, D.2	App. D

IBM System/34 Utilities Logic Manual, LY21-0563

Component/ Function	Diagram	Chapter
Work Station Utility	1-1	1
Screen Design Aid	2-1	2
Data File Utility	3-1	3
Source Entry Utility	4-1	4
Sort	5-1	5

IBM System/34 RPG II Logic Manual, LY21-0565

Component/ Function	Figure	Part
Compiler Phase Flow	1-1	1
Object Program	2-1	2

IBM System/34 BASIC Logic Manual, LY21-0586

Component/Function	Diagram	Section
Source Entry Function	1.0	2
Command Processor Function	2 0	2
Statement Processor Function	3.0	2
Interactive Compiler Function	4 0	2
Run-Time I/O Function	5 0	2
Run-Time Monitor Function	6 0	2
Special Run-Mode Function	7 0	2
Source Conversion Function	8.0	2

IBM System/34 Basic Assembler and Macro Processor Logic Manual, LY21-0569

Component/ Function	Figure	Chapter
Assembler	1-2	1
Macro Processor	2 2	2

IBM System/34 and System/32 FORTRAN IV Logic Manual, LY21-0568

Component/ Function	Diagram	Chapter
FORTRAN Compiler	2-2	2
FORTRAN Link-Editing	2-3	2

IBM System/34 COBOL Logic Manual, LY21-0572

Component/ Function	Figure	Chapter
Overview of the Compiler	1 1	1
Compiler Flow of Control	1-2	1

Figure 1-1. System/34 Logic Documentation Overview

IBM System/34 System Data Areas and Diagnostic Aids Manual, LY21-0049

- Data Communications Information
- Data Areas
- Diagnostic Aids
- Troubleshooting Aids

IBM System/34 System Support Program Logic Manual: Data Communications, LY21-0051

Component/Function	Diagram	Part
Binary Synchronous Communications	1	1
MULTI-LEAVING Remote Job Entry Utility	2	2
Batch Upline Systems Network Architecture	3	3
Synchronous Data Link Control (SDLC) Primary	4	4
Synchronous Data Link Control (SDLC) Secondary	5	5
SNA/SDLC Remote Job Entry (SRJE) Utility	6	6
Remote Work Station (RWS)	7	7
Data Communications Print Utility	A-1	App A
Forms Control Table Utility	B-1	App. B
Remote Work Station Sequence Charts	C-1	App. C
System/34 SRJE Protocols	D-1	App. D
MLCA Autocall	E-1	App. E

IBM System/34 Interactive Communications Feature Program Logic Manual, LY21-0581

Component/Function	Diagram	Chapter
Interactive Communications Feature Data Management	2.0	2
SSP-ICF Debug Trace Facility	3.0	3
Interactive Communications Feature Control	4.0	4
Intra Subsystem	5.0	5
Information Management System/Intelligent Remote Station Support (IMS/IRSS) Subsystem	6.0	6
Customer Information Control System/Virtual Storage (CICS/VS) Subsystem	7.0	7
Communication Control Program (CCP) Subsystem	8.0	8
SSP-ICF Binary Synchronous Communications Equivalence Link (BSCEL) Subsystem	9 0	9
SSP-ICF Binary Synchronous Communications Interrupt Handler	10 0	10
Systems Network Architecture 4/4	11 0	11
SNA Upline Facility (SNUF)	12.0	12
Systems Network Architecture 7/7	13.0	13
Peer Subsystems	14.0	14
3270 Subsystem	15.0	15
3270 BSC Interrupt Handler	16.0	16
Finance Subsystem	17.0	17

IBM System/34 3270 Device Emulation Program Logic Manual, LY21-0580

Component/Function	Diagram	Chapter
BSC 3270 Device Emulation	1.0	1
SNA 3270 Device Emulation	2.0	2
SSP-ICF 3270 SNA Support Subsystem	3.0	3

Figure 1-2. System/34 Data Communications Logic Documentation Overview

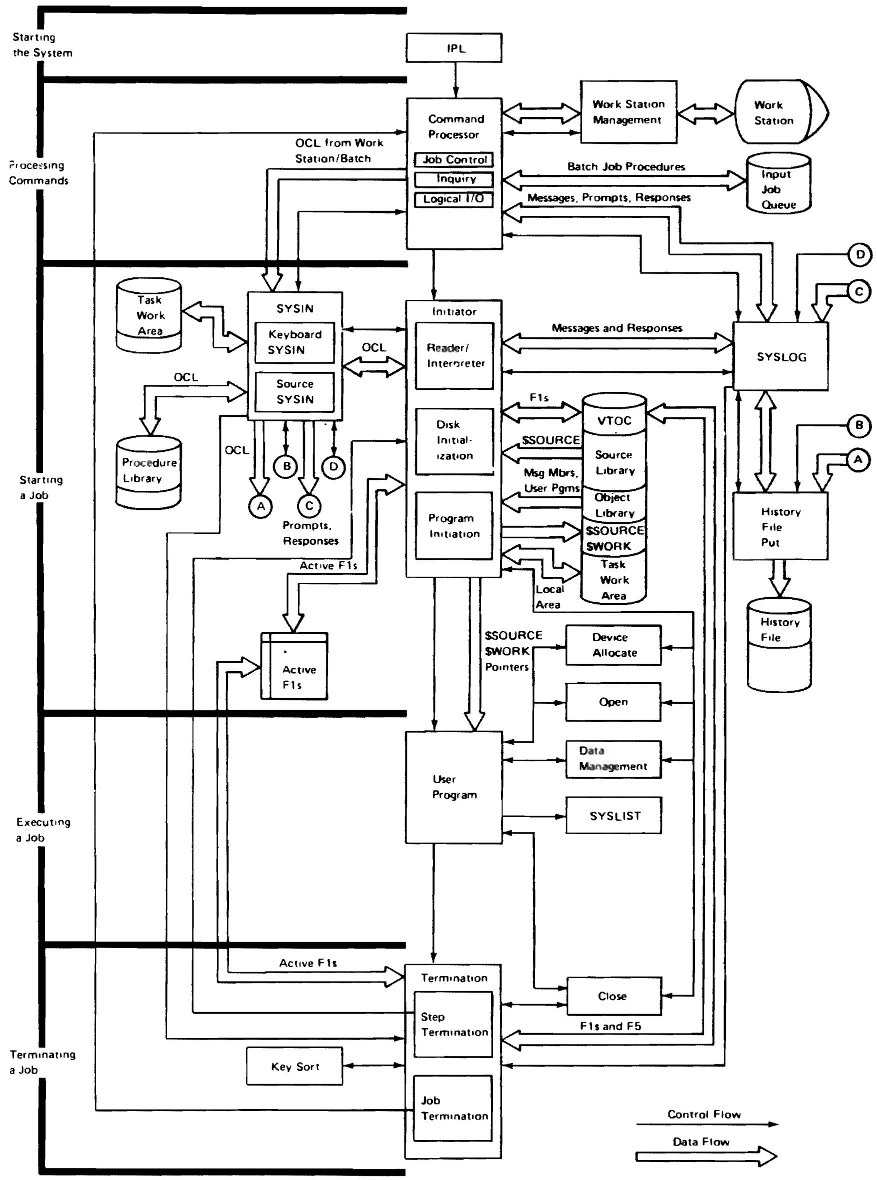


Figure 1-3. System Flow Overview

This section describes the IBM System/34 control storage, main storage, disk, and diskette and the associated data areas for each. Figure 2-1 shows the storage organization for the IBM System/34.

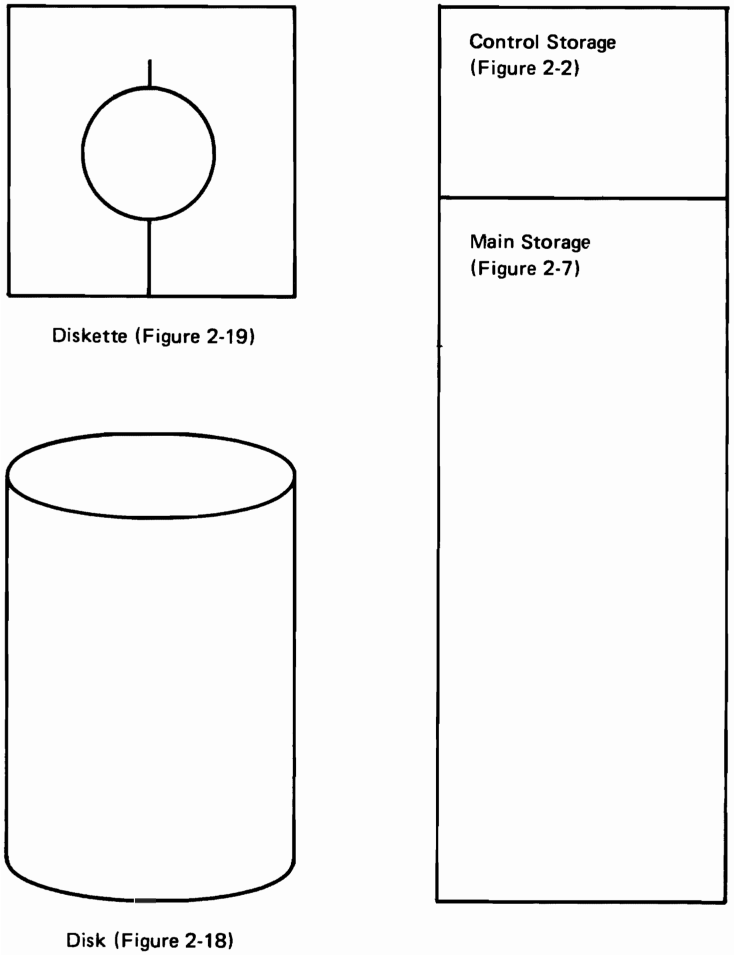


Figure 2-1. System/34 Storage Map

CONTROL STORAGE ORGANIZATION

Control storage is a 16K word area that contains the supervisor function of the system.

The control storage program performs the following functions:

- Initial program load and abnormal termination of control storage
- Nucleus
- I/O control handler
- Alter/display
- Interrupt handling
- Control of main storage processor

Figure 2-2 shows the general organization of control storage.

Location in Hex	Lng in Words in Dec	Area Description
0000	128	Direct area 0 (Figure 2-3)
0080	128	Segment 0 nucleus
0100	256	Segment 0 common routines
0200	512	Disk input/output control handler
0400	1024	Work station and printer input/output control handler
0800	1152	Diskette input/output control handler, or alter/display input/output request handler, or used by concurrent maintenance when active
0C80	896	Reserved for concurrent maintenance (initially loaded with control storage initial program load routine) or SMF
0FFF	—	End of control storage segment 0
1000	128	Direct area 1 (Figure 2-4)
1080	96	SVC status word table

Figure 2-2 (Part 1 of 3). Control Storage Organization

Location in Hex	Lng in Words in Dec	Area Description
10E0	24	System event counter table
10F8	8	Resource timer table
1100	64	Action control word entry address table
1140	4	Action control word zero through three
1144	130	Main storage transfer control table
11C6	42	Register stack area
11F0	16	Interrupt level two post area
1200	3072	Segment 1 nucleus
1E00	512	Transient area (initially loaded with control storage initial program load routine)
1FFF	—	End of control storage segment 1
2000	128	Direct area 2 (Figure 2-5)
2080	50	Control storage transient table (Figure 2-244)
20B2	78	Extended control storage supervisor number 2
2100	32	Disk error log area
2120	16	Drive A control field
2130	16	Drive B control field
2140	16	Drive C control field
2150	16	Drive D control field
2160	50	Interrupt level handlers
2192	878	Nucleus area number 2
2500	512	Extended nucleus area 2
2700	768	I/O transient area (communications)

Figure 2-2 (Part 2 of 3). Control Storage Organization

Location in Hex	Lng in Words in Dec	Area Description
2A00	256	I/O transient area (reserved)
2B00	768	I/O transient area (1255 and communication line 2)
2E00	512	Reserved area number 3
2FFF	—	End of control storage segment 2
3000	128	Direct area 3 (Figure 2-6)
3080	384	Extended control storage supervisor
3200	3584	Scientific instruction set emulator
3FFF		End of control storage segment 3

Figure 2-2 (Part 3 of 3). Control Storage Organization

Direct Areas

System/34 control storage contains four 128-word direct areas:

Area	Location (hex)	Size (dec)
DRCT0	0000	128
DRCT1	1000	128
DRCT2	2000	128
DRCT3	3000	128

These areas are used by control storage routines and contain frequently used control information. Figures 2-3 through 2-6 show the contents of the direct areas.

Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
0000	D0RESET	1	System reset and start entry point
0001	D0MCAREA	1	Machine check logout area
0002	D0IL0PCR	1	IL0 PCR save—machine check counter
0003	D0IL1PCR	1	IL1 PCR save
0004	D0IL2PCR	1	IL2 PCR save
0005	D0IL3PCR	1	IL3 PCR save
0006	D0IL4PCR	1	IL4 PCR save
0007	D0IL5PCR	1	IL5 PCR save
0008	D0WSRGS1	1	Temporary register save area
0009	D0WSRGS2	1	Temporary register save area
000A	D0WSRGS3	1	Temporary register save area
000B	D0WSCHNP	1	Terminal unit block chain pointer save area
000C	D0WSNXTT	1	Next terminal unit block in relative record polling
000D	D0WSCURT	1	Current terminal unit block being used
000E	D0WSREG0	1	Register 0 save
000F	D0WSNVLA	1	Buffer addressing indicator not valid
0010	D0WSDVID	1	Terminal unit block device ID save area
0011	D0WSSPR2	1	Reserved
0012	D0WSSPR3	1	Reserved
0013	D0WSSPR4	1	Reserved

Figure 2-3 (Part 1 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
The following areas apply to 62PC disk:			
0014	FDPOSTSV	1	Save area for post bits
0015	D0FDSDAR	1	Starting data address
0016	D0FDMTR	1	Save area for file control block address (used to reset meter)
0017	D0FDFCB@	1	Pointer to current file control block (on IL4)
0018	D0DFWCF@	1	Pointer to current file control block (on main)
0019	FDSAVINT	1	Save area for interrupt status word
001A	FDSAVTAG	1	Save area for tag byte
001B	FDSAVATR	1	Save area for sharable ATRs
001C	D0FDACF@	1	File control block address of disk spindle A processing data
001D	D0FDBCF@	1	File control block address of disk spindle B processing data
001E	D0FDSPR0	1	File control block address of disk spindle C processing data
001F	D0FDSPR1	1	File control block address of disk spindle D processing data
0020	D0FDSPR2	1	Reserved
0021	D0FDSPR3	1	Reserved
The following areas apply to 62EH disk:			
0014	D0FDRGS1	1	Save area for physical retry and save area for WR1 during ATR update

Figure 2-3 (Part 2 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description	
0015	D0FDRGS2	1	Save area for log control/command for alternative sector and save area for WR6 during ATR update	
0016	D0FDMBSV	1	Save area for memory address backup (MAB) register during ATR update	
0017	D0FDDFAW	1	Work area for adjusted data address	
0018	D0FDWCF@	1	Pointer to current data control field	
The following three words contain the disk alternative sector control field:				
0019	D0FDNFA	1	N-byte	F-byte
001A	D0FDCCA	1	Cylinder high	Cylinder low
001B	D0FDHSA	1	Head	Sector
001C	D0FDACF@	1	File control block address of disk spindle A processing data	
001D	D0FDBCF@	1	File control block address of disk spindle B processing data	
001E	D0FDRGS3	1	Save area for command or logical address update routine	
001F	D0FDSPR1	1	Reserved	
0020	D0FDSPR2	1	Reserved	
0021	D0FDSPR3	1	Reserved	
0022	D0HCPRC	1	Process byte for main storage processor (MSP) retry routines	
0023	D0HCRFS	1	Refresh indicator for CXMSPCK2	
0024	D0HCCMR	1	Save area for main storage processor control mode register	

Figure 2-3 (Part 3 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
0025	D0IOSTPM	1	Device address/unit address—stop mode
0026	D0IOSTER	1	Device address/unit address—stop on error
0027	D0IL4MAR	1	Interrupt level 4 entry point
0028	D0IL5MAR	1	Interrupt level 5 entry point
0029	D0QUEUE@	1	Start of main storage action control element queue headers
002A	D0ACWSV	1	Save area for the set action control word routine
002B	D0ACW0PT	1	Pointer to action control word zero
002C	D0UNUSED	20	20 reserved words
0040	D0CONMT1	1	Concurrent maintenance word number 1
0041	D0CONMT2	1	Concurrent maintenance word number 2
0042	D0CONMT3	1	Concurrent maintenance word number 3
0043	D0CONMT4	1	Concurrent maintenance word number 4
0044	D0IOQDA	1	Command code/device address
0045	D0IOCCYL	1	Previous cylinder/starting cylinder
0046	D0IORDCT	1	Read I/O counter
0047	D0IOWTCT	1	Write I/O counter
0048	D0IOSKCT	1	Seek I/O counter
0049	D0IOALCT	1	Auto loader I/O counter
004A	D0IOCH	1	Desired cylinder—desired head

Figure 2-3 (Part 4 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
004B	D0I0RX	1	Desired record—desired sector size
004C	D0I0PCRN	1	High byte—number of sectors to process; low byte—physical sector size
004D	D0I0CNT	1	Save area for IL4 delay parameter
004E	D0I0DAR2	1	Record number save area for verify
004F	D0I0RX2	1	Number of sectors of save area for verify
0050	D0I0SECL	1	Sector length save area
0051	D0I0GAPL	1	Gap length
0052	D0I0LDAR	1	Logical data address
0053	D0I0TDAR	1	Translated data address
0054	D0I0STAT	1	Soft status byte 0/byte 1
0055	D0I0SKAD	1	Current logical cylinder/current physical cylinder
0056	D0I0TCB@	1	Current task control block address
0057	D0I0UACE	1	Application program action control element address
0058	D0I0IOB	1	Real system IOB address

Figure 2-3 (Part 5 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
0059	D0I0FLEC	1	Error recovery procedure switches/error retry count: High byte: *Hex* *Meaning* 80 SVC queue disabled 40 Handling not ready 20 Diskette abend in progress 10 Request to log temporary error 08 Restart users IOB 04 Issued permanent error message 02 Error recovery procedure operation in progress 01 First exit after MIC response
005A	D0I0SW	1	Diskette IOS switches: High byte: *Hex* *Meaning* 80 Seek issued 40 User operation issued 20 Seek after issued 10 Reserved 08 IOB in progress 04 Temporary error in progress 02 Reserved 01 Permanent error
005B	D0I0ERSW	1	Diskette error recovery procedure action control element type save area
005C	D0I0ERMB	1	Diskette error recovery procedure return address
005D	D0I0ALST	1	Status byte 4/status byte 5

Figure 2-3 (Part 6 of 7). Contents of Direct Area 0

Location in Hex	Label	Lng in Words in Dec	Description
005E	D0IOST23	1	Status byte 2/status byte 3
005F	D0IOMAB4	1	Return address for IL4 post
0060	D0RSRVD	32	Reserved for concurrent maintenance
0080	D0END	1	End of direct area 0

Figure 2-3 (Part 7 of 7). Contents of Direct Area 0

Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1000	D1NUXNT0 or	1	Transient work space 0
	D1DSKTAB	1	Disk extent table (used by MSIPL only)
1001	D1NUXNT1	1	Transient work space 1
1002	D1NUXNT2	1	Transient work space 2
1003	D1NUXNT3	1	Transient work space 3
1004	D1NUXNT4	1	Transient work space 4
1005	D1NUXNT5	1	Transient work space 5
1006	D1NUXNT6	1	Transient work space 6
1007	D1NUXNT7	1	Transient work space 7
1008	D1UNUS08	1	Reserved
1009	D1UNUS09	1	Reserved

Figure 2-4 (Part 1 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
100A	D1XAMSWI	1	EXAM swap-in-candidate
100B	D1CURX28	1	Current (EXAM @ -28)
100C	D1WSCAF	1	WSC controller feature information language ID (high byte), feature memory (low byte) (hex 01 = feature A; hex 02 = feature B)
100D	D1IOLDAR	1	Saved diskette logical data address
100E	D1SMF@	1	Address of SMF SIO counter area in main storage
100F	D1MSIZE	1	Main storage size in 2K pages (low byte) number of bad 2K pages (high byte) X'80's bad 2K page area in main storage is full
1010	D1INDR1	1	System indicator word for segment 1 System word bit: High byte:

Hex	*Meaning*
80	Dump file protected indicator: 0—dump file is not protected 1—dump file is protected
40	Storage dump currently in progress: 0—no dump in progress 1—storage dump in progress
20	Suspend task for address compare dump: 0—do not suspend task for dump 1—suspend task after dump
10	Not used

Figure 2-4 (Part 2 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1010 (cont.)			*Hex* *Meaning* 08 Multi-purpose IOB error indicator: 0—no error in multi-purpose IOB 1—permanent disk error in multi-purpose IOB 04 MSIPL from disk indicator 02 MSIPL from diskette indicator 01 Reserved
	or D1CSIZE	1	Control storage size—low byte (in sectors)
1011	D1STK@	1	Address of start of register stack
1012	D1SVCIM@	1	Address of immediate SVC table
1013	D1SWPMIN	1	Minimum number of pages to partial swap
1014	D1LATR@	1	Address of load ATR subroutine
1015	D1REGPTR	1	Address of start of main storage processor register save area
1016	D1SEC@	1	System counter table address
1017	D1TMVAL@	1	Address of hardware timer value
1018	D1SWTCBO	1	Swapout task control block address
1019	D1ERRMIC	1	Job termination error message number
101A	D1ERRTCB	1	Job termination error task control block address
101B	D1ERRACE	1	Job termination error action control element address
101C	D1STKPTR	1	Address of current register stack entry
101D	D1LDSS	1	High and middle byte of sequential sector field

Figure 2-4 (Part 3 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
101E	D1LDSN	1	Low sequential sector byte and number of text sectors
101F	D1LDLINK	1	Link-edit address
1020	D1LDSTRT	1	Start control address
1021	D1LDRTOT	1	Relocation directory displacement and number of total sectors
1022	D1LDLOAD	1	Module load address
1023	D1ACVER@	1	Alter/display address compare verify address
1024	D1DSPFLG	1	Task management flags: High byte: *Hex* *Meaning* 80 Reserved 40 Task register restore required 20 Transient area refreshable 10 Disable task dispatcher, alter/display active 08 Force swapout of current task 04 Disable task dispatcher, main storage processor error pending 02 Temporary request to hold dispatching 01 EXAM indicator

Figure 2-4 (Part 4 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1025	D1ADCNTL	1	Alter/display control word: High byte: *Hex* *Meaning* 80 Exit alter/display 40 Alter/display system dump request 20 Display alter/display option menu 10 Instruction trace, step, address compare entry into alter/display 08 Alter/display waiting 04 Alter/display active 02 Alter/display in instruction trace mode 01 Alter/display in instruction step mode Low byte: *Hex* *Meaning* 80 Leave stop latch on when exiting alter/display 40 960-character display screen 20 On=system reset/start dump Off=system dump 10 Instruction step by task is active 08—01 Alter/display offset into $ADINIT OXREF table to get disk address of alter/display transients

Figure 2-4 (Part 5 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1026	D1SYSFLG	1	System flags: High byte: *Hex* *Meaning* 80 Main storage transient area load in progress, or swap I/O in progress, or task work area load in progress, or main storage loader action control element in progress 40 Current main storage loader request is a fetch 20 Nonswappable get page, get any page indicator 10 Nonswappable get page, have swap-in-candidate indicator 08 Nonswappable get page, not complete indicator 04 EXAM indicator for nonswappable get page transient 02 Not used 01 Not used Low byte: *Hex* *Meaning* 80 Not used 40 Not used 20 Not used 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used

Figure 2-4 (Part 6 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1027	D1ASRFLG	1	Assign recovery flag: High byte: *Hex* *Meaning* 80 Permanent assign failure has occurred 40 Assign recovery in progress 20 Assign recovery sequence has been started 10 A page has been assigned 0F Maximum number of reloops 07 Maximum number of retries
1028	D1TIMAB	1	Timer memory address backup save area
1029	D1TPTOXH	1	Time of expiration of first timer queue element on queue (high)
102A	D1TPTOXL	1	Time of expiration of first timer queue element on queue (low)
102B	D1TCBHDR	1	Address of main storage task control block queue
102C	D1MSATRS	1	Address of main storage ATR map
102D	D1FREEPT	1	Address of main storage free area
102E	D1MXNTPT	1	Address of main storage transient area
102F	D1DSTQE	1	Address of main storage dispatcher timer queue element
1030	D1TRSAVE	1	SVC trace address save area
1031	D1MNTQE	1	Address of main storage midnight timer queue element
1032	D1XNTBL	1	Address of main storage transient table 4

Figure 2-4 (Part 7 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1033	D1MXACE@	1	Address of main storage transient action control element
1034	D1MPIOB@	1	Address of main storage multi-purpose IOB (disk IOB format; used by task work area, relocating loader, main storage transient scheduler, and task swapper)
1035	D1SWACE@	1	Address of main storage swap action control element
1036	D1GPFLAG	1	General post flag word: High byte: *Hex* *Meaning* 80 System queue space failure indicator 40 Disk enqueue failure indicator 20 Test and set failure indicator 10 Work station queue space request failure indicator 08 Reserved 04 Reserved 02 Reserved 01 Reserved
1037	D1STKSAV	1	Stack pointer save area
1038	D1QHSAVE	1	Save area in queue routine for queue header
1039	D1TRACE@	1	Address of disk trace action control element (valid during trace)
	or D1IPIOB@	1	Address of MSIPL IOB (valid during IPL)
103A	D1TRIOB@	1	Address of trace IOB

Figure 2-4 (Part 8 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
103B	D1TIACE@	1	Address of main storage interval timer action control element
103C	D1FRCTCB	1	Address of current task control block that was marked for forced swapout
103D	D1DSPTCB	1	Current main storage active task control block
103E	D1CURJCB	1	Current job control block address
103F	D1QUEUE@	1	Queue header start address
1040	D1RTTABL	1	Resource table address in main storage
1041	D1IL5WRK	1	Work area for use on IL5
1042	D1SAVEIN	1	Post routine input save area
1043	D1IARS	1	Save area for input IAR value
1044	D1CURTCB	1	Address of main storage working task control block
1045	D1XTCB@	1	Main storage transient area owner
1046	D1LDACE@	1	Address of active main storage loader action control element
1047	D1SWTCBI	1	Swapin task control block address
1048	D1TWTCB@	1	Task work area task control block address (shared)
	or D1LDTCB@	1	Relocating loader task control block address (shared)

Figure 2-4 (Part 9 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1049	D1LOGPT	1	Address of next trace logout entry
			(H)=X'FF' trace buffer is full or not available for tracing (L)=X'FF' trace buffer used as free area extension
104A	D1LOGLIM	1	End address of trace buffer
104B	D1CURAQE	1	Current allocation queue element
104C	D1ASRTQE	1	Assign recovery timer queue element address
104D	D1AQEWRK	1	Resource enqueue/dequeue work area
104E	D1QSAVE	1	Save area for memory address backup in queue routine
104F	D1LOGSSH	1	Sector address of trace file/buffer size
			(H)=sector address low byte of trace file (L)=size of trace buffer
1050	D1LOGSS	1	Sector address of trace file (H, M-byte)
1051	D1LOGSIZ	1	Trace file size
1052	D1LOGUSD	1	Trace file current pointer (offset)
1053	D1CURXNT	1	Disk address of transient currently in main storage area
1054	D1CSDUMP	1	Control storage dump file sector address
1055	D1CURTRB	1	Current request block address
	or D1PREVRB	1	Previous request block address
1056	D1XR1	1	Save area for XR1

Figure 2-4 (Part 10 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1057	D1XR2	1	Save area for XR2
1058	D1ARR	1	Save area for ARR
1059	D1IAR	1	Save area for IAR
105A	D1PMRPSR	1	Save area for PMR and PSR
105B	D1RQ	1	Save area for R- and Q-bytes
105C	D1INL12	1	Inline parameters 1 and 2
105D	D1INL34	1	Inline parameters 3 and 4
105E	D1UNUS5E	1	Reserved
105F	D1IL5PCR	1	Save area for CMR/PCR
1060	D1HPCSDA	1	Main storage processor control status/channel device address: High byte: *Hex* *Meaning* 80 Assign failure main storage processor status indicator 40 Start the main storage processor before exit 20 Post SVC from IL2 is in process 10 Control storage SVC request 08 Main storage processor not busy (no task available) 04 Main storage processor waiting for start key 02 Suppress start of main storage processor 01 Error pending, recovery in process

Figure 2-4 (Part 11 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1061	D1HPCSTK	1	Current stack pointer for control storage SVCs from IL2 stack pointer
1062	D1HPSTK	1	Stack pointer for control storage SVC requests from IL2
1063	D1UNUS63	1	Reserved
1064	D1ACEIAR	1	Action control element IAR value
1065	D1ACEMAB	1	Action control element memory address backup value
1066	D1ACE12	1	Inline parameters 1 and 2
1067	D1ACE34	1	Inline parameters 3 and 4
1068	D1ACEXR1 or	1	Action control element XR1 value
	D1ACEIOB	1	Action control element IOB address value
1069	D1ACEXR2 or	1	Action control element XR2 value
	D1ACEPL@	1	Action control element parameter list address value
106A	D1ACETCB	1	Task control block address
106B	D1SETSW@	1	Set action control word entry point
106C	D1RDMS	1	R- and Q-bytes to read into main storage
106D	D1RDCS	1	R- and Q-bytes to read into control storage
106E	D1WRMS	1	R- and Q-bytes to write from main storage
106F	D1WRCS	1	R- and Q-bytes to write from control storage

Figure 2-4 (Part 12 of 13). Contents of Direct Area 1

Location in Hex	Label	Lng in Words in Dec	Description
1070	D1DSTIME	1	Dispatcher/swap time intervals Task timer interval: X'3D' (decimal 61) 61 timer units=499.712 milliseconds
1071	D1HCSTG@	1	Failing main storage address
1072	D1HCSTGD	1	Correction flag/corrected data
1073	D1ACVERD	1	Alter/display address compare verify data
1074	D1ACTSK@	1	Alter/display address compare task address
1075	D1ACCNTL	1	Alter/display address compare control word: High byte: *Hex* *Meaning* 80 Stop if task active 40 Real verify address 20 Verify stop 10 Stop if data matches 08 Stop if bits are on 04 Stop if bits are off 02 Address compare found on IL5 01 Address compare dump request Low byte: Task address translation register address of verify data
1076	D1END@	1	Label for next available word in DRCT1

Figure 2-4 (Part 13 of 13). Contents of Direct Area 1

Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
Communication Work Area Labels:			
2000	D2IOXT0	1	Communications work area for I/O transient area number 1 (location 2000 through 201F)
2001	D2IOXT1	1	
2002	D2IOXT2	1	
2003	D2IOXT3	1	
2004	D2IOXT4	1	
2005	D2IOXT5	1	
2006	D2IOXT6	1	
2007	D2IOXT7	1	
2008	D2IOXT8	1	
2009	D2IOXT9	1	
200A	D2IOXT10	1	
200B	D2IOXT11	1	
200C	D2IOXT12	1	
200D	D2IOXT13	1	
200E	D2IOXT14	1	
200F	D2IOXT15	1	
2010	D2IOXT16	1	
2011	D2IOXT17	1	

Figure 2-5 (Part 1 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2012	D2IOXT18	1	
2013	D2IOXT19	1	
2014	D2IOXT20	1	
2015	D2IOXT21	1	
2016	D2IOXT22	1	
2017	D2IOXT23	1	
2018	D2IOXT24	1	
2019	D2IOXT25	1	
201A	D2IOXT26	1	
201B	D2IOXT27	1	
201C	D2IOXT28	1	
201D	D2IOXT29	1	
201E	D2IOXT30	1	
201F	D2IOXT31	1	End of communications work area for I/O transient area number 1
2020	D2IOXT32	1	Communications work area for I/O transient area number 2 (location 2020 through 2027)
2021	D2IOXT33	1	
2022	D2IOXT34	1	
2023	D2IOXT35	1	
2024	D2IOXT36	1	

Figure 2-5 (Part 2 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2025	D2IOXT37	1	
2026	D2IOXT38	1	
2027	D2IOXT39	1	End of communications work area for I/O transient area number 2
2028	D2IOXT40	1	Communications work area for I/O transient area number 3 (location 2028 through 203F)
2029	D2IOXT41	1	
202A	D2IOXT42	1	
202B	D2IOXT43	1	
202C	D2IOXT44	1	
202D	D2IOXT45	1	
202E	D2IOXT46	1	
202F	D2IOXT47	1	
2030	D2IOXT48	1	
2031	D2IOXT49	1	
2032	D2IOXT50	1	
2033	D2IOXT51	1	
2034	D2IOXT52	1	
2035	D2IOXT53	1	
2036	D2IOXT54	1	
2037	D2IOXT55	1	

Figure 2-5 (Part 3 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2038	D2IOXT56	1	
2039	D2IOXT57	1	
203A	D2IOXT58	1	
203B	D2IOXT59	1	
203C	D2IOXT60	1	
203D	D2IOXT61	1	
203E	D2IOXT62	1	
203F	D2IOXT63	1	End of communications work area for I/O transient area number 3
2040	D2FDIOB	1	FDIOS IOB address save area
2041	D2FDLOG	1	Pointer to disk logout area
2042	D2SVFDCA	1	Save area for current FDIOS action control element address on a system reset and start request
2043	D2FDACF@	1	Address of disk spindle A processing data
2044	D2FDBCF@	1	Address of disk spindle B processing data
2045	D2FDCFCB	1	Current file control block pointer
2046	D2FDIWK1	1	FDIOS work area one
2047	D2FDCACE	1	FDIOS current action control element pointer

Figure 2-5 (Part 4 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2048	D2FDCIND	1	FDIOS current indicator: High byte: *Hex* *Meaning* 80 Disk error logout pending: 0—no error logout pending 1—error logout pending 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved Low byte: *Hex* *Meaning* 80 Spindle A or B request indicator: 0—spindle A request 1—spindle B request 40 Disk IOB in progress; spindle A 0—no IOB in progress 1—IOB in progress 20 Disk IOB in progress; spindle B 0—no IOB in progress 1—IOB in progress 10 Disk permanent error found 0—no disk permanent error found 1—disk permanent error found 08 DLOG in progress indicator 0—DLOG is in progress 1—DLOG is not in progress

Figure 2-5 (Part 5 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2048 (cont.)			*Hex* *Meaning* 04 Reserved 02 Disk IOB in progress; spindle C 0—no IOB in progress 1—IOB in progress 01 Disk IOB in progress; spindle D 0—no IOB in progress 1—IOB in progress
2049	D2FDSTRT	1	Start of disk
204A	D2FDSCP	1	First sector after SSP area
204B	D2FDMID	1	End of disk drive A (last 2 bytes)
204C	D2FDMEDK	1	End of disk drive A (first byte)/end of last disk drive (first byte)
204D	D2FDEND	1	End of last disk drive (last 2 bytes)
204E	D2FDNSCY	1	Number of sectors/cylinders
204F	D2QUEUE@	1	Start of main storage action control element queue headers
2050	D2CXNT#	1	ID of current transient—current transient status byte (the following equates apply to the low byte of the D0CXNT@ word): Low byte: *Hex* *Meaning* 80 Refresh request 40 Request is from the control storage transient area 20 Control storage transient area is busy 10 Control storage transient action control element is in progress

Figure 2-5 (Part 6 of 7). Contents of Direct Area 2

Location in Hex	Label	Lng in Words in Dec	Description
2051	D2CXIOB@	1	Address of the control storage transient scheduler IOB
2052	D2CXTBPT	1	Pointer to control storage transient table
2053	D2CXNTPT	1	Address of nucleus transient area
2054	D2CXENT@	1	Transient entry point address
2055	D2SET@	1	Address of NUSET routine in segment 0
2056	D2ACW0PT	1	Pointer to action control word 0
2057	D2ACTBPT	1	Pointer to the action control word branch table
2058	D2ERR@	1	Nucleus error routine address
2059	D2ERR1@	1	Interrupt level 1 error routine address
205A	D2IL2PCR	1	Save area for IL2 process condition register
205B	D2TMVALH	1	High timer value
205C	D2TMVALL	1	Low timer value
205D	D2MRIOC	1	SIO counter for 1255
205E	D2FDCCF@	1	Spindle C file control block address
205F	D2FDDCF@	1	Spindle D file control block address
2060	D2FDMLBC	1	Last 2 bytes of spindle juncture B/C disk address
2061	D2FDHBCD	1	High byte is first byte of spindle juncture B/C disk address; low byte is first byte of spindle juncture C/D disk address
2062	D2FDMLCD	1	Last 2 bytes of spindle juncture C/D disk address
2063	D2END	1	End of direct area 2

Figure 2-5 (Part 7 of 7). Contents of Direct Area 2

Direct Area 3

Location in Hex	Label	Lng in Words in Dec	Description
3000	XR	1	E-machine index register
3001	AR	1	E-machine address register
3002	B0	1	E-machine binary register
	or		
	B1		Not used
3003	B2	1	Not used
	or		
	B3		Not used
3004	FSIGN	1	E-machine floating point register sign
3005	F0	1	E-machine floating point register
	or		
	F1		Not used
3006	F2	1	Not used
	or		
	F3		Not used
3007	F4	1	Not used
	or		
	F5		Not used
3008	F6	1	Not used
	or		
	F7		Not used
3009	DOP1	1	Not used
300A	DOP2	1	Not used
300B	DOP3	1	Not used
300C	DOP4	1	Not used
300D	XM	1	E-machine index multiplier register

Figure 2-6 (Part 1 of 3). Contents of Direct Area 3

Location in Hex	Label	Lng in Words in Dec	Description
300E	IAREG	1	E-machine instruction address register
300F	OPCCR	1	Op code condition code register
3010	SCADDR	1	Temporary to store address
3011	D3PCRSAV	1	Process condition register save area
3012	D3NUSET@	1	Address of NUSET routine
3013	D3CMRSET	1	Load CMR with translate values
3014	D3IL5NTY	1	Address of IL5 entry
3015	D3MPLFF6	1	Control processor load for special function instruction: X'F6'
3016	D3INTRP@	1	Address of interrupt location
3017	D3INTRPL	1	Address of interrupt routine
3018	D3ERR@	1	Address of NUERR routine
3019	D3ACW0@	1	Address of action control word
301A	D3NUSETX	1	NUSET exit address
301B	D3HPGOT5	1	HPGOTO5 address
301C	D3LIW2H	1	Address of control storage SVC routine
301D	D3RETRN	1	Address of return
301E	D3MC@	1	Address of ECS machine check handler
301F	D3INV@	1	Address of invalid address error
3020	D3IL0@	1	Address of main IL0 handler
3021	D3MARSAV	1	Address of memory address register save area on error

Figure 2-6 (Part 2 of 3). Contents of Direct Area 3

Location in Hex	Label	Lng in Words in Dec	Description
3022	D3CHECKS	1	Address of check save area on error
3023	D3MPLW0	1	Address of MPLW0 save area
3024	D2PCRSV@	1	Address of IL5 process condition register save area
3025	D3HPEC@	1	Address of main storage processor ECS check code
3026	D3ILOPCR	1	Address of IL0 process condition register save area
3027	FXEQ	1	Not used
3028	D3NUAC@	1	Address of action controller
3029	D3END2@	1	End of direct area 3

Figure 2-6 (Part 3 of 3). Contents of Direct Area 3

MAIN STORAGE ORGANIZATION

Main storage sizes are: 32, 48, 64, 96, 128, or 256K bytes. It is divided into three distinct parts: fixed nucleus, variable nucleus, and a user area. The fixed nucleus and variable nucleus can be accessed only by real addressing and the user area can only be accessed by means of address translation (see *Appendix E. Conversion Aids* for information on address translation).

Fixed Nucleus

The fixed nucleus starts at real address 00 and is 4K bytes in size. It is initialized mainly by control storage IPL and the first main storage IPL transient (#MSNIP).

Figure 2-7 shows the fixed nucleus storage format.

Address of Leftmost Byte in Hex	Lng in Bytes in Dec	Description
0000	256	System communication area
0100	192	Action control element queue headers
01C0	32	Multi-purpose IOB (disk IOB format)
01E0	32	Control storage transient loader IOB
0200	128	Command processor task control block (TCB)
0280	35	Task work area index
02A3	5	Task work area queue header
02A8	56	Diskette error log area
02E0	32	System library (#LIBRARY) format 1
0300	16	Alter/display action control element
0310	16	Alternative sector action control element
0320	16	Statistical logout action control element
0330	16	Interval timer action control element
0340	16	Main storage processor error action control element
0350	16	Swap action control element
0360	16	Main storage transient loader action control element
0370	16	Diskette error action control element
0380	16	Error task—task action control element
0390	8	Dispatcher timer queue element
0398	8	Midnight timer queue element

Figure 2-7 (Part 1 of 2). Main Storage Organization—Fixed Nucleus

Address of Leftmost Byte in Hex	Lng in Bytes in Dec	Description
03A0	8	Statistical logging timer queue element
03A8	8	System queue space failure timer queue element
03B0	32	Termination dump IOB
03D0	16	Termination dump action control element (ACE)
03E0	16	Permanent swap ACE
03F0	784	MSIPL free area
0700	256 or	Minimum trace buffer
	192 and	Alter/display work area
07C0	64	CSIPL error log save area
0800	2048	Main storage transient area

Figure 2-7 (Part 2 of 2). Main Storage Organization—Fixed Nucleus

Variable Nucleus

The variable area starts immediately after the main storage transient area (hex 1000). Its size is variable depending on options selected during MSIPL and the hardware configuration. The contents of the variable nucleus are resident routines, work areas, buffers, control blocks, and the queue space area. The contents are listed below in the order they are initialized.

1000	Variable Nucleus Area:	Initialized By:
	Terminal unit blocks	#MSTWA
	Command processor work area	#MSTWA
	Command processor matrix image	#MSTWA
	Command processor mainline (#CPML)	#MSTWA
	Disk data management (#DDDM or #DDDE)	#MSSQS

1000 (cont.)	Variable Nucleus Area:	Initialized By:
	Task to task communications (#SVTTC)	#MSCOM
	Device allocate table	#MSCOM
	Command processor error action control element	#MSIPL
	Command processor task—task action control element	#MSIPL
	Command processor job control block	#CPON
	Spool intercept ($SPINT)	#MSIPL
	Spool intercept buffer	#MSIPL, #MSSP
	Spool write buffer	#MSIPL, #MSSP
	Display station data management (#WDDA)	#MSIPL
	Work station queue space (WSQS)	#MSSQS
	System queue space (SQS)	#MSSQS
	SSP-ICF data management	#MSSQS

User Area

The user area starts on the first 2K storage boundary after the system queue space area of the variable nucleus. The user area includes the remainder of main storage. This area is accessed by means of address translation (see *Appendix E. Conversion Aids* for information on address translation). After MSIPL, the first byte of each free 2K page contains the ATR value of the next free 2K page. The last free 2K page has a chain pointer of X'00'. The user area is initialized by main storage IPL (#MSSQS).

On systems with 64K or more storage, some optional SSP resident routines may reside in the area from 50K to 64K but are not part of the user area.

Control Block Chains

The following diagrams illustrate the logical relationships among major system control blocks:

Note: The symbol ↑ in these control block charts means pointer (for example, ↑ JCB means pointer to job control block).

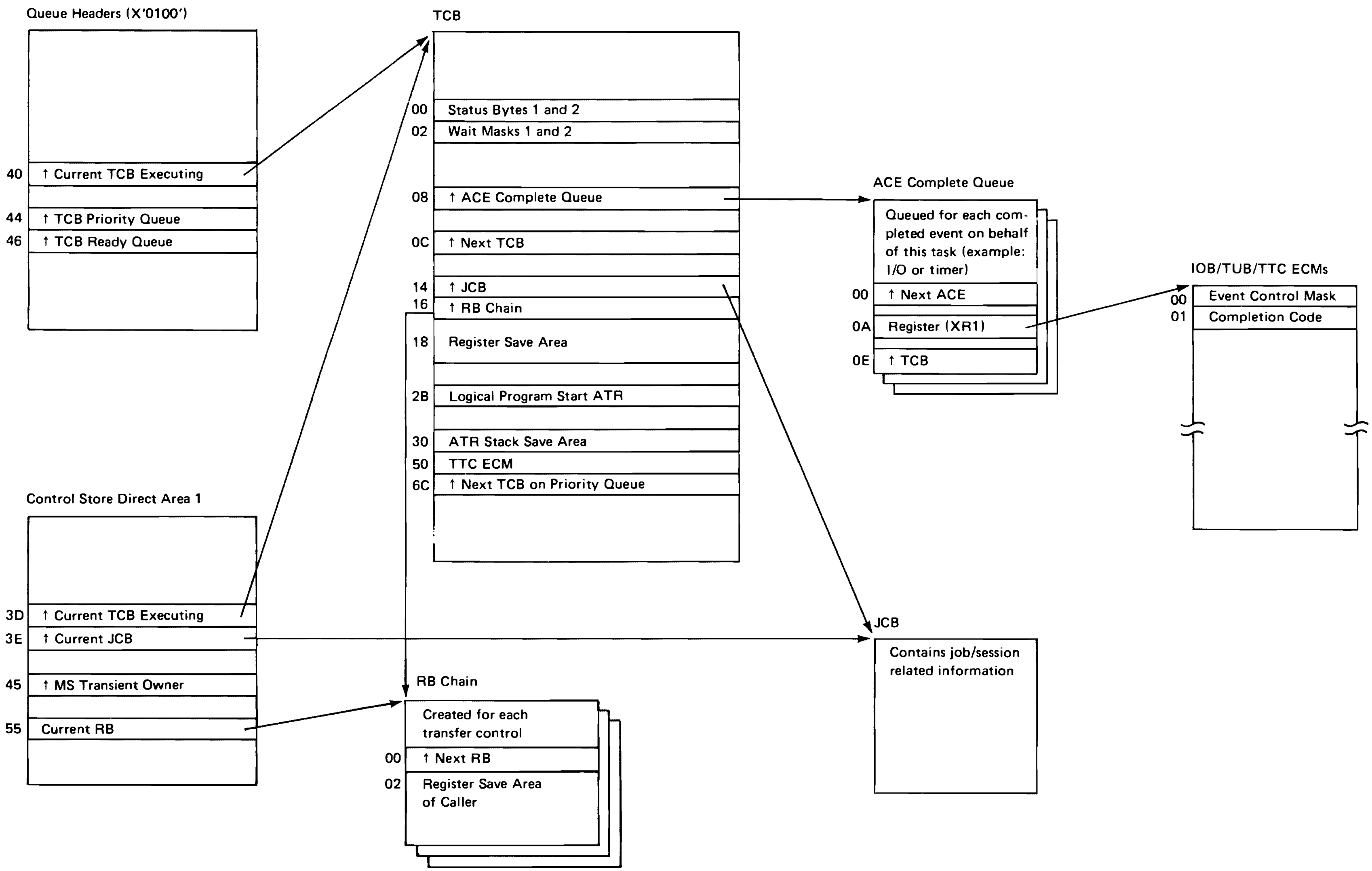


Figure 2-8. Task Management Control Blocks

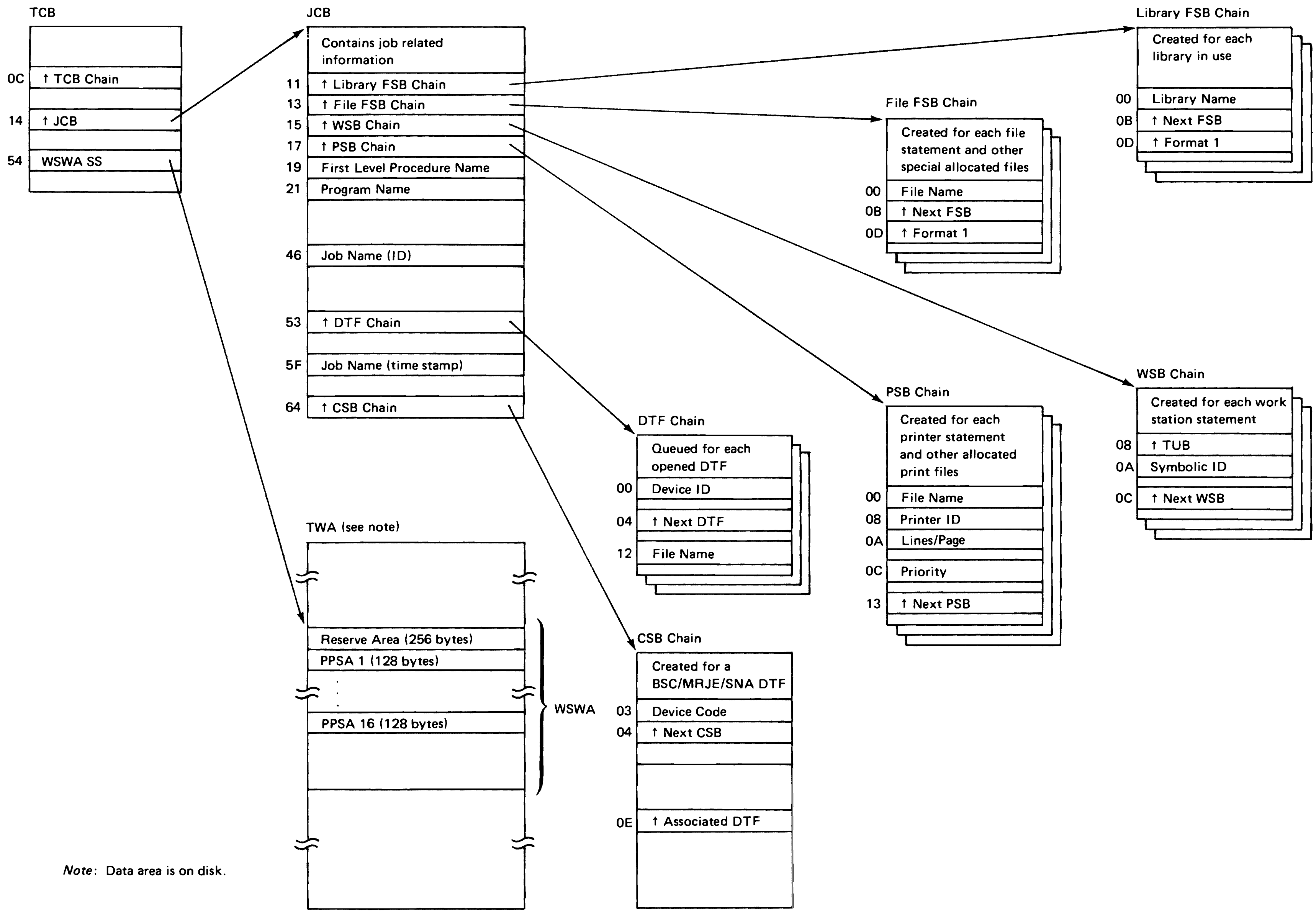


Figure 2-9. Job Management Control Blocks

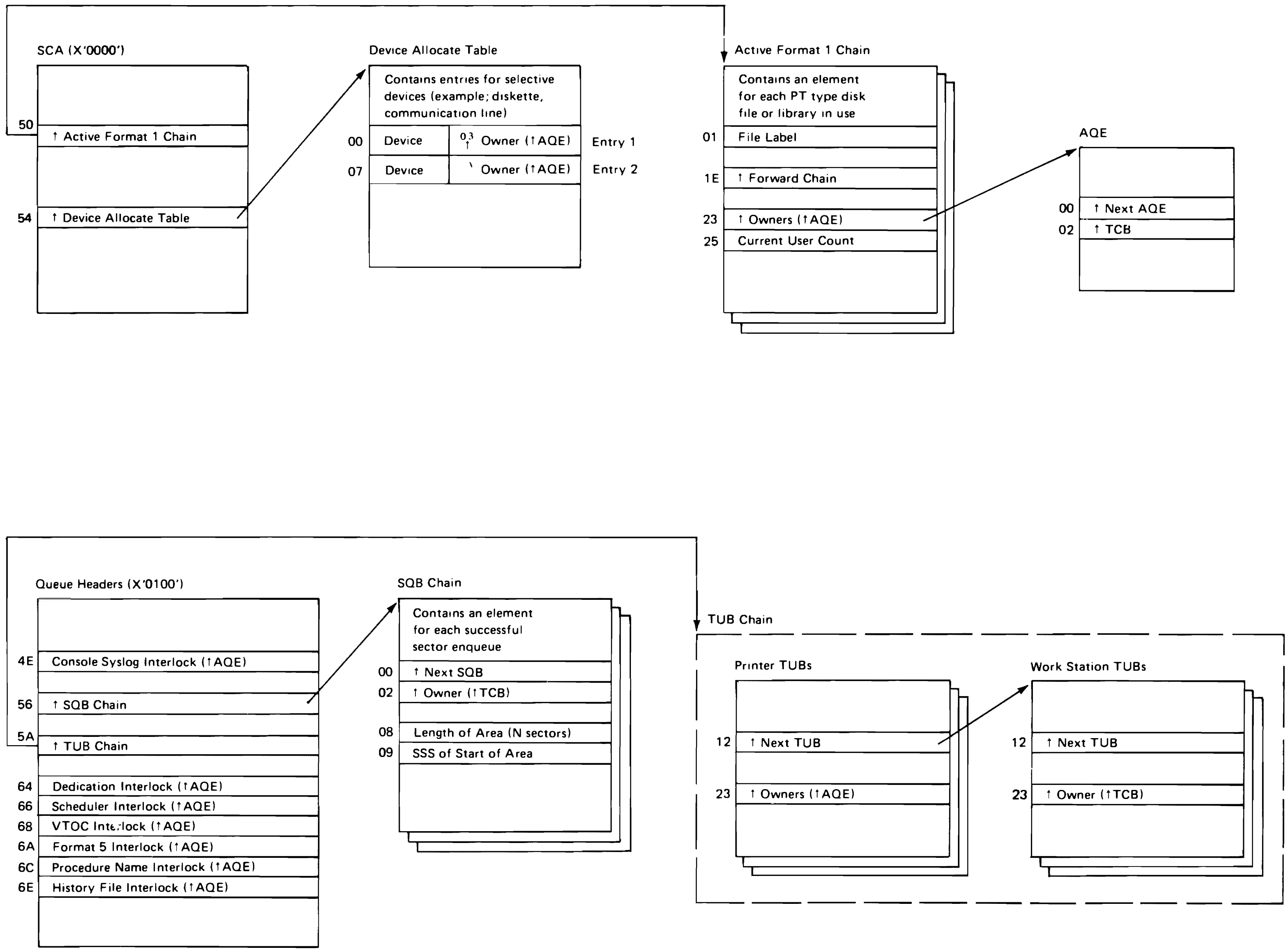


Figure 2-10. Resource Allocation Related Control Blocks

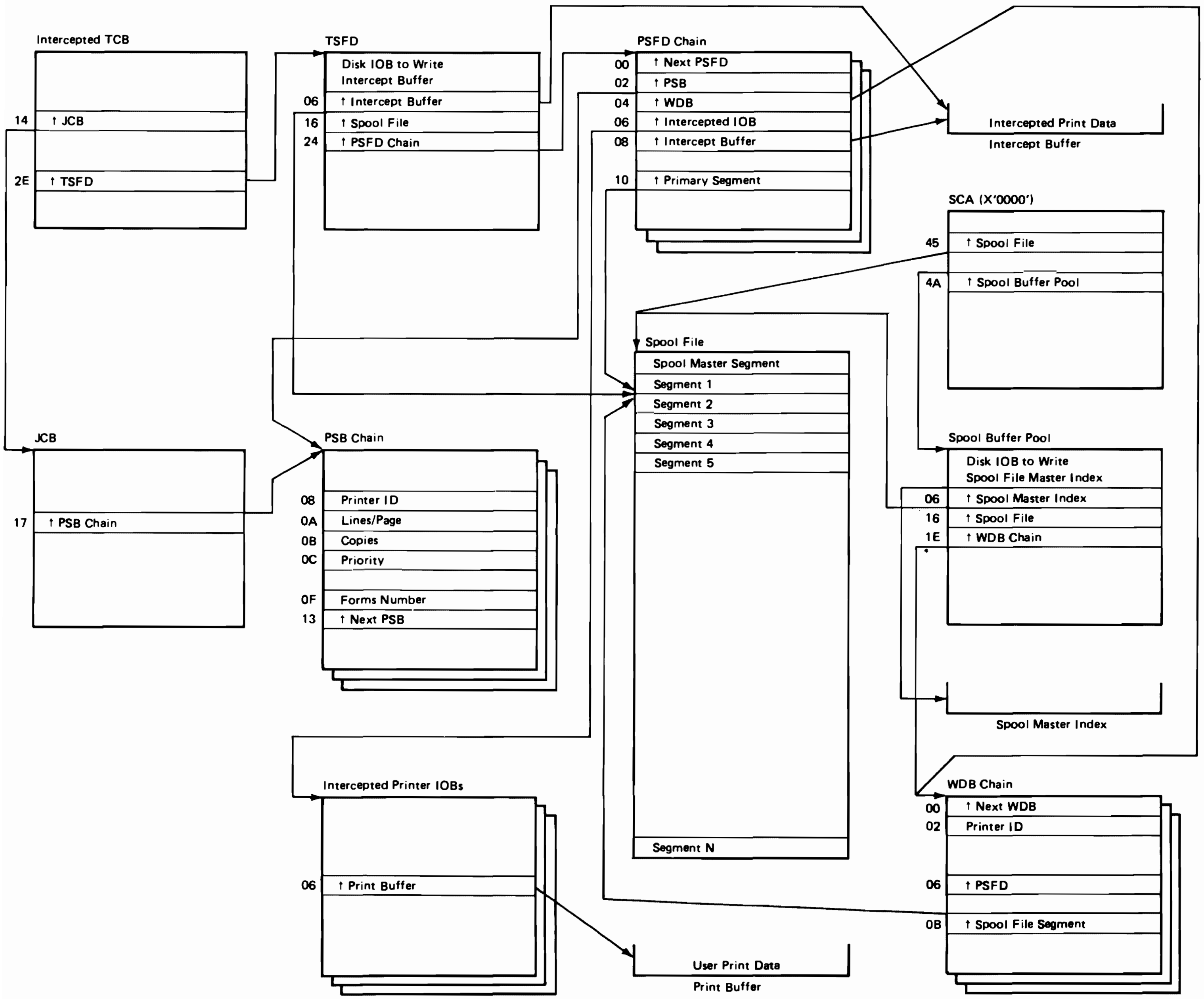


Figure 2-11. Spool Intercept Control Blocks

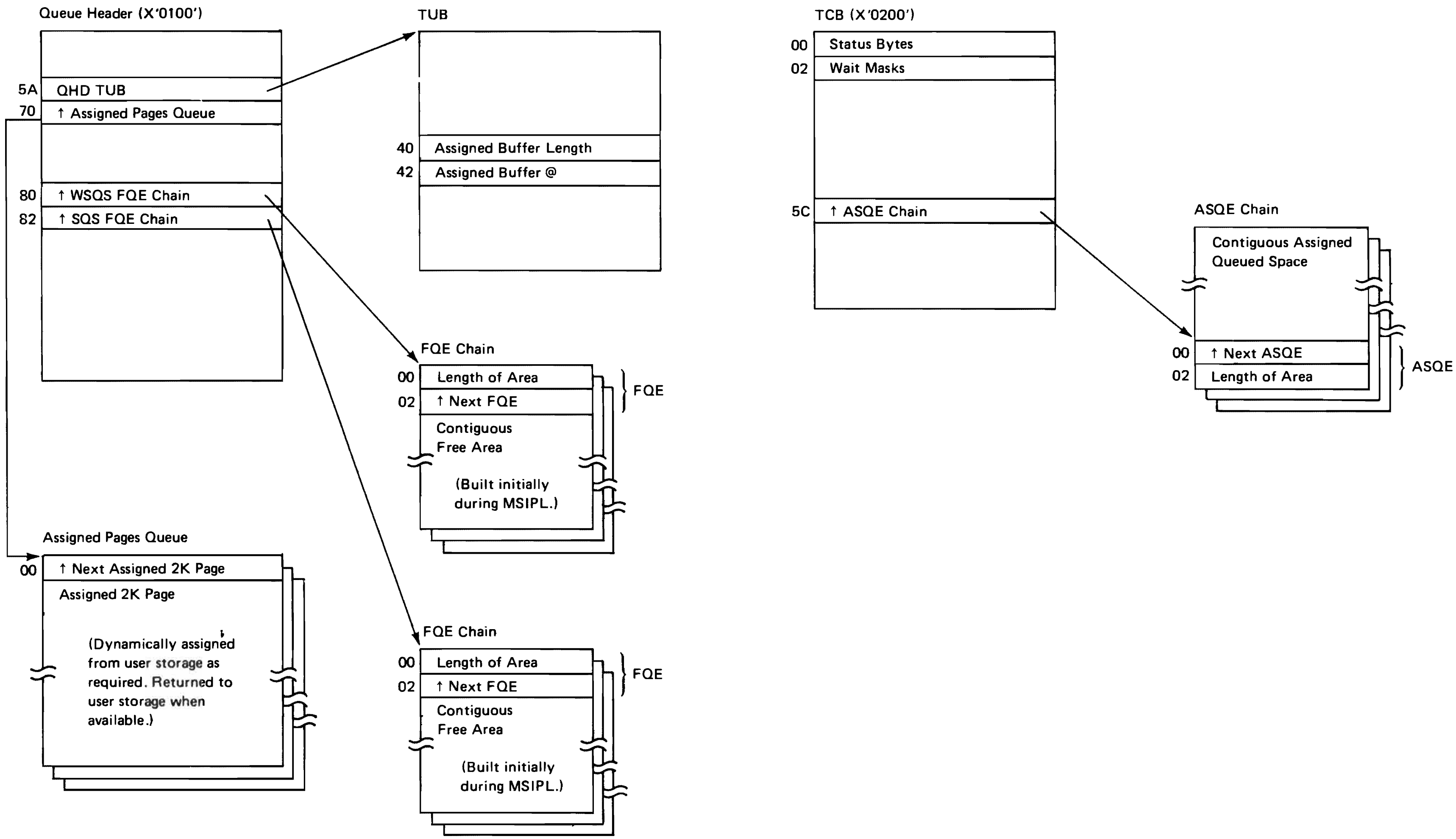


Figure 2-12. Real Storage Management Control Blocks

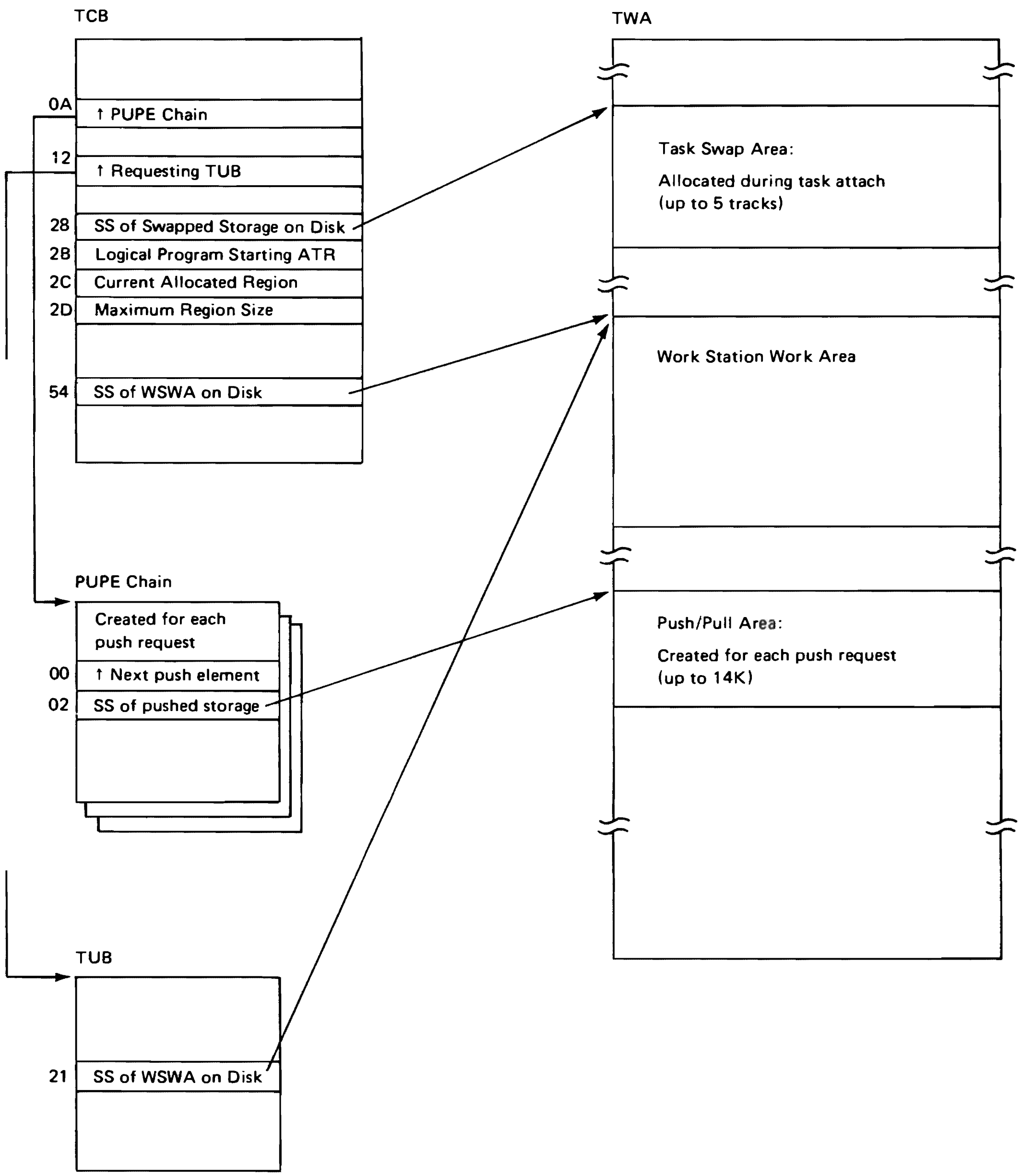


Figure 2-13. Task Work Area Management Control Blocks

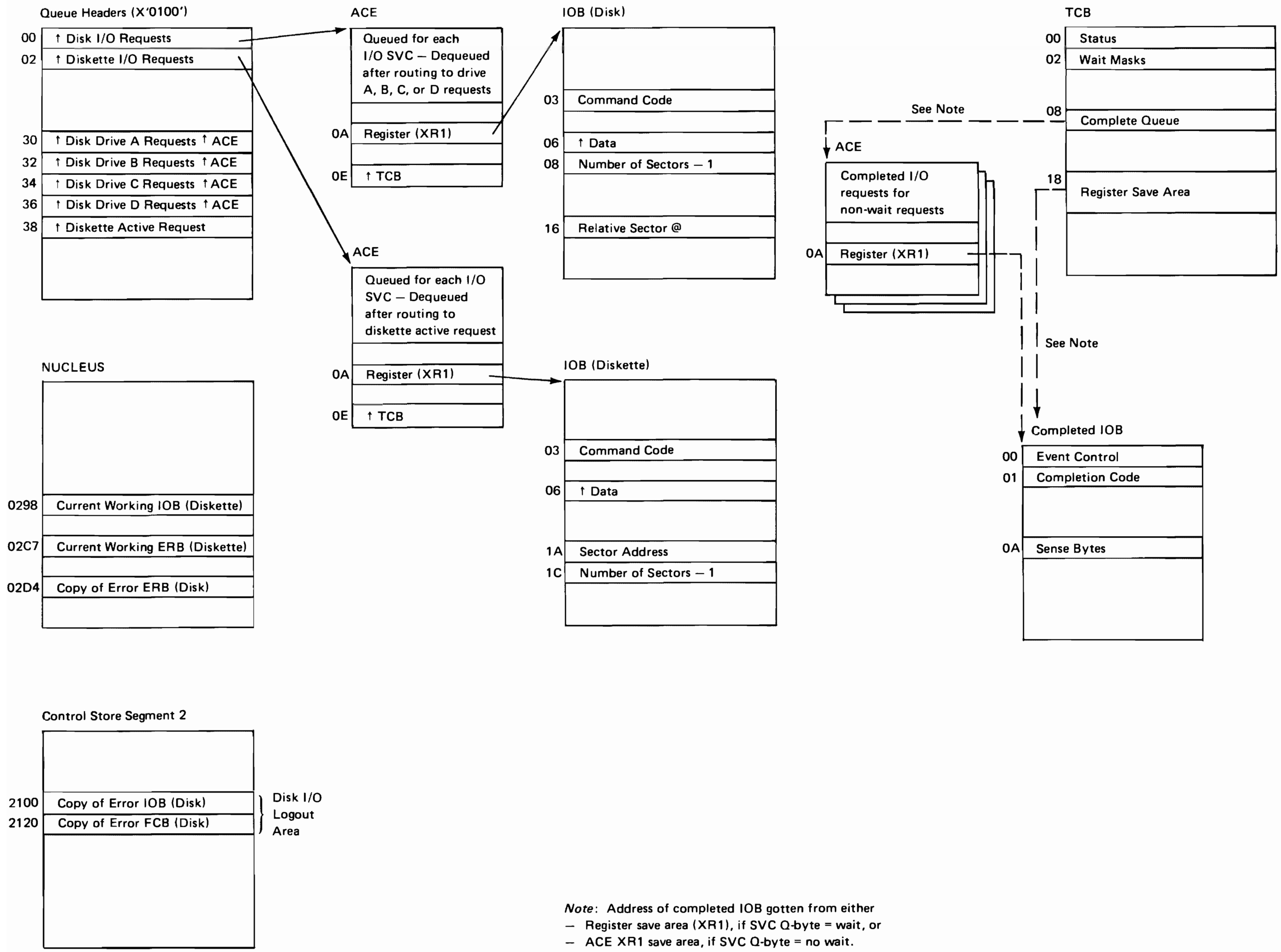


Figure 2-14. Disk/Diskette I/O Control Blocks

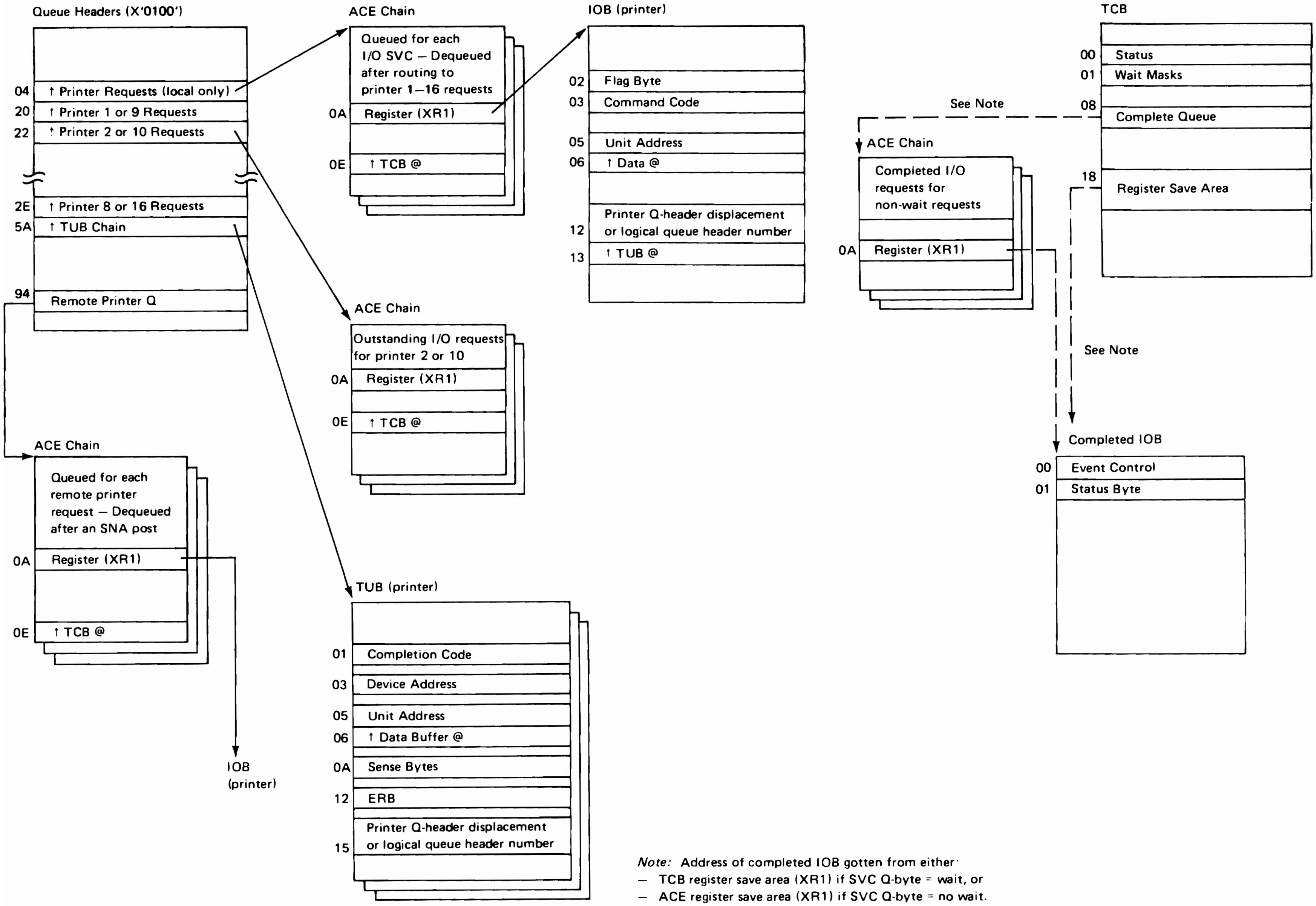
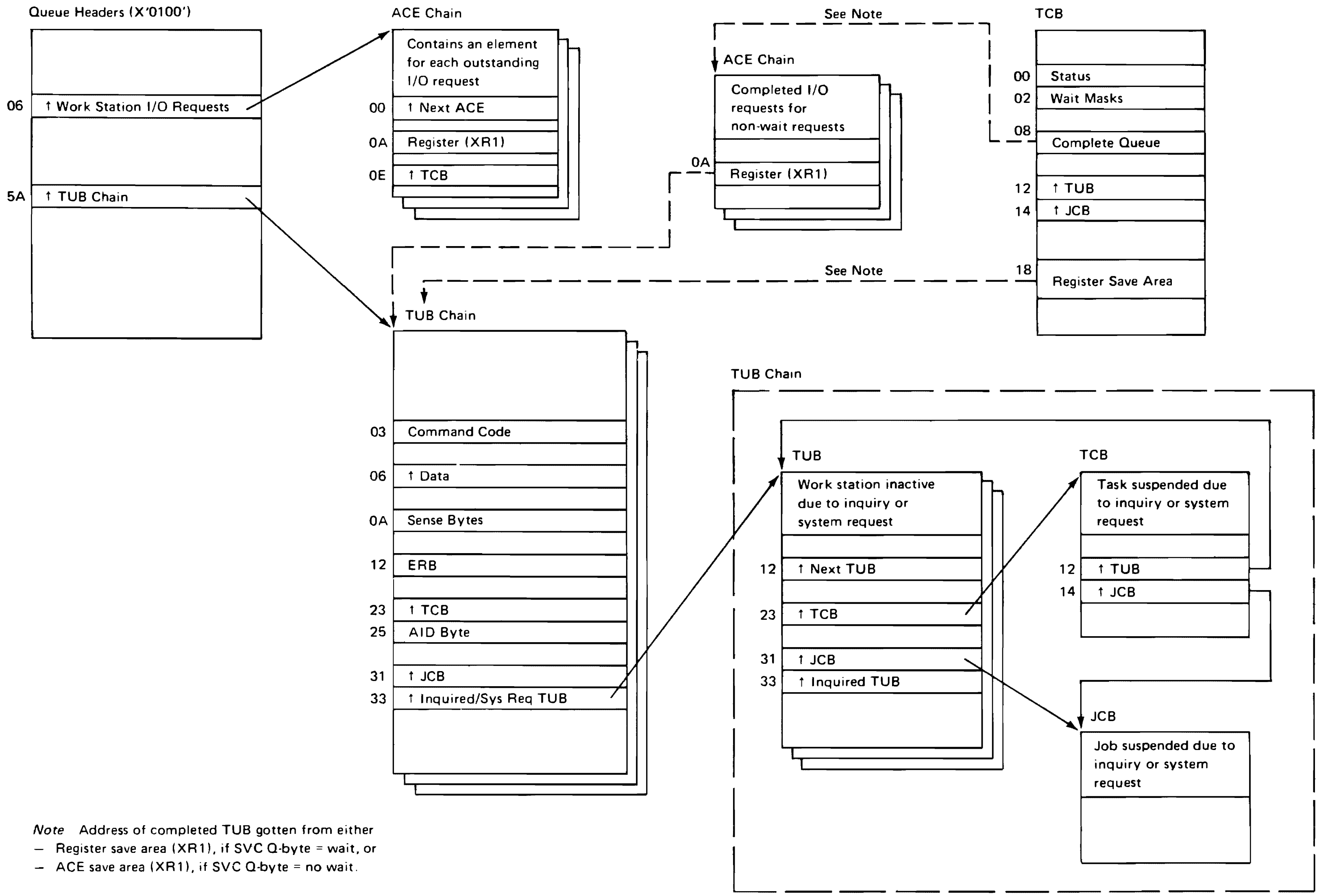


Figure 2-15. Printer I/O Control Blocks



Note Address of completed TUB gotten from either
– Register save area (XR1), if SVC Q-byte = wait, or
– ACE save area (XR1), if SVC Q-byte = no wait.

Figure 2-16. Work Station I/O Control Blocks

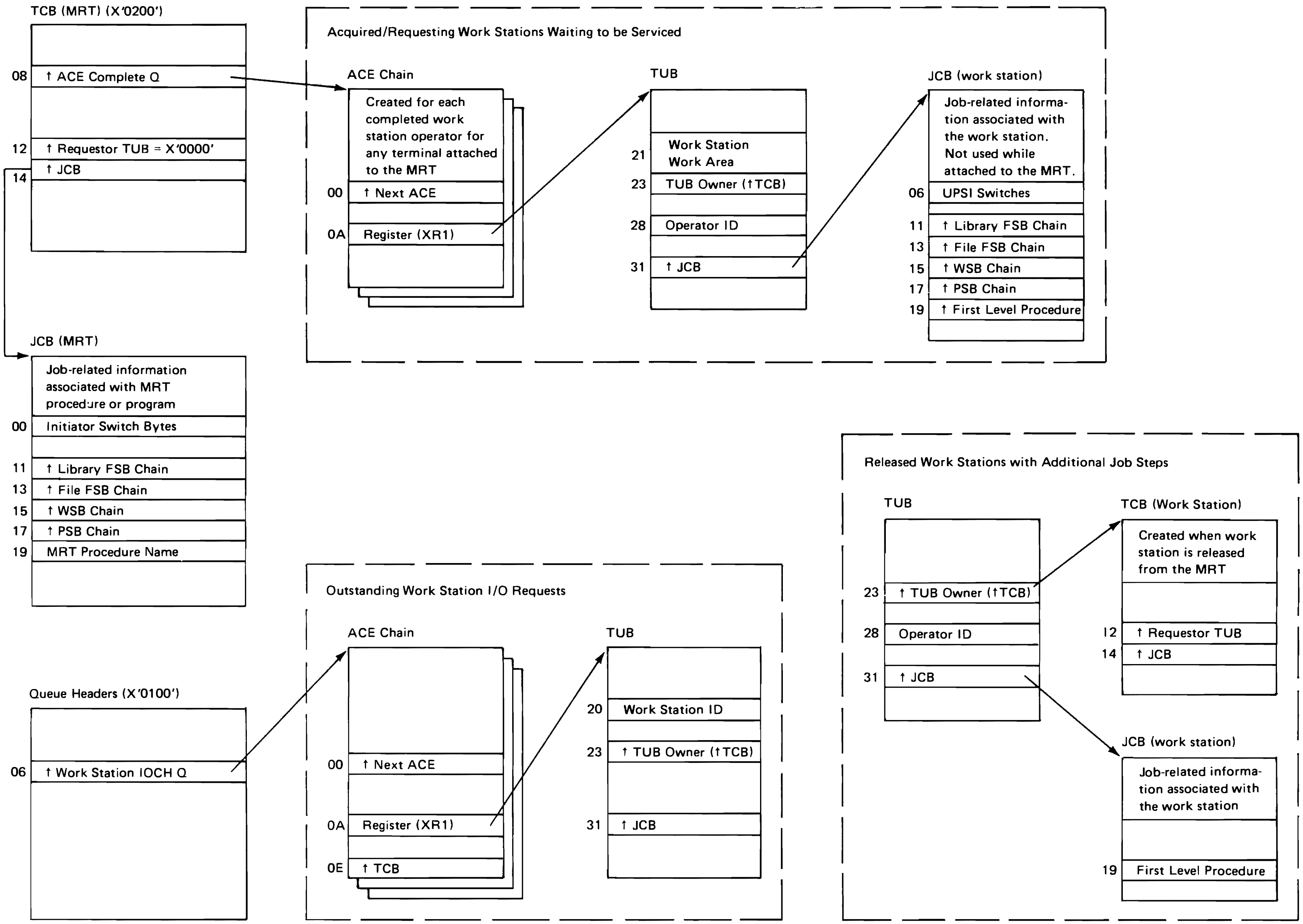


Figure 2-17. MRT-Related Control Blocks

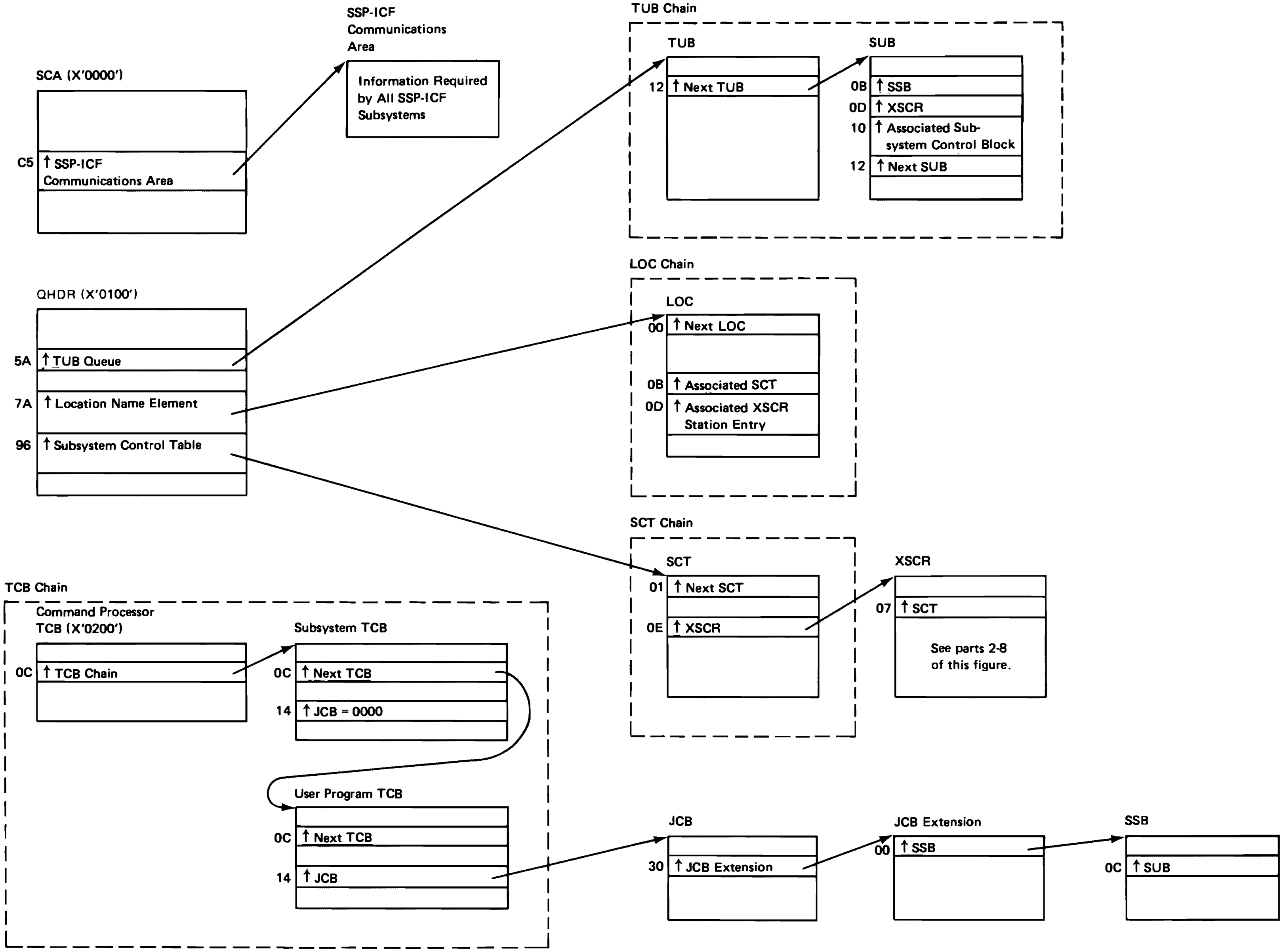


Figure 2-18 (Part 1 of 8). SSP-ICF Control Blocks (Overview)

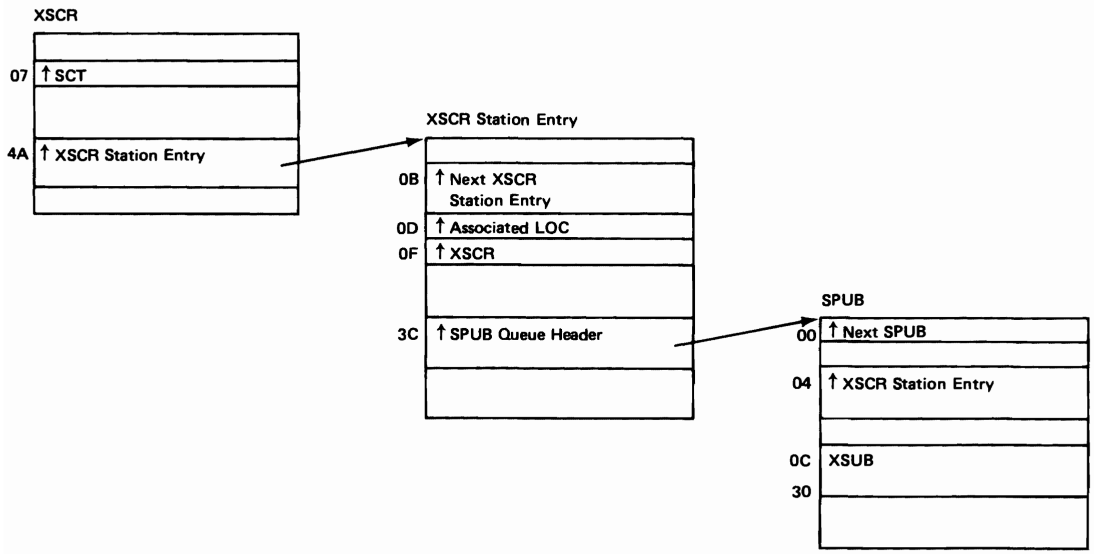


Figure 2-18 (Part 2 of 8). SSP-ICF Control Blocks (SNA Peer)

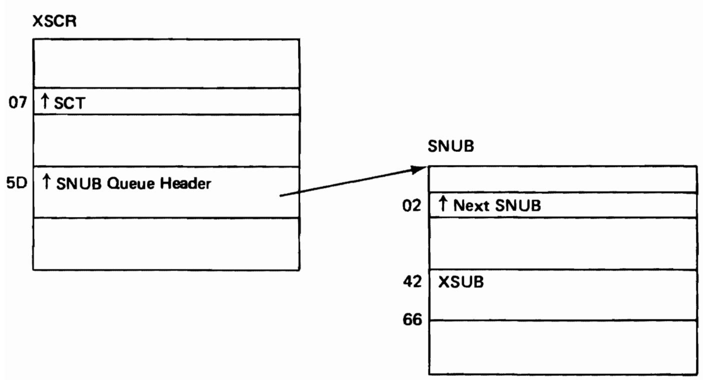


Figure 2-18 (Part 3 of 8). SSP-ICF Control Blocks (SNA Upline)

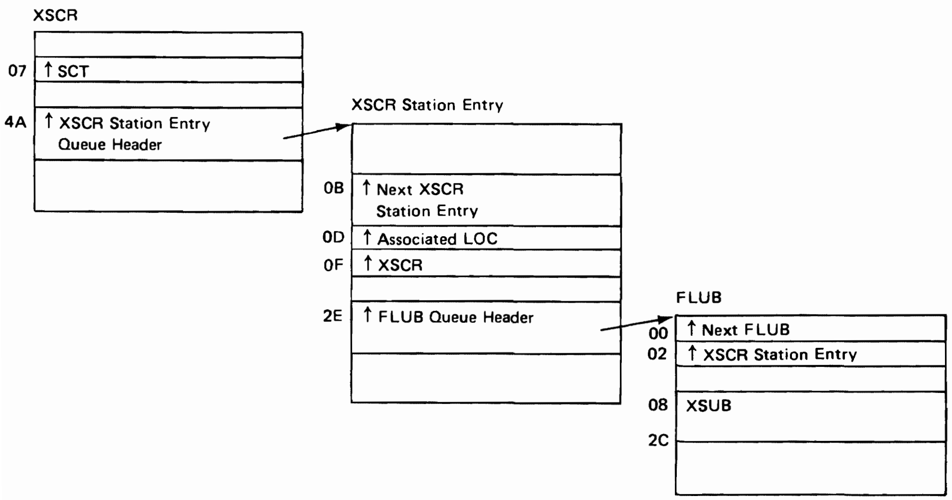


Figure 2-18 (Part 4 of 8). SSP-ICF Control Blocks (Finance Subsystem)

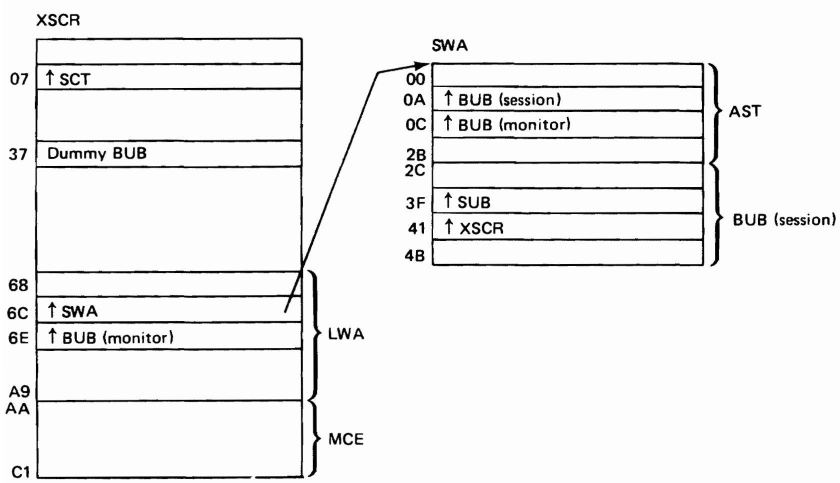


Figure 2-18 (Part 5 of 8). SSP-ICF Control Blocks (BSCEL Subsystem)

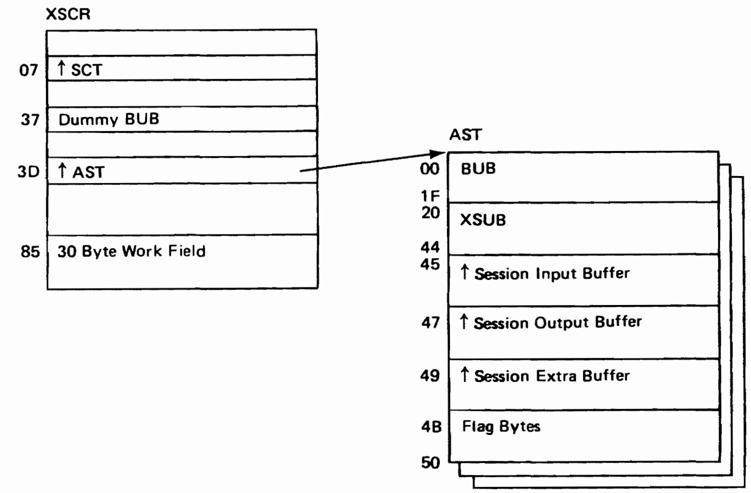


Figure 2-18 (Part 6 of 8). SSP-ICF Control Blocks (BSC CCP Subsystem)

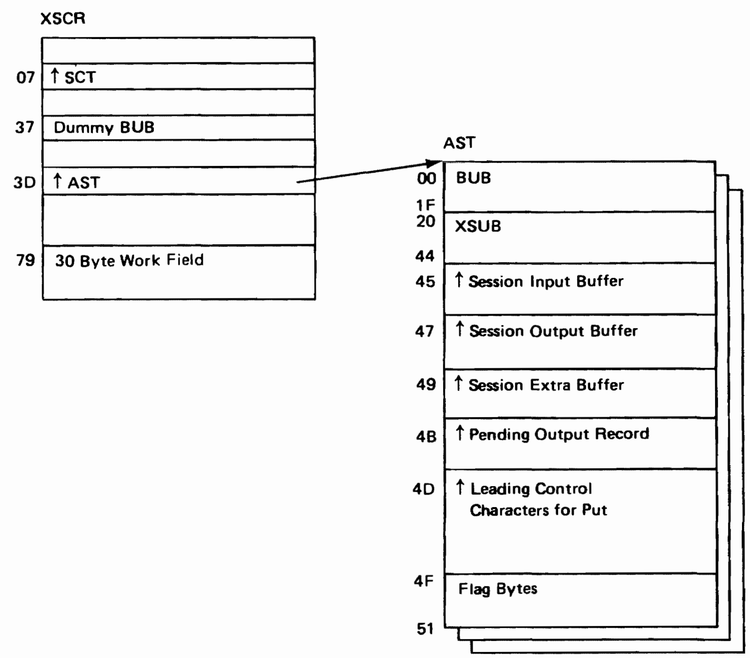


Figure 2-18 (Part 7 of 8). SSP-ICF Control Blocks (BSC CICS Subsystem)

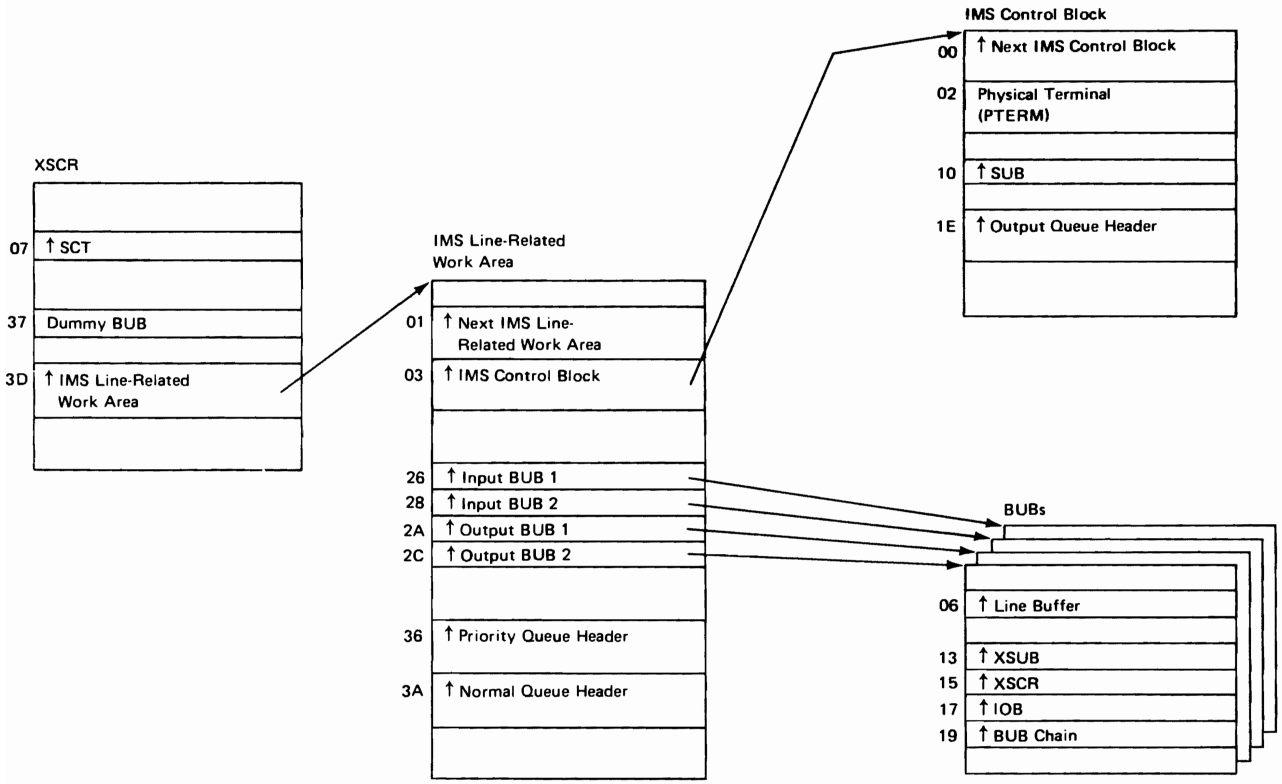


Figure 2-18 (Part 8 of 8). SSP-ICF Control Blocks (BSC IMS/IRSS Subsystem)

DISK ORGANIZATION

The disk sizes available on System/34 are 8.6, 13.2, 27.1, 63.9, 128.4, 192.9, and 257.4 megabytes. The disk, or disks (up to 4) consist of four major functional areas:

- Fixed areas
- Variable area
- System library area
- User area

Figure 2-19 shows the disk organization for drives A, B, C, and D.

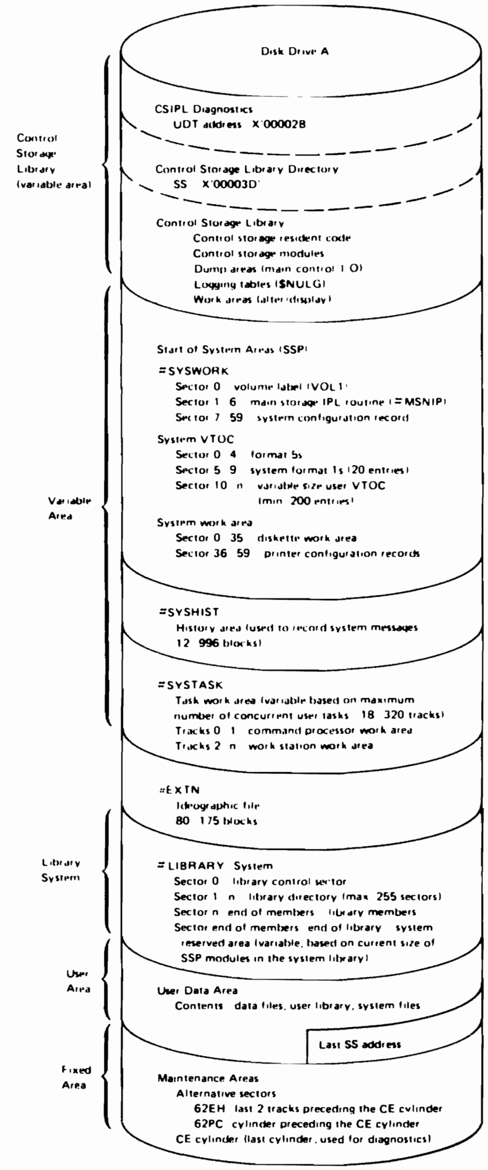
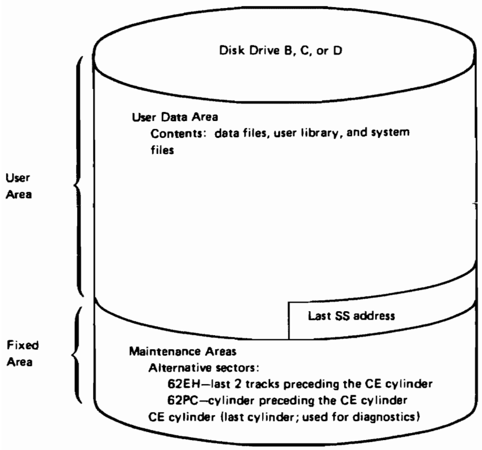


Figure 2-19 (Part 1 of 2). System/34 Disk Organization



Disk Extents:

Size	Start SS on Drive A	Last SS on Drive A	Last SS on Drive B	Last SS on Drive C	Last SS on Drive D
	H M L	H M L	H M L	H M L	H M L
8.6 MB	00 00 01	00 8D 54	N/A	N/A	N/A
13.2 MB	00 00 01	00 D3 E0	N/A	N/A	NA/
27.1 MB	00 00 01	00 D3 E0	01 A7 C0	N/A	N/A
63.9 MB	00 00 01	03 D8 7E	N/A	N/A	N/A
128.4 MB	00 00 01	03 D8 7E	07 B0 FC	N/A	N/A
192.9 MB	00 00 01	03 D8 7E	07 B0 FC	0B 89 7A	N/A
257.4 MB	00 00 01	03 D8 7E	07 B0 FC	0B 89 7A	0F 61 F8

Net User Disk Capacities:

Megabytes	Bytes (Note 1)	Cylinders (Note 2)
8.6	8,616,960	202
13.2	13,271,040	303
27.1	27,156,480	303 x 2
63.9	63,905,280	354
128.4	128,424,960	712
192.9	192,944,640	1070
257.4	257,464,320	1428

Notes:

1. Last 2 sectors on each spindle are not available to users.
2. Approximate values.
3. Alternative sectors and CE cylinder are not accessed by SS addressing.

Figure 2-19 (Part 2 of 2). System/34 Disk Organization

DISKETTE ORGANIZATION

System/34 consists of a diskette 1 drive, a diskette 2D drive, or a 72MD multiple diskette drive. The diskette 1 is composed of 75 usable cylinders (1 track per cylinder, numbered 0 through 74). Track 0 contains 26 records (sectors), each 128 bytes long. With the 128-byte format tracks 1 through 74 each contain 26 sectors, each of which is 128 bytes long. With the 512-byte format, tracks 1 through 74 each contain 8 sectors, each of which is 512 bytes long.

The double density diskette 2D contains 75 usable cylinders numbered 0 through 74 (2 tracks per cylinder). Cylinder 0, head 0 contains 26 records (sectors), each 128 bytes long. Cylinder 0, head 1 contains 26 records, each 256 bytes long. With the 256-byte format, cylinders 1 through 74 contain 26 sectors per track each 256 bytes long. With the 1024-byte format, cylinders 1 through 74 contain 8 sectors per track each 1024 bytes long.

The 72 MD multiple diskette drive assembly consists of two ten-pack magazines and three manual insertion slots, each of which can accommodate either the diskette 1 or the diskette 2D.

Figure 2-20 shows the storage for the two types of diskettes.

The system uses sector (SS) addressing, starting with sector address hex 0001 (cylinder 1, head 0, record 1) and numbers sequentially in hexadecimal (Figure 2-21). Control storage direct area 0 contains the control program labels for the diskette. These labels are:

- D0IOCH—Cylinder address and head address
- D0IORX—Sector address and number of sectors to be operated on
- D0IOCPCRN—Record length for the diskette operation

Alternative Cylinders

Each recording surface of a diskette contains 77 concentric cylinders (tracks) for storing information. However, the last 2 tracks (75 and 76) are used as alternate cylinders. That is, they are reserved for use as replacements (alternative cylinders) for defective cylinders.

Cylinder	Track	Sector	Contents
0	0	1–2	Reserved for CSIPL functions
		3	Reserved for system scratch use
		4	Reserved
		5	Error map
		6	Reserved
		7	VOL1 label (Figure 2-249)
		8–26	Data set header labels (HDR1). This 19-sector area is also known as the diskette VTOC (Figure 2-115).
	1–74		Data or unallocated available space
	75–76		Alternative sectors

Note: The contents are the same for the diskette 1 and the diskette 2D as shown above. However, on a diskette 2D, track 0, head 1, sectors 27 through 52 are also composed of a 26-sector data set label area.

Figure 2-20. Diskette Storage

Diskette 1 (33FD) — 128-Byte Format (26 records)

Cyl. (decimal)	Hd.	Rec.	SS@ (hex)
1	0	1	01
1	0	2	02
1	0	3	03
1	0	4	04
1	0	5	05
≈	≈	≈	≈
1	0	22	16
1	0	23	17
1	0	24	18
1	0	25	19
1	0	26	1A
2	0	1	1B
2	0	2	1C
2	0	3	1D
2	0	4	1E
2	0	5	1F
≈	≈	≈	≈
2	0	22	30
2	0	23	31
2	0	24	32
2	0	25	33
2	0	26	34
≈	≈	≈	≈

Diskette 1 (33FD) — 512-Byte Format (8 records)

Cyl. (decimal)	Hd.	Rec.	SS@ (hex)
1	0	1	01
1	0	2	02
1	0	3	03
1	0	4	04
1	0	5	05
1	0	6	06
1	0	7	07
1	0	8	08
2	0	1	09
2	0	2	0A
2	0	3	0B
2	0	4	0C
2	0	5	0D
2	0	6	0E
2	0	7	0F
2	0	8	10
≈	≈	≈	≈

Diskette 2D (53FD) — 256-Byte Format (26 records)

Cyl. (decimal)	Hd.	Rec.	SS@ (hex)
1	0	1	01
1	0	2	02
1	0	3	03
1	0	4	04
1	0	5	06
≈	≈	≈	≈
1	0	22	16
1	0	23	17
1	0	24	18
1	0	25	19
1	0	26	1A
1	1	1	1B
1	1	2	1C
1	1	3	1D
1	1	4	1E
1	1	5	1F
≈	≈	≈	≈
1	1	22	30
1	1	23	31
1	1	24	32
1	1	25	33
1	1	26	34
2	0	1	35
2	0	2	36
2	0	3	37
2	0	4	38
2	0	5	39
≈	≈	≈	≈
2	0	22	4A
2	0	23	4B
2	0	24	4C
2	0	25	4D
2	0	26	4E
2	1	1	4F
2	1	2	50
≈	≈	≈	≈
2	1	26	68
≈	≈	≈	≈

Diskette 2D (53FD) — 1024-Byte Format (8 records)

Cyl. (decimal)	Hd.	Rec.	SS@ (hex)
1	0	1	01
1	0	2	02
1	0	3	03
1	0	4	04
1	0	5	05
1	0	6	06
1	0	7	07
1	0	8	08
1	1	1	09
1	1	2	0A
1	1	3	0B
1	1	4	0C
1	1	5	0D
1	1	6	0E
1	1	7	0F
1	1	8	10
2	0	1	11
2	0	2	12
2	0	3	13
2	0	4	14
2	0	5	15
2	0	6	16
2	0	7	17
2	0	8	18
2	1	1	19
2	1	2	1A
2	1	3	1B
2	1	4	1C
2	1	5	1D
2	1	6	1E
2	1	7	1F
2	1	8	20
≈	≈	≈	≈

Figure 2-21. Diskette Sequential Sector Addressing

INDIVIDUAL DATA AREAS

This part of Section 2 is arranged in alphabetical order to aid you in locating specific data areas. Use the letter in the footline to help locate the data areas.

Action Control Element (ACE)

The System/34 action control elements (ACE) are 16-byte elements used by both main and control storage. An ACE is used by delayed supervisor calls for processing the requests for the delayed supervisor call function. The supervisor call processor builds the ACEs and places them on the appropriate queue.

How to Find

An ACE can be found by referring to the queue header starting at location hex 0100 in the main storage nucleus. ACEs are chained together by field ACECHAIN in each action control element.

Format

Figure 2-22 shows the format of an action control element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ACECHAIN	2	Chain to next action control element
02	ACEIAR	2	Callers IAR value
04	ACEMAB	2	MAB address (control storage ACE)
06	ACEPARM1	1	First inline parameter (SVC)
07	ACEPARM2	1	Second inline parameter (SVC)
08	ACEPARM3	1	Third inline parameter (SVC)

Figure 2-22 (Part 1 of 2). Format of an Action Control Element (ACE)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	ACETYPE	1	Type of ACE (control or main storage): *Hex* *Meaning* 80 On—indicator for main storage ACE Off—indicator for control storage ACE 40 Indicator for privileged ACE 20 Chained IOB indicator 10 On—indicator for SYSLOG called or indicator for asynchronous error ACE 08 On—multiple wait indicator or work station ACE in use 04 Indicator for IOB to be in real storage (must be the same as bit 5 of SVC Q-code) 01 Increase quiesce counter value
0A	ACEXR1	2	Callers XR1 value (may be an IOB or a TUB)
0C	ACEXR2	2	Callers XR2 value (address of associated parameter list such as the work station parameter list for a work station operation)
0E	ACETCB@	2	Related task control block address

Figure 2-22 (Part 2 of 2). Format of an Action Control Element (ACE)

Address Compare Dump Block

The 12-byte address compare dump block (ACDB) is required as input to the control storage transient ($ACDUMP) to set the hardware address compare registers, software address compare control storage records, and other information that is defined when the SETDUMP command function is invoked. When the routine is requested, XR2 contains the address of the associated parameter list.

How to Find

The address compare dump block is located in the command processor work area (see Figure 2-50) at offset CPWRKL.

Format

Figure 2-23 shows the format of an address compare dump block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ACDCNTL	1	Dump control byte: *Hex* *Meaning* 80 Dump when task is active 40 On—verify address is real Off—verify address is logical 20 Dump when verify condition is met 10 On—verify data is the same Off—verify data is different 08 Tested bits are ones 04 Tested bits are zeros 02 Reserved 01 Reserved 00 No change to dump control bits
01	ACDPRM	1	Parameter control byte: *Hex* *Meaning* 80 Set address compare value 40 Set address qualifier value 20 Set verify address 10 Set verify data 08 Set task ID 04 Reset software address compare 02 Set suspend task indicator on 01 Set suspend task indicator off
02	ACDADDR	3	Address compare value

Figure 2-23 (Part 1 of 2). Format of an Address Compare Dump Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	ACDQUAL	1	Address qualifier value: *Hex* *Meaning* 80 On—real address Off—logical address 40 Main storage processor operand read/write 20 Main storage processor instruction fetch 10 Control processor read/write 08 Reserved 04 Reserved 02 Reserved 01 Reserved
06	ACDVER@	2	Verify address
08	ACDVERD	2	Verify data
0A	ACDTCB@	2	TCB address

Figure 2-23 (Part 2 of 2). Format of an Address Compare Dump Block

Allocation Queue Element

An 8-byte allocation queue element (AQE) is created when it is necessary to ensure resource control by enqueuing a particular resource.

How to Find

To find the AQE for a particular task depends on the resource allocated. If the resource is an interlock refer to the Q-header table (Figure 2-176) interlock fields starting at offset hex 64. The 2-byte interlock field represents the resource that is allocated by the AQE and contains the address of the AQE. If the resource is not an interlock, the AQE is found in a control block representing the resource itself. The following chart shows the noninterlock resource and where to refer to find the AQE associated with it. Associated AQEs are chained from the resource pointer.

Resource	Where to Look	Comments
Diskette or Communications Line	SCA—field SCADVICE for the device allocate table	The device allocate table entry bytes 4 and 5 contain the pointer to the AQE. Only one AQE per device for diskette communications line and 1255; there may be more than one AQE for FORTRAN.
Printer	TUB—field TUBTCB	Field TUBTCB in the printer terminal unit block points to the AQE. Only one unless inquiry (then both owners)
Data File Format 1	DTF—field $F1AFA	$F1AFA points to the active format 1 for the file format 1. Field F1ADADDQ points to the AQE and field F1ADOWNR points to the AQE for the owner
Library Format 1	FSB—field FSBDF1PT	Field F1ADLBOW in the active library. Format 1 points to the first AQE on the chain

Format

Figure 2-24 shows the format of an AQE.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	AQECHN	2	Chain pointer
02	AQETCB	2	Address of related task control block
04	AQEFLAGS	1	AQE flags: *Hex* *Meaning* 80 Owner of resource 40 Never ending program owner/requestor 30 Reserved 0C Reserved for allocate 04 Level 3 03 Level 2 02 Level 1 01 Level 0
05	AQEWORK	3	Reserved

Figure 2-24. Format of an Allocation Queue Element

Attach Parameter List

This 27-byte area is required as input for the attach transient (no RIB). When a routine is requested, XR1 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$ATLOAD	12	Loader parameter list offset (X'0B')
0C	$ATFLAG	1	First flag byte offset: *Hex* *Meaning* EC Start initialization D4 Start spool 90 Start batch 80 Create a new task control block 40 Logical—real to link address 20 On—terminal unit block address passed in parameter list Off—job control block address passed in parameter list 10 On—do not assign job name Off—assign job name 08 Put data to session work area (also, dummy up invite) 04 Task is privileged 02 Task is not swappable 01 Free attach parameter list
0D	$ATMSS1Z	1	Number of 2K blocks of main storage
0E	$ATPRIOR	1	Priority of new task
0F	$ATTUB@ or	2	Terminal unit block address
	$ATJCB@	2	Job control block address
11	$ATSSSN	4	Sector address number value of next transient

Figure 2-25 (Part 1 of 2). Format of an Attach Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
15	$ATFLAG1	1	Second flag byte: *Hex* *Meaning* 80 Refresh unconditionally if attach was successful 40 Program has common 20 Pass control to initiator 10 Increment job count 08 System task 04 Requestor terminal unit blocks, but not owner 02 Disallow cancel or inquiry 01 Attacher indicator (MRJE)
16	$ATTSKID	1	Task ID of task attached
17	$ATDATA@	2	Address of data to put (attach error return code) *Note:* If the attachment was successful, XR1 returns with the task control block address of the attached task. If the attachment was not successful, XR1 contains one of the following: *Hex* *Meaning* 0007 Allocate failure for work station work area 0006 Allocate failure for swap area 0005 Assign failure on request block 0004 Assign failure on task control block 0003 Task nonswappable, and its storage requirements will put a swappable task in too long of a wait 0002 Task nonswappable, and not enough storage 0001 Not enough storage

Figure 2-25 (Part 2 of 2). Format of an Attach Parameter List

Autocall Phone List Header

This 16-byte control block is passed to the autocall/X.21 when a dial operation is requested.

How to Find

Label IOBCAR in the BSC IOB or label SIOBDEA in the SDLC IOB, passed to the autocall/X.21 task, contains the address of the autocall/X.21 phone list header.

Format

Figure 2-26 shows the format of the autocall phone list header.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PNJCB@	2	JCB pointer
02	PNNXT#	2	Displacement beyond header to next number to call
04	PNHFLG	1	Flag byte: *Hex* *Meaning* 80 List exhausted 40 Loop flag 20 Autocall restore done last 10 X.21 phone list 08 Non-USA type list
05	PNLSTNL	2	Length of list including header
07	PNMOD#	1	Phone list modification number
08	PNNAME	8	Name of phone list

Figure 2-26. Autocall Phone List Header

Autocall Phone List Load Member

This variable length area contains the phone numbers in the phone list passed to the autocall task.

How to Find

The first phone number entry immediately follows the autocall phone list header and is followed by each succeeding phone number. Field PNNXT# in the autocall phone list header contains the displacement beyond the header of the next phone number to call.

Format

Figure 2-27 shows the format of an entry in the autocall phone list load member. There is one entry for each phone number.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PNLEN	1	Length of phone number
01	PNERC	1	Error retry count
02	PN#TRY	1	Connection timer value
03	PNCTV	1	Flag byte
04	PNFLAG	1	Start of phone number *Hex* *Meaning* 80 This number called 40 CCITT GRDUP CPS 2 or 6 received
05	PNNUM	1	First (left) byte of phone number (see first byte of this control block for length of phone number)

Figure 2-27. Autocall Phone List Load Member Entry

Autocall Phone Number

This variable length area is the interface between the autocall/X.21 task and the autocall/X.21 microcode. This area also contains the phone number to be called.

How to Find

Label IOBSTAR in the autocall IOB issued to microcode by the autocall/X.21 task contains the address of the autocall/X.21 phone number.

Format

Figure 2-28 shows the format of the autocall phone number.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCPNLEN	1	Length of phone number
01	MCPNERC	1	Error retry count
02	MCPNCTV	1	Connection timer value[1]
03	MCPNFLAG	1	Flag byte: *Hex* *Meaning* 20 Wait 3 seconds before dial 10 Wait 60 seconds before dial
04	MCPNNUM	1	Start of phone number

[1] For X.21, this value is the number of seconds that must elapse before this number is dialed again.

Figure 2-28. Autocall Phone Number

BSC CCP Active Session Table

This 79-byte area describes the status of its associated defined session. The BSC CCP active session table contains buffer addresses, a BSC unit block, a translated session unit block, and status indicators. One entry exists for each session defined at configuration time. The active session table is built in common queue space at enable time.

How to Find

Label XSCDBAST in the extended subsystem configuration record contains the address of the BSC CCP active session table. Label XSCDBLST in the extended subsystem configuration record contains the length of the BSC CCP active session table.

Format

Figure 2-29 shows the format of the BSC CCP active session table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00-1F		32	BSC unit block (BUB) entries
20-44		37	Translated session unit block (XSUB) entries
45	ASTIBUF@	2	Address of session input buffer
47	ASTOBUF@	2	Address of session output buffer
49	ASTXBUF@	2	Address of session extra buffer
4B	ASTSTAT0	1	Session status byte 0: *Hex* *Meaning* 80 Transmit mode 40 Receive mode 20 Data mode 10 Queued 08 Signed on 04 Address available 02 Initial put 01 Sign-on pending

Figure 2-29 (Part 1 of 3). Format of the BSC CCP Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4C	ASTSTAT1	1	Session status byte 1: *Hex* *Meaning* 80 Return code pending 40 RVI sent 20 Data mode escape sent 10 /RELEASE sent 08 Post possible 04 /OFF sent 02 Evoke pending 01 CCP ERP end of transmission
4D	ASTSTAT2	1	Session status byte 2: *Hex* *Meaning* 80 Normal end of transaction received 40 /MSG command sent 20 CCP shutdown message received 10 Abnormal end of transaction received 08 Both buffers busy 04 Data pending 02 BSC unit block canceled 01 Next operation will cause end of transmission
4E	ASTSTAT3	1	Session status byte 3: *Hex* *Meaning* 80 Input buffer busy 40 Output buffer busy 20 Extra buffer busy 10 Procedure request pending 08 BSC unit block posted to interrupt handler 04 Address in pool 02 CCP command sent 01 End of transmission expected

Figure 2-29 (Part 2 of 3). Format of the BSC CCP Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4F	ASTSTAT4	1	Session status byte 4: *Hex* *Meaning* 80 Selection has been NAKed 40 EXEC procedure request received 20 Shutdown received this session 10 New request pending 08 EOT to WACK received 04 Reserved 02 Reserved 01 Reserved
50	ASTSTAT5	1	Session status byte 5: *Hex* *Meaning* 80 Acquire in progress 40 Evoke in progress 20 Put in progress 10 Get in progress 08 End in progress 04 Disable in progress 02 Abnormal termination in progress 01 Abnormal release in progress

Figure 2-29 (Part 3 of 3). Format of the BSC CCP Active Session Table

BSC CCP Message Control Element

This 11-byte area is used by the message display/response routines to save registers, return addresses, the BUB pointer, and the MIC number when a message requiring a response is issued. The address of the associated event control mask is saved to enable the response routine to route control to the correct routine for each response received.

How to Find

Label XSCD3WRK-15 in the extended subsystem configuration record contains the BSC CCP message control element.

Format

Figure 2-30 shows the format of the BSC CCP message control element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCEECM@	2	Event control mask address
02	MCERTN@	2	Caller's return address
04	MCEXR1	2	Caller's XR1
06	MCEMIC	2	MIC number issued
08	MCEBUB	2	Associated BUB
0A	MCEFLG	1	Flag byte:
			Hex *Meaning*
			80 Dump message

Figure 2-30. Format of the BSC CCP Message Control Element

BSC CICS Active Session Table

This 81-byte area describes the status of its associated defined session. The BSC CICS active session table entries contain buffer addresses, a BSC unit block, a translated session unit block, and status indicators. One entry exists for each session defined at configuration time. The active session table is built in common queue space at enable time.

How to Find

Label XSCDBWKA in the extended subsystem configuration record contains a pointer to the first entry in the BSC CICS active session table. Label XSCDBLST in the extended subsystem configuration record contains the length of the BSC CICS active session table.

Format

Figure 2-31 shows the format of the BSC CICS active session table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00-1F		32	BSC unit block (BUB) entries
20-44		37	Translated session unit block (XSUB) entries
45	ASTIBUF@	2	Address of session input buffer
47	ASTOBUF@	2	Address of session output buffer
49	ASTXBUF@	2	Address of session extra buffer
4B	ASTPEND	2	Address of pending output record
4D	ASRLDCH	2	Leading control characters for put (this field set at enable with transparent or nontransparent control characters)
4F	ASTFLG1	1	Flag byte:
			Hex *Meaning*
			80 Session not reserved
			40 Last active session table entry
			20 Session address not available
			10 Session in transmit mode
			08 End of file operation in process
			04 Session in receive mode
			02 Session on switched line
			01 Session selected

Figure 2-31 (Part 1 of 2). Format of the BSC CICS Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
50	ASTFLG2	1	Flag byte: *Hex* *Meaning* 80 Subsystem get in process 40 Post user on subsystem get operation end 20 Set if acquire operation is issued 10 Owned session is awaiting get 08 Owned session has post waiting 04 Set if default procedure running 02 Set if end of step/session 01 Reserved
51	ASTFLG3	1	Flag byte: *Hex* *Meaning* 80 First put issued with get in process 40 CSSN transaction has run successfully 20 Automatic CSSF running 10 CSSN transaction not yet completed 08 Operation being cancelled 04 EOT received to WAK sent 02 Manual operation message pending (switched line) 01 Monitor line operation in process

Figure 2-31 (Part 2 of 2). Format of the BSC CICS Active Session Table

BSC CICS Subsystem Queue Space Assign Parameter List

This 6-byte area is used by the CICS buffer space assign routine as an address/register save area. The length of the space required is placed in the parameter list before entering the assign routine, and the address of the space assigned is placed in the list before returning to the caller.

How to Find

Label BPLIST in the CICS mainline module contains the BSC CICS subsystem queue space assign parameter list.

Format

Figure 2-32 shows the format of the BSC CICS subsystem queue space assign parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	BPLLEN	2	Length to assign
02	BPLXSCR	2	Extended subsystem configuration record (XSCR) address
04	BPLADR	2	Address assigned if assign is successful

Figure 2-32. Format of the BSC CICS Subsystem Queue Space Assign Parameter List

BSC CICS Common Queue Space Assign Parameter List

This 6-byte area is used by the CICS buffer space assign routine as an address/register save area. The length of the space required is placed in the parameter list before entering the assign routine, and the address of the space assigned is placed in the list before returning to the caller.

How to Find

Label GPLIST in the CICS mainline module contains the BSC CICS common queue space assign parameter list.

Format

Figure 2-33 shows the format of the BSC CICS common queue space assign parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	GPLLEN	2	Length to assign
02	GPLXSCR	2	Extended subsystem configuration record (XSCR) address
04	GPLADR	2	Address assigned if assign successful

Figure 2-33. Format of the BSC CICS Common Queue Space Assign Parameter List

BSC CICS Message Control Element

This 8-byte area is used by the message display/response routines to save registers and the return address when a message requiring a response is issued. The address of the associated event control mask is saved to enable the response routine to route control to the correct routine for each response received.

How to Find

Label XSCDCWKL in the extended subsystem configuration record contains the BSC CICS message control element.

Format

Figure 2-34 shows the format of a BSC CICS message control element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCEECM	2	Event control mask address save area
02	MCESV1	2	Caller's XR1 save area
04	MCESV2	2	Caller's XR2 save area
06	MCEARR	2	Caller's ARR save area

Figure 2-34. Format of the BSC CICS Message Control Element

BSC Error History Data Parameter List

This 8-byte area is required as input for BSC error-logging modules (no RIB). When a routine is requested, the address of the communication parameter list for logging (see BSC work area) is an inline parameter for the request. That parameter list contains the address of the following data.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	BSLQBYTE	1	Command code
01	BSLRBYTE	1	Command modifier
02	BSLSENSE	2	Reserved and sense information byte 0
04	BSLERCNT	1	Error retry count
05	BSLBSCCC	1	BSC completion code: *Hex* *Meaning* 57 EOT abort 56 Forward abort received 55 Adapter check 54 Response not valid 53 Lost connection 52 Lost data 51 Data check 50 No response 4F Permanent error 4E Delay count exceeded 4D Request not valid 4B ASCII character not valid
06	BSLTERAD	2	Terminal address

Figure 2-35. Format of a BSC Error History Data Parameter List

BSC IMS Control Block

This 48-byte area is an internal control block used to pass information between the various modules of the System/34 IMS/IRSS subsystem. A BSC IMS control block exists for each physical terminal defined at enable time plus one additional block for internal use.

How to Find

Find the address of the BSC IMS line-related work area (L1WKA, L2WKA, L3WKA, or L4WKA). Label IMSCB1ST contains the address of the first BSC IMS control block. By adding IMSCBEND to the value found in IMSCB1ST, you can find the address of the next BSC IMS control block. Label PTRMBZY in the BSC IMS line-related work area contains the address of the first active (acquired) BSC IMS control block. Label IMSCBCHN points to the next active BSC IMS control block. Label PTRMFRE in the BSC IMS line-related work area contains the address of the first inactive (not acquired) BSC IMS control block. Label IMSCBCHN in the BSC IMS control block points to the next free BSC IMS control block. When label IMSCBCHN minus 1 contains hex 00, you have reached the end of the chain.

Format

Figure 2-36 shows the format of the BSC IMS control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IMSCBCHN	2	Address of the next BSC IMS control block
02	IMSCBPTM	2	Physical terminal assigned to this task
04	IMSCBLIN	1	Line number associated with this physical terminal

Figure 2-36 (Part 1 of 4). Format of the BSC IMS Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	IMSCBST3	1	Status byte 3: *Hex* *Meaning* 40 Input to IMS/VS stopped and output from IMS/VS stopped (initial) 20 Input to IMS/VS stopped and output from IMS/VS started 10 Input to IMS/VS started and output from IMS/VS started 08 Input to IMS/VS started and output from IMS/VS stopped
06	IMSCBST4	1	Status byte 4: *Hex* *Meaning* 80 Physical terminal defined to IMS/VS 40 BSC IMS control block for remote program start requests only 20 Last BSC IMS control block in chain 10 Input message from IMS/VS in progress 08 Output message to IMS/VS in progress 04 Postpone mode (initial) 02 Resume mode 01 Physical terminal may be acquired
07	IMSCBCM1	1	Communication byte 1: *Hex* *Meaning* 80 Send output complete 40 Send input in progress 20 Send input terminated 10 Send DA (data) block 08 Send error SY (synchronization) block 04 Send postpone output 02 Send resume output

Figure 2-36 (Part 2 of 4). Format of the BSC IMS Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	SYBUFR@	2	Address of 24 byte SY (synchronization) error buffer
0A	ERRCODE	4	MIC number of error to send to IMS/VS
0E	IMSCBST1	1	Status byte 1: *Hex* *Meaning* 80 Output complete not required 40 Input discarded for this session 20 Program start of *EXEX procedure 10 BSC IMS shutdown pending 08 Message type received from IMS/VS: On—USR message Off—DFS message 04 Post user with permanent I/O error 02 DFS message received in error block 01 Inactive destination procedure is being started
0F	IMSCBST2	1	Status byte 2: *Hex* *Meaning* 80 User waiting on send acknowledgement 40 Task is batch job 20 User in send mode 10 User in receive mode 08 User waiting for data from IMS/VS 04 Data available for user 02 User has not acknowledged data received
10	ACTSUB	2	Address of session unit block associated with this physical terminal
12	XSMODCB	1	Translated session unit block operation modifier

Figure 2-36 (Part 3 of 4). Format of the BSC IMS Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
13	XSOPCB	1	Translated session unit block operation code
14	GET1ST	2	Address of next available record from IMS/VS in chain
16	GETLAST	2	Address of last record from IMS/VS in chain
18	IMSRSV1	2	Reserved
1A	SEGRECV	2	Number of segments received from IMS/VS for this message
1C	SEGMNT#	2	Number of segments given to user
1E	CHN1ST	2	Address of first output record in SSP-ICF queue chain
20	CHNLST	2	Address of last output record in SSP-ICF queue chain
22	CHNTHIS	2	Address of last user record in SSP-ICF queue chain
24	RETRNCOD	2	Last error return code given to user
26	MSGSIZ	2	Maximum output message length defined at acquire time for nonbatch user
28	MSGLGH	2	Current output length of message for nonbatch user
2A	BUF1ST	2	Start of buffer chain to send online
2C	MSG#	4	DFS message number received from host
30	IMSCBEND		Length of BSC IMS control block

Figure 2-36 (Part 4 of 4). Format of the BSC IMS Control Block

BSC IMS Line-Related Work Area

This 72-byte area is a save area and communications area for the System/34 IMS/IRSS subsystem. This area will be unique for each line enabled with the BSC IMS subsystem.

How to Find

Label L1WKA for line 1, label L2WKA for line 2, label L3WKA for line 3, and label L4WKA for line 4 in the source code contain the addresses of the BSC IMS line-related work areas.

Format

Figure 2-37 shows the format of the BSC IMS line-related work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LINE#	1	Line number: *Hex* *Meaning* 04 Line 4 03 Line 3 02 Line 2 01 Line 1
01	NXTLINWK	2	Address of next line work area
03	IMSCB@	2	BSC IMS control block address for last DA (data) block sent
05	DA	2	Data format block header
07	BLKID#	4	Last block ID sent to IMS/VS
0B	PTERM#	2	Physical terminal identifier for last DA (data) block sent
0D	MSGID#	1	Message ID number in last DA (data) block sent
0E	FLAGS	1	Flag value in last DA (data) block sent

Figure 2-37 (Part 1 of 6). Format of the BSC IMS Line-Related Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	LL#	2	Length of data (+LL) in last DA (data) block sent
11	IMSCB1ST	2	Start of BSC IMS control block chain
13	PTRMBZY	2	Chain of active physical terminals
15	PTRMFRE	2	Chain of available physical terminals
17	SUBSTAT1	1	Subsystem status byte 1: *Hex* *Meaning* 80 Cold start has been received 40 Emergency restart has been received 20 Emergency restart response received 10 Normal restart has been received 02 System shutdown has been received 01 Immediate shutdown request received
18	SUBSTAT2	1	Subsystem status byte 2: *Hex* *Meaning* 80 Batch job running on this line 40 SY (synchronization) block to send 20 DA (data) block to send 10 Acquires not allowed (init) 08 Link control has abended 04 Permanent I/O error (line failure) 02 An assign failure has occurred

Figure 2-37 (Part 2 of 6). Format of the BSC IMS Line-Related Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
19	SUBSTAT3	1	Subsystem status byte 3: *Hex* *Meaning* 80 Subsystem in cold start mode 40 Subsystem in emergency restart mode 20 Subsystem in emergency restart response mode 10 Subsystem in normal restart mode 08 Subsystem in normal operating mode 04 Subsystem in initial mode (init) 02 Subsystem in system shutdown mode 01 Subsystem in immediate shutdown mode
1A	SUBSTAT4	1	Subsystem status byte 4: *Hex* *Meaning* 80 Error message has been displayed 40 IMS/VS is sending in receive mode
1B	SUBSTAT5	1	Subsystem status byte 5: *Hex* *Meaning* 80 Disable request pending 40 Subsystem has initiated immediate disable 20 IMS cold starting; subsystem in initial mode 10 Subsystem disabling; IMS has cold started 08 EOT was sent after last buffer 04 Input for IMSDM is pending 02 Waiting for response to halt message 01 Send EOT required

Figure 2-37 (Part 3 of 6). Format of the BSC IMS Line-Related Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C	QUECTRL	1	Output queues control byte:
			Hex *Meaning*
			80 Priority output queue in hold state
			40 Normal output queue in hold state
			20 Test priority queue only for output
1D	SY80OUT	1	SY80 output block indicators:
			Hex *Meaning*
			80 Send cold start
			40 Send emergency restart
			08 Send shutdown request
1E	SY40OUT	1	SY40 output block indicators:
			Hex *Meaning*
			40 Send stop input to IMS/VS and stop output from IMS/VS
			20 Send stop input to IMS/VS and start output from IMS/VS
			10 Send start input to IMS/VS and start output from IMS/VS
			08 Send start input to IMS/VS and stop output from IMS/VS

Figure 2-37 (Part 4 of 6). Format of the BSC IMS Line-Related Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1F	SY20OUT	1	SY20 output block indicators:
			Hex *Meaning*
			80 Send output complete
			40 Send input in progress
			20 Send input terminated
			10 Send ask
			04 Send postpone output
			02 Send resume output
			01 Send general form of hex 04 or hex 02 (physical terminal ID equals binary zeros)
20	SY10OUT	1	SY10 output block indicators:
			Hex *Meaning*
			80 Send error block
21	RESTRTID or	5	Restart ID field
	RSTBLKID and	4	Restart block ID
25	RSTMSGID	1	Restart message ID
26	INBUB1@	2	Input BSC unit block 1 address
28	INBUB2@	2	Input BSC unit block 2 address
2A	OTBUB1@	2	Output BSC unit block 1 address
2C	OTBUB2@	2	Output BSC unit block 2 address
2E	DABFRAVL	2	Address of input DA (data) buffer to be processed
30	USERPOST	2	Address of BSC IMS control block needing to be posted

Figure 2-37 (Part 5 of 6). Format of the BSC IMS Line-Related Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
32	PREIMSCB	2	Address of BSC IMS control block of DA (data) block sent immediately preceding the last DA (data) block sent
34	LSTIMSCB	2	Address of BSC IMS control block of DA (data) block last sent
36	PRTYQHDR	2	Queue header for priority output messages
38	PRYENDCN	2	Last block address on the priority output chain
3A	NORMQHDR	2	Queue header for normal output messages
3C	NRMENDCN	2	Last block address on the normal output chain
3E	PREFMTBF	2	Address of ASK/EOT SY (synchronization) buffer
40	EMRSTBLK	2	Address of emergency restart SY (synchronization) buffer
42	XSCR@	2	Address of the extended subsystem configuration record
44	SYHDR	2	Address of SY (synchronization) block to enqueue
46	SSQSIZE	2	Amount of subsystem queue space used for this line

Figure 2-37 (Part 6 of 6). Format of the BSC IMS Line-Related Work Area

BSC IMS/VS Data (DA) Blocks

A data block contains one or more segments belonging to one or more messages. A segment is fully transmitted by IMS/VS in one transmission, unless its size exceeds the user-specified transmission buffer size, in which case it is changed into multiple segments of the following format.

Block Format

D	A	Block Identifier
0	1	2

Data Segment Format

Terminal Identifier	Msg ID	Flags	Length	Data
0	2	3	4	6

Flags

Bit	Meaning
0–4	Reserved
5	Segment spanning flag: 0=Segment ends in this buffer 1=Segment does not end in this buffer
6	0=First part of a message 1=Not the first part of a message
7	0=Last part of a message 1=Not the last part of a message

All combinations of flag bits 5, 6, and 7 are valid except hexadecimal 04 and hexadecimal 06.

BSC IMS/VS Synchronization (SY) Blocks

Synchronization blocks are used to transmit nondata control information between IMS/VS and System/34. Only the formats described are transmitted by IMS/VS. Any input format different from those described below is ignored if received by IMS/VS.

General Block Formats

Format A Unblocked

S	Y	Type	Flags	Data
0	1	2	3	4

Format B Blocked

S	Y	Type	Flags	Data	Type	Flags	Data
0	1	2	3	4			

S and Y identify the block as a synchronization block. The field contains the characters S and Y in uppercase EBCDIC.

Type identifies the type of information contained in the block.

Value (hex)	Block Format	Description
80	A	Shutdown/restart block
40	B	Status change block
20	B	I/O synchronization block
10	A	Error message block

All other type values are reserved.

Shutdown/Restart Blocks

Format 1

S	Y	80	Flags
0	1	2	3

Format 2

S	Y	80	Flags	Block ID	Msg ID
0	1	2	3	4	8

Flags

Value (hex)	Meaning
80	Cold start (Format 1)
40	Emergency restart
20	Emergency restart response (Format 2)
10	Normal restart (Format 2)
08	Shutdown request (Format 1)
02	System shutdown (Format 1)
01	Immediate shutdown request (Format 1)

All other flag values are reserved.

Block identifier identifies the last received block causing a message to be queued.

Message identifier identifies the last message within the block to be queued.

Status Change Blocks

Status change blocks are used to specify a change in transmission mode between IMS/VS and a System/34. Status change blocks may be sent as a result of using the LINE or PTERM keywords with the following commands: /START, /STOP, /RSTART, /PSTOP, /PURGE, and /MONITOR.

S	Y	40	Flags	Terminal ID	40	Flags	Terminal ID	40	Flags	Terminal ID
0	1	2	3	4	6	7	8	10	11	12

Flags

Value (hex)	Meaning
80	Unable to operate with terminal (to IMS/VS only)
40	Stop input from and output to terminal
20	Stop input from and start output to terminal
10	Start input from and output to terminal
08	Start input from and stop output to terminal

All other flag values are reserved.

Terminal identifier specifies the status changing terminal.

I/O Synchronization Blocks

I/O synchronization blocks are used to allow the System/34 and IMS/VS to synchronize I/O operations and maintain system integrity. I/O synchronization blocks also allow the System/34 to optimize its resources by controlling when and what output is sent by IMS/VS.

S	Y	20	Flags	Terminal ID	20	Flags	Terminal ID	20	Flags	Terminal ID
0	1	2	3	4	6	7	8	10	11	12

Flags

Value (hex)	Meaning
80	Output completed (sent by System/34)
40	Input in progress (sent by System/34)
20	Input terminated (sent by System/34)
10	Send output (sent by System/34; ASK block)
08	No output available (sent by IMS/VS; NO-OUT message)
04	Postpone output (sent by System/34)
02	Resume output (sent by System/34)

All other flag values are reserved.

Terminal identifier specifies the affected terminal or is binary zeros; the terminal identifier field must always be present but is not verified for flag values X'10' or X'08'.

IMS/VS does not transmit I/O synchronization segments except for the NO-OUT block; it ignores a received NO-OUT block.

Error Blocks

Error blocks allow IMS/VS and the System/34 to inform each other of errors pertaining to received data.

The error block format is as follows:

S	Y	10	Flags	Terminal ID	Msg ID	Error Code
0	1	2	3	4	6	7

Flags

Value (hex)	Meaning
00	Error occurred in last block transmitted
01	Error occurred on previous block transmitted
02	Error occurred asynchronously (Msg. ID field = X'00')
80	Error message on last block is from user message table
81	Error message on previous block is from user message table

All other bit settings are reserved.

The terminal identifier and message identifier are from the segment in error.

The error code is any four-character number in numeric-character notation when sent to or received from IMS/VS.

BSC IMS/VS Output Buffer Header

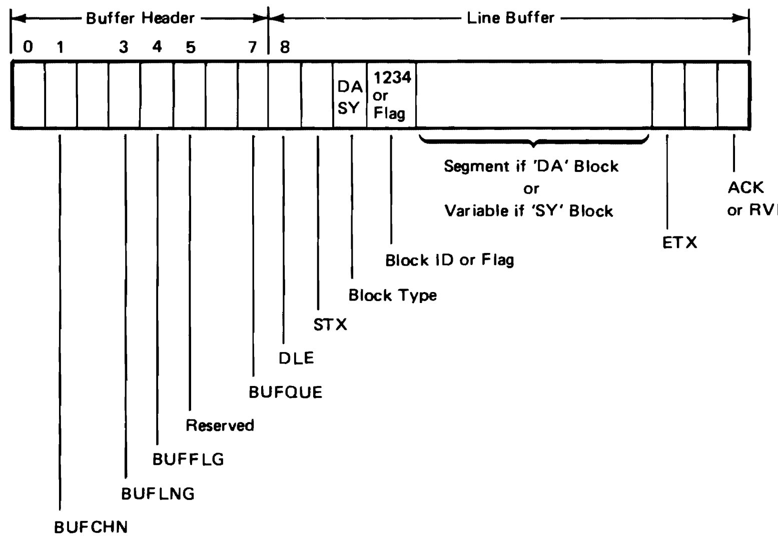
Every output buffer has an associated buffer header. This header is the first 8 bytes of the associated buffer. It is used to chain all the buffers of a message together, to chain all output buffers on an output queue, and also to transfer information about the buffer between modules. Figure 2-38 shows the format of the output buffer header.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	BUFCHN	2	Address of the next buffer in this message
02	BUFLNG	2	Length of the buffer and header
04	BUFFLG	1	Buffer status byte:
			Hex *Meaning*
			80 Buffer should not be freed
			40 Priority buffer
			20 Preformatted buffer
			10 Buffer is being used
			08 SY block in this buffer
			04 User is waiting for a positive response
			02 EOT should be sent after this buffer
			01 Buffer is no longer on the queue
05		1	Reserved
06	BUFQUE	2	Address of the next buffer on this output queue

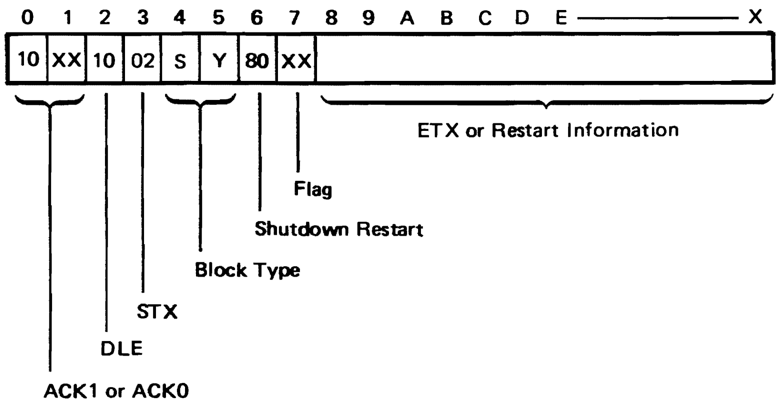
Figure 2-38. Format of a BSC IMS/VS Output Buffer Header

BSC IMS/VS IRSS Subsystem Buffer Formats

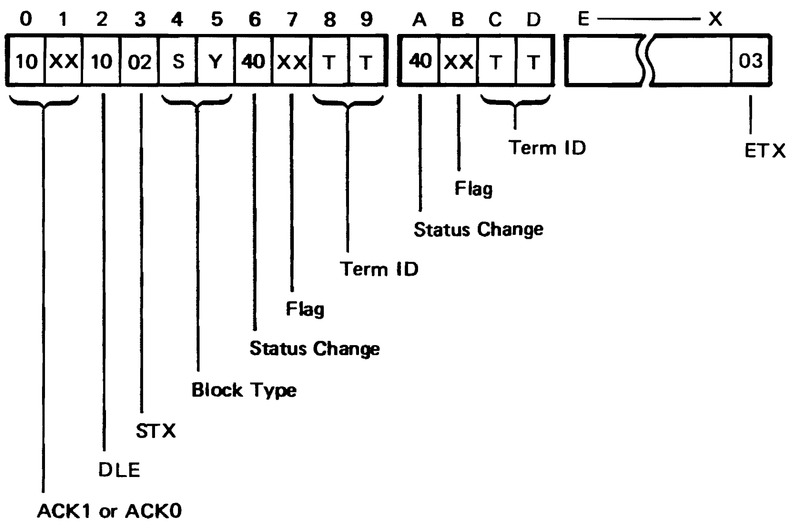
Transmit Buffer Format



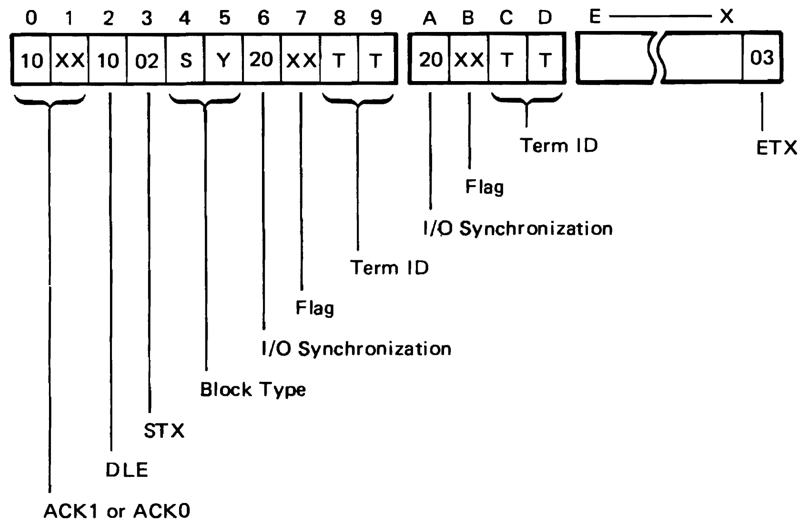
Shutdown/Restart SY Block as Received from IMS/VS IRSS



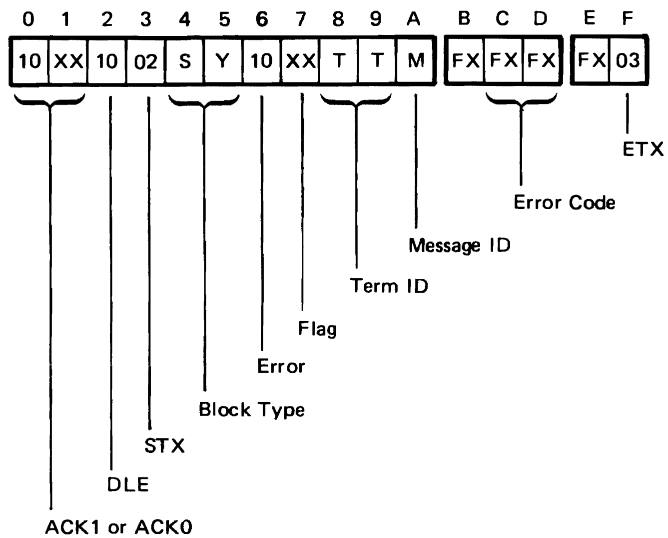
Status Change SY (synchronization) Block as Received from IMS/VS IRSS



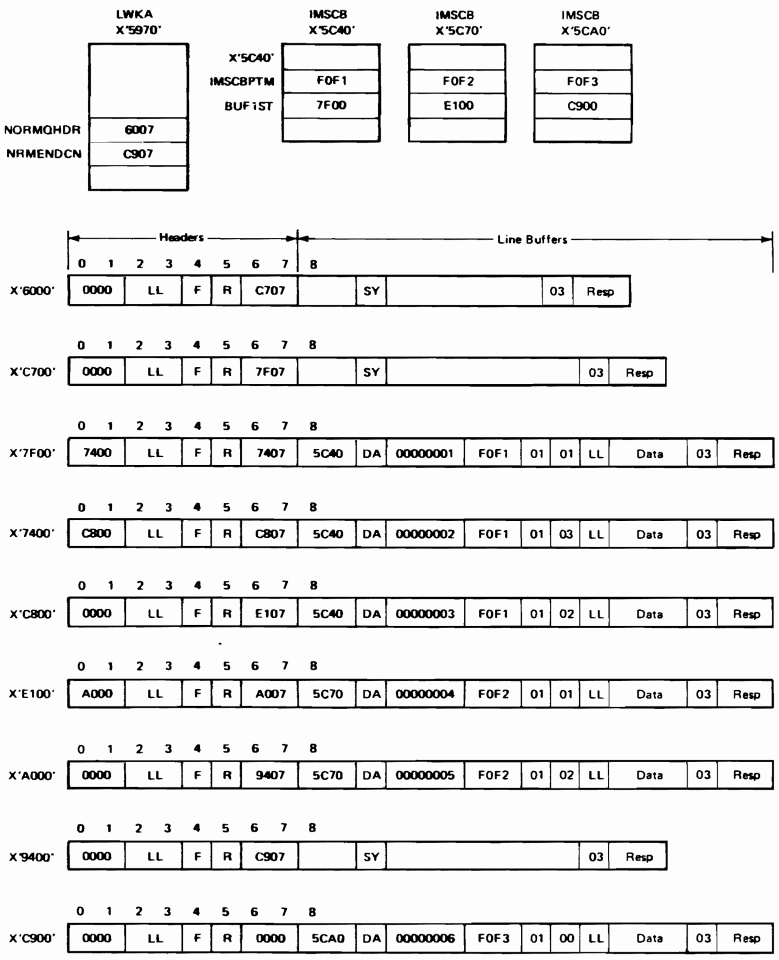
I/O (synchronization) Block as Received from IMS/VS IRSS



Error SY (synchronization) Block as Received from IMS/VS IRSS



BSC IMS/VS IRSS Subsystem Output Queue Illustration



Note: Addresses are for example only

BSC Unit Block (BUB)

This 32-byte control block is used as the primary interface between the SSP-ICF BSC subsystems and the SSP-ICF BSC interrupt handler task.

How to Find

BSC Interrupt Handler

- Interrupt handler line work area field PBUBQHDR contains the address of the first BUB in the chain.

BSCEL

- BSCEL line work area field LWAMBUB@ contains the address of the monitor BUB.
- BSCEL session work area field ASTBUB@ contains the address of the session BUB.
- BSCEL line work area field LWAWORK contains the abort BUB during abnormal termination.

CCP/CICS

- XSCR field XSCDBAST contains the address of the first AST element which contains the BUB.

IMS

- IMS line-related work area field INBUB1@ contains the address of input BUB 1.
- IMS line-related work area field INBUB2@ contains the address of input BUB 2.
- IMS line-related work area field OTBUB1@ contains the address of output BUB 1.
- IMS line-related work area field OTBUB2@ contains the address of output BUB 2.

Format

Figure 2-39 shows the format of the BSC unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	BUBSTSKI	1	Subsystem task ID
01	BUBITSKI	1	SSP-ICF BSC interrupt handler task ID

Figure 2-39 (Part 1 of 6). Format of the BSC Unit Block (BUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
02	BUBRTC	1	Return code:	
			Hex	*Meaning*
			Unsuccessful return codes that require halts:	
			39	X.21 Switched line – X.21 task not active
			38	MLCA temporary controller check
			37	MLCA permanent controller check
			36	Data set not ready/connection lost
			35	Receive time-out error
			34	Adapter check
			33	Invalid response received
			32	Data check
			31	Unexpected response from remote system
			Unsuccessful return codes:	
			2A	Incompatible phone list type
			30	Phone list exhausted from auto-call/X.21
			29	No phone number reached from autocall/X.21
			28	Operation canceled
			27	Command rejected due to abort request
			26	Delay count exceeded
			25	Abort disconnect received
			24	Abort received
			23	Data lost—buffer exceeded
			22	Invalid switched line ID received
			21	Operation unsuccessful
			Informational return codes:	
			14	Disconnect received in control state
			13	EOT received in control state
			12	Request for SS to display message —MIC placed in BUBLBFR@ field —options placed in BUBMOD field
			11	Select but no line buffer available

Figure 2-39 (Part 2 of 6). Format of the BSC Unit Block (BUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
02 (cont.)			*Hex*	*Meaning*
			Successful return codes:	
			05	Abort successful plus line sequence sent
			04	Disconnect received
			03	End of file
			02	Request change of direction received
			01	Operation successful
03	BUBMOD	1	Operation code modifier:	
			Hex	*Meaning*
			FF	Pseudo BSC unit block in XSCR
			80	Request a change in direction (RVI)
			40	Last data record in transmit file
			08	Send disconnect sequence—go on hook
			04	Line status request
			00	Execute operation normally—no modification
			Results of the wrap test:	
			04	MLCA controller check during wrap
			02	Modem failure
			01	Attachment failure
			00	Successful wrap test

Figure 2-39 (Part 3 of 6). Format of the BSC Unit Block (BUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	BUBOP	1	Operation code: *Hex* *Meaning* C0 Get A0 Put 80 Mask representing a queued operation 10 Request to terminate the interrupt handler task 08 Abort 04 Remove BSC unit block from queue—address of target BSC unit block specified in BUBLBFR@ 02 Reject the select (NAK the select) 01 Begin monitoring the line
05	BUBSSNA	1	Session address
06	BUBLBFR@	2	Line buffer address
08	BUBLBFRL	2	Line buffer length
0A	BUBDATA@	2	Address of received data
0C	BUBEFFL	2	Effective input length
	or BUBOUTL	2	Output length
0E	BUBLINE#	1	Line number
0F	BUBSTYPE	1	Switch type information for line initialization: *Hex* *Meaning* 88 Manual call required 84 Manual answer required 80 Manual type mask 02 Auto answer mode 01 Use requester local ID

Figure 2-39 (Part 4 of 6). Format of the BSC Unit Block (BUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	BUBSTATS	1	BSC unit block status byte: *Hex* *Meaning* 80 BSC unit block owned by interrupt handler module 40 BSC unit block owned by subsystems 20 BSC unit block is free-able 10 To be set by subsystem if line buffer is allocated within SSP-ICF common queue space 08 BSC unit block is in process 04 BSC unit block interlock mask—set by interrupt handler—to be reset by SS if reusable 02 Monitor request issued from open
11	BUBWORK0	1	Subsystem work byte 0
12	BUBWORK1	1	Subsystem work byte 1
13	BUBXSUB@	2	Address of associated translated session unit block
	or BUBSUB@	2	Address of associated session unit block
15	BUBXSCR@	2	Address of associated extended subsystem configuration record
17	BUBIOB@	2	Address of associated IOB
19	BUBCHN@	2	BSC unit block chain field
1B	BUBPHL@	2	Phone list pointer

Figure 2-39 (Part 5 of 6). Format of the BSC Unit Block (BUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1D	BUBPHLPM	1	Phone list parameters: *Hex* *Meaning* 04 REFRESH-YES specified 01 RESTORE-YES specified
1E	BUBRSVD	2	Reserved

Figure 2-39 (Part 6 of 6). Format of the BSC Unit Block (BUB)

BSC Work Area

The BSC work area is 256 bytes long and is contained in module #BSCM. It is pointed to by field IOBWKA in the BSC IOBs and by field $BSWKA in the BSC DTF.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ZEROD	2	Zero
02	ONED	2	One
04	TWOD	3	Decimal two
07	MINONE	2	Minus one (decimal)
09	DTFUNXL	2	Untranslated DTF address during close
0B	WKANEWD	2	Address of new DTF
0D	BSCDTF@	2	Current translated DTF@
0F	PARM@	2	Address of parameter list for logging
11	DTFATR	3	Save area for ATR bytes

Figure 2-40 (Part 1 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
14	BSFL5D	1	Flag byte: *Hex* *Meaning* 80 User has called BSC 20 MLCA controller check has occurred
15	WKATR	2	Address of address translation routine
17	WKIOS	2	Address of #BSIO
19	WKWAIT	2	Address of #BSIW
1B	WKPOST2	2	Address of #BSPST2
The following bytes contain the DTF as used in the BSC work area:			
1D	WKADEV	1	Device code
1E	WKACSB	2	BSC communications specification block address
20	WKAUPS	1	User external switches
21	WKACHA	2	Backward DTF chain pointer
23	WKACHB	2	Forward DTF chain pointer
25	WKAWKBX	2	Address of user logical buffer
27	WKACMP	1	DTF completion code
28	WKAOPC	1	DTF operation code

Figure 2-40 (Part 2 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
29	WKAAT1	1	Attribute byte 1: *Hex* *Meaning* 80 Input file 40 Output file 20 ITB mode 10 Transparent mode 08 Get file 04 ASCII 02 Assembler DTF
2A	WKAAT2	1	Attribute byte 2: *Hex* *Meaning* 80 Multipoint line 40 Two IOBs required 20 Manual line 10 Answer line 08 Switched line 04 File used 02 File active 01 File opened
2B	WKAAT3	1	Attribute byte 3: *Hex* *Meaning* 80 Record separator mode 40 Get with RVI 04 File allocated 02 Nucleus resident data management 01 Open required

Figure 2-40 (Part 3 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2C	WKAAT4	1	Attribute byte 4: *Hex* *Meaning* 80 Compression/expansion 40 Truncation 20 Multiple file support 10 First time indicator
2D	WKARCL	2	Logical record length
2F	WKANAM	8	DTF name
37	WKASIZ	1	Number of 2K blocks for this task
38	WKARES	2	Reserved
3A	WKAPSC	2	Multipoint tributary station address
3C	WKADLY	2	Delay time
3E	WKABKL	2	Block length
40	WKAITB	2	ITB count
42	WKAPRM	3	Permanent error indicator
45	WKARVI	3	Reverse interrupt indicator
48	WKAERC	1	Error retry count
49	WKARID	2	Receive ID pointer
4B	WKARIDL	1	Receive ID length

Figure 2-40 (Part 4 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4C	WKATID	2	Transmit ID pointer
4E	WKATIDL	1	Transmit ID length
4F	WKASEP	1	Record separator
50	WKAMAX	2	Pad bytes in ID field
52	WKADBL	2	Physical I/O buffer length
54	WKAWKA	2	Pointer to BSC work area
56	WKAMRJ	1	Reserved for MRJE
57	WKAPAD	2	Length added to I/O buffer for line control characters and padding to a multiple of eight
59	WKALGR	1	Reserved for RPG
5A	WKATMP	7	Reserved for future use
The following bytes contain the BSC line control characters:			
61	AKEVND	2	ACK0
63	ACK1D	2	ACK1
65	DLESTD	2	DLE STX
67	SYND	1	SYN
68	SNEOTD	1	SYN EOT
69	WAKD	2	WACK
6B	TTDD or ENQD	2	TTD (STX ENQ) Enquiry

Figure 2-40 (Part 5 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6D	RVID	2	Reverse interrupt indicator
6F	DISCD	2	Disconnect
71	ETBCON	1	End of text block
72	NAKD	1	NAK
73	IGSD	1	IGS—blank compression character
74	IRSD	1	IRS or ITB character
75	BLNKD	1	Blank character
76	CNTMSK	1	Blank count mask for compression/expansion
The following bytes are reinitialized to zero by #BSL0 each time the BSC line is initialized:			
77	WRKLEN1	1	Length of work area not initialized to 0s
78	RSRV2	1	Reserved
79	ATRSAV	3	Save area for ATRs from #BSCL
7C	IOBSAV	2	Save area for IOB from #BSCL
7E	MPFLAG	1	Multipoint flag byte
7F	WKAWKB	2	Translated logical buffer address
81	WKDTFD	2	Address of DTF in process
83	WKABKX	2	I/O buffer data pointer
85	BSIOB	2	Address of current IOB

Figure 2-40 (Part 6 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
87	BSRJ2D	1	Flag byte: *Hex* *Meaning* 80 Set by #BSL0 when the DTF is copied into the BSC work area. Checked by #BSDB. 40 Used by close to indicate a permanent error occurred while closing a file 20 Set whenever the user's SWAP counter is decremented, indicating the user is swappable 10 Set before linkage to the wait routine (#BSIW). Indicates the user is to be brought back into main storage 08 On—set and checked by #BSIW. Indicates an IOB is being waited upon Off—indicates an OP-end occurred while waiting for a user request 04 Indicates the BSC error and text counters have been logged 02 First time enable indicator 01 Set by BSC close when a disconnect sequence is transmitted
88	WKIOBD	2	Address of last IOB used
8A	WKAXR1	2	Save area for register 1
8C	WKAXR2	2	Save area for register 2
8E	WKAARR	2	Save area for address recall register (ARR)
90	WAITXR1	2	XR1 save area for #BSIW

Figure 2-40 (Part 7 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
92	WAITARR	2	ARR save area for #BSIW
94	POSTARR	2	ARR save area for #BSPST2
96	CLOSEARR or LOARR	2	Save area for ARR for #BSCL Save area for ARR for #BSL0
98	CLOSECMP	1	Save area for IOB completion code
99	WKASCRT	2	Scratch work bytes
9B	WKASCRT2	2	Scratch work bytes
9D	WKAGSW	1	Switch byte for #BSMG
9E	WKAERL	2	Record length for expansion/compression/truncation
A0	ELRPTR	2	Logical buffer pointer for expansion/compression/truncation
A2	BSFL3D	1	Flag byte: *Hex* *Meaning* 80 Flag set by #BSL0: Indicates it has already displayed a line initialization message 60 Flag set by interrupt handler (#BSHB) when creating error history table entries in the BSC work area 10 Flag set by #BSCL when a null message (STXETX) is sent to a 3741

Figure 2-40 (Part 8 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
A2 (cont.)			*Hex*	*Meaning*
			08	Flag set by #BSCL when 3741 multiple file mode being used and multiple files are being received. Also causes #BSL0 to send back ACK for last null record received
			04	Last put was put EOB
			02	Flag set by #BSL0 for multiple 3740 put files
			01	Flag set when a user issues a put EOF request. It is used to ensure that the line is disabled when the BSC files are closed
A3	BSFLGD	1	Flag byte:	
			Hex	*Meaning*
			80	IOBs have been formatted
			40	TTD was received
			20	Transmit/receive operation
			10	BSC line has been enabled
			08	Set by #BSHB when a EOT is sent to the remote end after a permanent error has occurred
			04	Set by #BSHB when a TTD (forward) about) is transmitted after a permanent error has occurred
			02	Set any time a 2-second time-out is started. It is reset by #BSIO when the next BSC I/O request is started
			01	Read error message bit

Figure 2-40 (Part 9 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
A4	ACKSD	1	Acknowledgement counter:	
			Hex	*Meaning*
			80	Set by #BSHB when a null record (STXETX) is received from a 3741. It is checked by #BSCL
			40	Set by the interrupt handler (#BSHB) when it receives an RVI and the user has specified an RVI flag.
			20	Give not valid ID halt
			10	EOT received
			08	Switched line
			04	Error posted (line not active)
			02	On—RCV ACK1 Off—RCV ACK0
			01	On—send ACK1 Off—send ACK0
A5	BSFL2D	1	Flag byte:	
			Hex	*Meaning*
			80	Close in process
			40	Set by #BSL0 and checked by #BSCL. Indicates there is a new DTF (file) to process after closing the current one
			20	New file is get
			10	Error logged already
			08	The last buffer received before an EOT did not end in an ETX. Abort to be posted
			04	Close calling IOS
			02	NAK sent last
			01	ID exchange in process

Figure 2-40 (Part 10 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
A6	BSFL4D	1	Flag byte: *Hex* *Meaning* 80 Set by #BSCL when called by common close 40 Set by #BSCL when an EOT or disconnect is sent before the SYS-3209 message is posted 20 Set by #BSCL when a disable command is issued to the adapter 10 Set by the BSC abnormal termination routine when a process check occurs in the BSC interrupt handler 08 Set by #BSCL when the SYS-3305 message is posted 04 Set by #BSL0 when a request completion code is posted in the DTF as not valid 02 Autocall task posted with a reset
A7	DCOUND	2	Delay time count
A9	CLOSEDTF	2	Save area for DTF address during close
AB	OPENDIOB	2	Address of IOB being processed by interrupt handler
AD	MPTIOB	2	Pointer to multipoint IOB
AF	DLYIOB	2	Pointer to delay IOB
B1	DLYIO	12	Delay I/O buffer
BD	MPTIO	12	Multipoint I/O buffer

Figure 2-40 (Part 11 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 15 bytes contain the parameter list for system trace entries:			
C9	TRCID	1	Trace ID
CA	TRCQR	1	Q and R-byte information
CB	TRCSNS	1	Trace sense byte
CC	TRCLINO	1	Trace line number
CD	TRCRSRVD	1	Trace reserved
CE	TRCFXMIT	3	First 3 bytes transmitted
D1	TRCLXMIT	3	Last 3 bytes transmitted
D4	TRCFRCVD	2	First 2 bytes received
D6	TRCLRCVD	2	Last 2 bytes received
The following 4 bytes are used only by #BSHB:			
D4	SVRS1D	1	Reserved
D5	SVRS2D	1	Reserved
D6	SVRS3D	1	Reserved
D7	SVRS4D	1	Reserved
The following 28 bytes contain the BSC job counters:			
D8	BSLTBTFJ	2	Number of text blocks transmitted
DA	BSLTBRFJ	2	Number of text blocks received
DC	BSLNAKFJ	2	Number of negative acknowledgements received
DE	BSLDCKFJ	2	Number of data checks

Figure 2-40 (Part 12 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
E0	BSLFARFJ[1]	2	Number of forward aborts received
E2	BSLABTFJ	2	Number of aborts received
E4	BSLACTFJ	2	Number of adapter checks during transmission
E6	BSLACRFT	2	Number of adapter checks while receiving
E8	BSLIRRFJ	2	Number of not valid responses received
EA	BSLEAAFJ[1]	2	Number of inquiries received as affirmative acknowledgement
EC	BSLLDEFJ	2	Number of lost data errors
EE	BSLDTOFJ	2	Number of disconnect timeouts
F0	BSLRTOFJ	2	Number of receive timeouts
F2	BSLTWTFJ[1]	2	Number of transmission timeouts
The following 8 bytes contain the BSC error history data:			
F4	BSLQBYTE	1	Command code
F5	BSLRBYTE	1	Command modifier
F6	BSLSENSE	2	Reserved and sense information byte 0
F8	BSLERCNT	1	Error retry count
F9	BSLBSCCC	1	BSC completion code
FA	BSLTERAD	2	Terminal address

[1]Used only by BSC.

Figure 2-40 (Part 13 of 14). Format of the BSC Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 4 bytes contain the communications parameter list for logging:			
FC	CPLFLADD	2	Address of the parameter list that contains the data to be logged
FE	CPLFLLIN	1	Communications line number (UDT unit address)
FF	CPLFLFLG	1	Flag byte: *Hex* *Meaning* 80 Update the counter table 40 Update the error history table 01 Error occurred during logging process *Note:* The communications-logging transients only support the updating of either the counter table or the error history table on any one evocation. If the flag byte (CPLFLFLG) indicates that both tables are to be processed, the counter table is updated and there is no indication of an error.

Figure 2-40 (Part 14 of 14). Format of the BSC Work Area

BSC 3270 Subsystem Session Control Block

The BSC 3270 subsystem session control block is used by the BSC 3270 subsystem to control processing for each session (every session has a session control block associated with it).

This control block contains state information, indicator status and work fields necessary for asynchronous multiple session support.

How to Find

The subsystem session control block queue header is at displacement XSCD7SQF in the extended subsystem configuration record (XSCR). The address stored at this location is the address of the first element in the queue. Subsequent session control blocks can be located by following the forward pointers at displacement ITQNXTP in the session control block. The session control blocks are in subsystem translated storage (SSP-ICF common queue space).

Format

Figure 2-41 shows the format of the BSC 3270 subsystem session control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ITQBSBH	25	XSUB hold field
25	ITQCURI	1	Instruction index (current state)
26	ITQCURS	1	Current state
27	ITQTARI	1	Instruction state (target state)
28	ITQTARS	1	Target state: *Hex* *Meaning* E0 Buffer state mask 80 AID bit mask 40 Queue op mask

Figure 2-41 (Part 1 of 3). Format of the BSC 3270 Subsystem Session Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
29	ITQCNT1	1	Control byte 1: *Hex* *Meaning* 80 STX bit 40 ETX bit 20 Interrupt handler op flag bit 10 User operation flag bit 08 Format bit 04 Queue op bit 02 Put fail bit 01 Data squeeze bit
2A	ITQCNT2	1	Control byte 2: *Hex* *Meaning* 80 Evoke pending flag 40 Clear key pending 20 Unlock keyboard pending 10 Read modified command pending 08 Session eligible for read modified 04 Read modified data is evoke data
2B	ITQRETC	2	Return code hold
2D	ITQFLDL	2	Field length
2F	ITQDTID	2	Data ID characters
31	ITQHOST	1	Host
32	ITQIBFD	2	Intermediate buffer displacement
34	ITQLBFD	2	Line buffer displacement
36	ITQHBFD	2	Hold buffer displacement
38	ITQLBP1	1	Logical screen position (high order)

Figure 2-41 (Part 2 of 3). Format of the BSC 3270 Subsystem Session Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
39	ITQLBP2	1	Logical screen position (low order)
3A	ITQWFL	2	Working field length
3C	ITQSUB@	2	SUB address
3E	ITQRITE@	2	RIT entry address
40	ITQRITT@	2	RIT table address
42	ITQGTBF@	2	Get buffer address
44	ITQPTBF@	2	Put buffer address
46	ITQRDLEN	2	Read modified buffer length
48	ITQNXTP	2	Next pointer
4A	ITQPRRP	2	Prior pointer
4C	ITQPAD	4	Reserved
	ITQLEN		X'50' length of session control block

Figure 2-41 (Part 3 of 3). Format of the BSC 3270 Subsystem Session Control Block

BSCEL Active Session Table (AST)

This 44-byte area contains information needed by the BSCEL subsystem to conduct a session. The BSCEL active session table consists of status indicators, pointers to other control blocks, and other session-related information

How to Find

The SSP-ICF common queue space contains the BSCEL active session table. Label LWASWA@ in the BSCEL line work area contains the address of the BSCEL active session table. The BSCEL active session table is part of the BSCEL session work area (SWA).

Format

Figure 2-42 shows the format of a BSCEL active session table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ASTSWAL	2	Length of session work area
02	ASTSTATE	1	Session status indicator: *Hex* *Meaning* 80 Command state active 40 Transmit state active 20 Receive state active 10 Control state active
03	ASTFLAG1	1	Session flag byte 1: *Hex* *Meaning* 80 Put op is in BSC interrupt handler. Process select/ENQs specially 40 Routine waiting for op-end 20 ITB mode selected 10 Transparency mode selected 08 PARTNER-ATTR selected 04 Evoke operation is in process 02 Switched line operator dial/answer message pending response 01 Select/ENQs should be ignored

Figure 2-42 (Part 1 of 5). Format of the BSCEL Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	ASTFLAG2	1	Session flag byte 2: *Hex* *Meaning* 80 Next operation must be EOSN or EOSA 40 Request change direction is pending to go on line 20 Request change direction has been sent for this file 10 Stop issuing operations to BSC interrupt handler because EOT was received 08 Session termination being processed 04 Send put as put-end-of-file 02 First put in a file is pending 01 Line is down. Issue no more operations to BSC interrupt handler
05	ASTFLAG3	1	Session flag byte 3: *Hex* *Meaning* 80 Requestor session active 40 *EXEC requestor session 20 Message is in monitor buffer 10 Message is in session buffer 08 User has not been informed of a waiting message 04 User has not been informed of waiting data 02 User must issue get as next operation 01 A select/ENQ is being processed

Figure 2-42 (Part 2 of 5). Format of the BSCEL Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	ASTFLAG4	1	Session flag byte 4: *Hex* *Meaning* 80 A user operation is outstanding 40 A pending return code is waiting for the user 20 Line error is being processed 10 EOT in control state with active transaction 08 Requestor session's first-time-op is pending 04 End of transaction return code is waiting for the user 02 Blank compression selected 01 Blank truncation selected
07	ASTFLAG5	1	Session flag byte 5: *Hex* *Meaning* 80 Put end of file with 3740 multiple files issued last 40 Truncated put with all blank data is being processed 20 Put with no data to send 3740 end of file null record 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
08	ASTRECBF	2	Pointer to record buffer
0A	ASTSBUB@	2	Pointer to session BSC unit block

Figure 2-42 (Part 3 of 5). Format of the BSCEL Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	ASTMBUB@	2	Pointer to monitor BSC unit block
0E	ASTMBH@	2	Pointer to monitor buffer header
10	ASTLBH@	2	Pointer to line buffer header
12	ASTLBL	2	Line buffer length
14	ASTRTN@	2	Op-end return address
16	ASTOXRF@	1	Offset into OXREF table for transient waiting for control
17	ASTRECL	2	Maximum user record length
19	ASTOPMOD	1	Translated session unit block op code modifier
1A	ASTOPCOD	1	Translated session unit block op code
1B	ASTXOUTL	2	Translated session unit block output length
1D	ASTPEND	2	Pending return code
1F	ASTSPR	2	Return address for subroutine IBLSPR
21	ASTENQAS	2	Return address for subroutine IBLENQAS
23	ASTEVST	2	Return address for subroutine IBLEVST
25	ASTBLKL	2	Block length

Figure 2-42 (Part 4 of 5). Format of the BSCEL Active Session Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
27	ASTBLKL2	2	Actual block length
29	ASTRECSP	1	Record separator character (EBCDIC equivalent)
2A	ASTRECU	1	Record separator character (specified by user)
2B	ASTSTSAV	1	Temporary copy of ASTSTATE when unexpected data is received

Figure 2-42 (Part 5 of 5). Format of the BSCEL Active Session Table

BSCEL Line Buffer Header (LBH)

This 16-byte area contains information about its associated line buffer.

How to Find

BSCEL uses three line buffer headers:

- Field LWAMBH@ of the BSCEL line work area and field ASTMBH@ of the BSCEL active session table contain the address of the monitor line buffer header. The monitor line buffer header is allocated from SSP-ICF subsystem queue space during subsystem enable.
- Field ASTLBH@ of the BSCEL active session table contains the address of the first session line buffer header.
- Field LBHCHN@ of the first session line buffer header contains the address of the second session line buffer header. The session line buffer headers are allocated from SSP-ICF subsystem queue space during an acquire operation and when a procedure is started.

Format

Figure 2-43 shows the format of a BSCEL line buffer header.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LBHCHN@	2	Chain pointer to next line buffer header
02	LBHBFR@	2	Pointer to line buffer
04	LBHDATA@	2	Pointer to data in line buffer
06	LBHDLEN	2	Length of data in line buffer
08	LBHRTNC	2	Translated session unit block return code
0A	LBHSTAT	1	Buffer status byte: *Hex* *Meaning* 80 Busy—user owned 40 Busy—waiting to go online 20 Busy—BSC interrupt handler owned 10 Busy—waiting for user 00 Free

Figure 2-43 (Part 1 of 2). Format of the BSCEL Line Buffer Header

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	LBHBDB	1	Buffer data byte (defines contents of line buffer): *Hex* *Meaning* 80 Null record occupies buffer 13 *EXEC procedure start request 12 *EXEX procedure start request 11 *EXNC procedure start request 10 *EXNX procedure start request 06 3741 status message in buffer 05 ICFM non-error message 04 ICFE error message 03 *REL command (release) 02 *EOX command (end of transaction) 01 *ACQ command (acquire)
0C	LBHRSVD1	1	Reserved byte 1
0D	LBHRSVD2	1	Reserved byte 2
0E	LBHRSVD3	1	Reserved byte 3
0F	LBHRSVD4	1	Flag byte: *Hex* *Meaning* 80 EOT (end of transmission) received 40 Disconnect received

Figure 2-43 (Part 2 of 2). Format of the BSCEL Line Buffer Header

BSCEL Line Work Area (LWA)

This 66-byte area contains information about one line. The line work area is allocated from SSP-ICF common queue space at enable time.

How to Find

The BSCEL line work area begins at displacement X'68' in the extended subsystem configuration record (XSCR).

Format

Figure 2-44 shows the format of a line work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LWASTATE	1	Line status indicator: *Hex* *Meaning* 80 Off—monitor state active 40 Remote state active 20 Line activity in progress 10 Active user is in termination 08 Successful get-for-EOT op-end 04 Unsuccessful get-for-EOT op-end 02 Line error being processed 01 Continuation record hasn't been read yet
01	LWAFLAG1	1	Line flag byte 1: *Hex* *Meaning* 80 Get operation is in BSC interrupt handler 40 An operation is in BSC interrupt handler 20 Must send message after abnormal termination 10 Op-end that could not be cancelled is in process 08 Cancel or abort is in process 04 BSC unit block op-ended before cancel or abort BSC unit block op-ended 02 Must send *REL after abort 01 User canceled while waiting for a pending return code during line error processing. Line must be restarted.

Figure 2-44 (Part 1 of 3). Format of the BSCEL Line Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	LWAFLAG2	1	Line flag byte 2: *Hex* *Meaning* 80 Disable has been posted 40 Line is down. BSC interrupt handler remains active 20 Program start is in process 10 Successful program start has been posted 08 Normal or abnormal end of job has been posted while program start is being processed 04 #IBLR should give control to #IBLD upon exit 02 Must ignore select/ENQs 01 Put op is in BSC interrupt handler. Process select/ENQs specially
03	LWAFLAG3	1	Line flag byte 3: *Hex* *Meaning* 80 Record received exceeds maximum user record length 40 #IBLF processed normal disconnect for user and is waiting to complete it 20 Not used 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
04	LWASWA@	2	Pointer to session work area for this line
06	LWAMBUB@	2	Pointer to monitor BSC unit block (BUB)
08	LWAMBH@	2	Pointer to monitor buffer header
0A	LWASUB@	2	Pointer to session unit block (SUB)

Figure 4-44 (Part 2 of 3). Format of the BSCEL Line Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	LWARTN@	2	Op-end return address with no active session
0E	LWAOXRF@	1	Offset to OXREF table for transient waiting for control
0F	LWARTNCD	2	Op-end return code
11	LWAWORK	32	Work area for cancel or abort BSC unit block and program start SYSLOG parameter list
The following four fields define a portion of the LWAWORK field used during line error processing:			
2C	LWABUBRC	1	BSC unit block (BUB) return code
2D	LWAEMIC	2	Error MIC
2F	LWAXSUBR	1	Translated session unit block (XSUB) minor return code
30	LWAWRAP	1	Wrap test results
31	LWAXR1	2	Save area for register 1 or pointer to BUB that op-ended before abort
33	LWAXR2	2	Save area for register 2
35	LWAPEOT	2	Return address for subroutine IBLPEOT
37	LWAPMSG	2	Return address for subroutine IBLPMSG
39	LWARTC	1	Saved BSC unit block return code
3A	LWARSVD	8	Reserved

Figure 2-44 (Part 3 of 3). Format of the BSCEL Line Work Area

BSCEL Message Control Element (MCE)

This 24-byte area contains information about a message being displayed or logged to the history file.

How to Find

Field XSCDQLW@ in the extended subsystem configuration record contains the BSCEL message control element. The message control element follows the BSCEL line work area and is at offset X'AA' into the extended subsystem configuration record (XSCR).

Format

Figure 2-45 shows the format of a BSCEL message control element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCEMIC	2	Message identification code
02	MCEOPTA	1	Options requested: *Hex* *Meaning* 80 Message needs location name insert data 08 Option 0 selected 04 Option 1 selected 02 Option 2 selected 01 Option 3 selected
03	MCEOPTT	1	Option taken to halt message: *Hex* *Meaning* F3 Option 3 taken F2 Option 2 taken F1 Option 1 taken F0 Option 0 taken C4 Option D taken
04	MCEECM@	2	Pointer to event control mask
06	MCERTN@	2	Caller's return address
08	MCEOXRF@	1	Caller's OXREF table offset
09	MCELIN#	1	Line number (character form)

Figure 2-45 (Part 1 of 2). Format of the BSCEL Message Control Element

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	MCELOCN	8	Subsystem location name
12	MCERSVD1	1	Reserved byte 1
13	MCERSVD2	1	Reserved byte 2
14	MCERSVD3	1	Reserved byte 3
15	MCERSVD4	1	Reserved byte 4
16	MCERSVD5	1	Reserved byte 5
17	MCERSVD6	1	Reserved byte 6

Figure 2-45 (Part 2 of 2). Format of the BSCEL Message Control Element

BSCEL Session Work Area (SWA)

This 76-byte area contains information about one session. The SWA consists of the active session table (AST) and the active session BSC unit block (BUB). The SWA is allocated from SSP-ICF common queue space at acquire time or when a procedure start request is received.

How to Find

Field LWASWA@ of the BSCEL line work area contains the address of the BSCEL session work area.

Format

Figure 2-46 shows the format of the BSCEL session work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 44 bytes contain the active session table:			
00	ASTSWAL	2	Length of session work area
02	ASTSTATE	1	Session status indicator: *Hex* *Meaning* 80 Command state active 40 Transmit state active 20 Receive state active 10 Control state active
03	ASTFLAG1	1	Session flag byte 1: *Hex* *Meaning* 80 Put op is in interrupt handler—process select/ENQs specially 40 Routine is waiting for op-end 20 ITB mode specified 10 Transparency mode selected 08 PARTNER-ATTR selected 04 Evoke operation is in process 02 Switched line operator dial/answer message pending response 01 Select/ENQs should be ignored

Figure 2-46 (Part 1 of 6). Format of the BSCEL Session Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	ASTFLAG2	1	Session flag byte 2: *Hex* *Meaning* 80 Next operation must be EOSN or EOSA 40 Request change direction is pending to go on line 20 Request change direction has been sent for this file 10 Stop issuing operations to BSC interrupt handler because EOT was received 08 Session termination being processed 04 Send put as put-end-of-file 02 First put in a file is pending 01 Line is down. Issue no more operations to BSC interrupt handler
05	ASTFLAG3	1	Session flag byte 3: *Hex* *Meaning* 80 Requestor session active 40 *EXEC requestor session 20 Message is in monitor buffer 10 Message is in session buffer 08 User has not been informed of a waiting message 04 User has not been informed of waiting data 02 User must issue get as next operation 01 A select/ENQ is being processed

Figure 2-46 (Part 2 of 6). Format of the BSCEL Session Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	ASTFLAG4	1	Session flag byte 4: *Hex* *Meaning* 80 A user operation is outstanding 40 A pending return code is waiting for the user 20 Line error being processed 10 EOT in control state with active transaction 08 Requestor session's first time-op is pending 04 End-of-transaction return code is waiting for user 02 Blank compression selected 01 Blank truncation selected
07	ASTFLAG5	1	Session flag byte 5: *Hex* *Meaning* 80 Put end of file with 3740 multiple files issued last 40 Truncated put with all blank data is being processed 20 Put with no data to send 3740 end of file null record 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
08	ASTRECBF	2	Pointer to record buffer
0A	ASTBUB@	2	Pointer to session BSC unit block (BUB)
0C	ASTMBUB@	2	Pointer to monitor BSC unit block (BUB)
0E	ASTMBH@	2	Pointer to monitor buffer header

Figure 2-46 (Part 3 of 6). Format of the BSCEL Session Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	ASTLBH@	2	Pointer to line buffer header
12	ASTLBL	2	Line buffer length
14	ASTRTN@	2	Op-end return address
16	ASTOXRF@	1	Offset into OXREF table for transient waiting for control
17	ASTRECL	2	Maximum user record length
19	ASTOPMOD	1	Translated session unit block (XSUB) op code modifier
1A	ASTOPCOD	1	Translated session unit block (XSUB) op code
1B	ASTXOUTL	2	Translated session unit block (XSUB) output length
1D	ASTPEND	2	Pending return code
1F	ASTSPR	2	Return address for subroutine IBLSPR
21	ASTENQAS	2	Return address for subroutine IBLENQAS
23	ASTEVST	2	Return address for subroutine IBLEVST
25	ASTBLKL	2	Block length
27	ASTBLKL2	2	Actual block length
29	ASTRECSP	1	Record separator character (EBCDIC equivalent)
2A	ASTRECU	1	Record separator character (specified by user)
2B	ASTSTSAV	1	Temporary copy of ASTSTATE when unexpected data is received

The following bytes contain the session BUB:

2C	SWBSTSKI	1	Subsystem task ID
2D	SWBITSKI	1	BSC interrupt handler task ID

Figure 2-46 (Part 4 of 6). Format of the BSCEL Session Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2E	SWBRTC	1	Return code
2F	SWBMOD	1	Op code modifier
30	SWBOP	1	Op code
31	SWBSSNA	1	Session address
32	SWBLBFR@	2	Line buffer address
34	SWBLBFRL	2	Line buffer length
36	SWBDATA@	2	Received data address
38	SWBEFFL or	2	Effective input length
	SWBOUTL	2	Output length
3A	SWBLINE#	1	Line number
3B	SWBSTYPE	1	Switch type information for line initialization
3C	SWBSTATS	1	BSC unit block status byte
3D	SWBWORK0	1	Subsystem work byte 0
3E	SWBWORK1	1	Subsystem work byte 1
3F	SWBXSUB@ or	2	Address of associated translated session unit block
	SWBSUB@	2	Address of associated session unit block
41	SWBXSCR@	2	Address of associated extended subsystem configuration record (XSCR)
43	SWBIOB@	2	Address of associated IOB
45	SWBCHN@	2	BSC unit block chain field
47	SWBPHL@	2	Phone list pointer

Figure 2-46 (Part 5 of 6). Format of the BSCEL Session Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
49	SWBPHLPM	1	Phone list parameters
4A	SWBRSVD	2	Reserved

Figure 2-46 (Part 6 of 6). Format of the BSCEL Session Work Area

BSCEL Transient Parameter List

This 38-byte area is an internal interface between mainline code and transients.

How to Find

When BSCEL calls a BSCEL transient, register 2 contains the address of the leftmost byte of the BSCEL transient parameter list.

Format

Figure 2-47 shows the format of a BSCEL transient parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	XPLWL@	2	Pointer to wait list
02	XPLOXRF@	2	Pointer to OXREF table
04	XPLXSCR@	2	Pointer to extended subsystem configuration record (XSCR)

Figure 2-47 (Part 1 of 2). Format of the BSCEL Transient Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	XPLRSVD1	1	Reserved byte 1
07	XPLRSVD2	1	Reserved byte 2
08	XPLMSGD	2	Address of IBLMSGD subroutine
0A	XPLENQNT	2	Address of ENQASNT subroutine
0C	XPLWAIT	2	Address of IBLWAIT subroutine
0E	XPLPOSIW	2	Address of IBLPOSIW subroutine
10	XPLIED9	2	Address of CALLIED9 subroutine
12	XPLDABL	2	Address of IBLMDABL subroutine
14	XPLIDBL	2	Address of IBLIDBL subroutine
16	XPLTPD	2	Address of IBLTPD subroutine
18	XPLERRLC	2	Address of IBLERRLC subroutine
1A	XPLCPET	2	Address of IBLCPET subroutine
1C	XPLTASN	2	Address of IBLTASN subroutine
1E	XPLASTI	2	Address of ASTINIT subroutine
20	XPLCHKA	2	Address of CHKAST subroutine
22	XPLPEOT	2	Address of IBLPEOT subroutine
24	XPLPMSG	2	Address of IBLPMSG subroutine

Figure 2-47 (Part 2 of 2). Format of the BSCEL Transient Parameter List

CE Cylinder

The CE cylinder is a diagnostic area located at the end of each disk drive on a system. This cylinder is reserved for running diagnostics and/or storing diagnostic data. Cylinder addresses are:

8.6 megabyte—cylinder 201
13.2 megabyte—cylinder 302 (disk drive A)
27.1 megabyte—cylinder 302 (disk drives A and B)
63.9 megabyte—cylinder 359 (disk drive A)
128.4 megabyte—cylinder 359 (disk drives A and B)
192.9 megabyte—cylinder 359 (disk drives A, B, and C)
257.4 megabyte—cylinder 359 (disk drives A, B, C, and D)

Checkpoint Control Block (CCB)

An 80-byte checkpoint control block (CCB) is created in system queue space when a task wants to save checkpoint records. The checkpoint control block is used to pass information between checkpoint transients and within the restart utility. The checkpoint control block contains a pointer to the checkpoint record file for this job step.

How to Find

The job control block (JCB) extension field JCBDCCB@ contains the address of the checkpoint control block.

Format

Figure 2-48 shows the format of the checkpoint control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CCBFCT	1	Functions requested of checkpoint: *Hex* *Meaning* 80 Issue informational message just once 00 Issue informational message for each checkpoint

Figure 2-48 (Part 1 of 3). Format of the Checkpoint Control Block (CCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	CCBNAM	8	Label of checkpoint record file
09	CCBCMP	1	Completion code returned to user: *Hex* *Meaning* 99 No checkpoint saved 80 Normal restart completion 43 Invalid request 41 Disk I/O error 40 Normal checkpoint completion
0A	CCBFLG	1	Checkpoint flag byte: *Hex* *Meaning* 80 An offline multivolume file exists 40 An error occurred previously 20 Informational message was issued once 10 A restart is in process 08 Checkpoint is in process 04 Remove checkpoint status and check-point record file for this task 02 Reserved 01 Reserved
0B	CCBCNT	2	Number of user data files
0D	CCBCRF	3	SSS of the checkpoint record file
10	CCBPL@	2	Address of checkpoint parameter list in translated storage (XR2)
12	CCBUXR1	2	Save area for user's XR1
14	CCBVLI	8	Variable length insert for SYSLOG
1C	CCBXR1	2	XR1 save area
1E	CCBXR2	2	XR2 save area

Figure 2-48 (Part 2 of 3). Format of the Checkpoint Control Block (CCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
20	CCBARR	2	ARR save area
22	CCBEXT	2	Address of checkpoint control block extension
24	CCBRESV1	5	Reserved area
29	CCBWORKS	9	Start of work area
31	CCBWORKE	—	End of work area
32	CCBRESV2	30	Reserved area

Figure 2-48 (Part 3 of 3). Format of the Checkpoint Control Block (CCB)

CMOCL Parameter List

The CMOCL parameter list allows a program to issue an operator control command.

How to Find

The address of the CMOCL parameter list is contained in the associated OCL queue element (OCLQE). The OCL queue element is chained to the OCL queue header in the nucleus (QHDCPOCL).

Format

Figure 2-49 shows the format of the CMOCL parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CMOECM	2	Event control mask (ECM)
02	CMOINP@	2	Address of input data

Figure 2-49 (Part 1 of 3). Format of the CMOCL Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	CMOINLEN	1	Length of input data
05	CMOUT@ or CMSUB@	2 2	Address of output Address of session unit block for SSP-ICF
07	CMOUTLEN	1	Length of output
08	CMRETCD	2	Return code
0A	CMOFUNC	1	Function code: *Hex* *Meaning* 80 Code for cancel by TCB@ 40 No wait option 20 Start a procedure 10 Request from SSP-ICF program start 08 Special message parameter list for SSP-ICF 00 Code for character command
0B	CMOFLAG1	1	Function code: *Hex* *Meaning* 80 Security check only request

The following 5 bytes contain the equates for the format of the input area for cancel by TCB@:

00	CMCATCB	2	TCB address
02	CMCAID	1	Task ID
03	CMCAOPT	1	Option for cancel
04	CMCALEN	1	Length of input area

Figure 2-49 (Part 2 of 3). Format of the CMOCL Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 12 bytes contain the equates for the parameter list for SSP-ICF special message interface:			
00	CMMCHAIN	2	Chain address for special message
02	CMMMIC#	2	MIC number to retrieve
04	CMMFLAG	1	Flag for special message interface: *Hex* *Meaning* 80 0—no substitution data 1—substitution data 40 0—log to history and display 1—log but do not display message
05		3	Not used
08	CMMRCODE	2	Return code
0A		1	Not used
0B	CMMSUB	8	8 bytes by substitution data

Figure 2-49 (Part 3 of 3). Format of the CMOCL Parameter List

Command Processor Task Control Block

The command processor task control block (TCB) contains information related to command processor tasks. The command processor TCB always exists and is located in main storage at hex location 0200. The command processor TCB contains the chain pointer for other TCBs that are built. See Figure 2-236 for the format of a TCB.

Command Processor Work Area

The command processor work area is a 256-byte resident area in the variable nucleus used by command processor transients. The total area can be used by any command processor transient as long as the area has previously been logged (#CMCU) and the static portion of the area is saved and restored (field CPWSDMIN and CPTUB). Because of the many command processor transients using this area, the contents are not of a static format. Before analyzing the work area be aware of the transient that is using it by checking the main storage transient area (hex location 0800).

How to Find

The command processor work area can be found by referring to field SCADCPW@ in the system communication area.

Format

Figure 2-50 shows the format of the command processor work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CPWRK	1	Start of work area
The following area comprises the work station parameter list area (see Figure 2-254):			
01	CPWSDM or	23	Work station parameter list
The following area comprises the message retrieve parameter list (see Figure 2-162):			
01	CPMRTV or	15	Message retrieve parameter list
Command operand table:			
17	CPOPLN1	1	Operand 1 length minus 1
18	CPOPADR1	2	Operand 1 right hand address

Figure 2-50 (Part 1 of 6). Format of the Command Processor Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1A	CPOPLN2	1	Operand 2 length minus 1
1B	CPOPADR2	2	Operand 2 right hand address
1D	CPOPLN3	1	Operand 3 length minus 1
1E	CPOPADR3	2	Operand 3 right hand address
20	CPOPLN4	1	Operand 4 length minus 1
21	CPOPADR4	2	Operand 4 right hand address
23	CPOPCNT	1	Number of command operands
24	CPCODE	1	Command routing code:

Hex	*Meaning*
27	Call to #CMCI
26	Call to #CPON
25	Call to #CPIQ
24	// OFF OCL statement
23	IDELETE command code
22	End the menu, no I/O
21	Update address compare dump
20	End address compare dump
1F	Address compare dump auto resume
1E	Address compare dump errors to console
1D	Cancel SVC code
1C	Display address compare dump message
1B	SETDUMP command code
1A	Inquiry option one request
19	Timer status request (development)
18	I/O error inquiry resume request
17	I/O error cancel request
16	I/O error console rebuild request
15	Reserved

Figure 2-50 (Part 2 of 6). Format of the Command Processor Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24 (cont.)			

Hex	*Meaning*
14	Sign-off due to I/O error
13	Stop system has completed
12	Automatic update status call
11	Start print call from start system
10	Sign-on call from MSIPL
0F	End and dequeue status
0E	Find command code
0D	Input job queue initiation call
0C	TIME command
0B	Cancel from inquiry menu
0A	CONSOLE command code
09	MODE command code
08	Restore screen request
07	Aid byte function request
06	Build job control block request
05	Cancel menu function
04	OFF command code
03	PRTY command code
02	MSG command code
01	MENU command code

Character	*Meaning*
J	JOBQ command code
D	STATUS command code
C	CANCEL command code
V	VARY command code
R	REPLY command code
P	STOP command code
S	START command code
T	RESTART command code
A	ASSIGN command code
G	CHANGE command code
H	HOLD command code
L	RELEASE command code

Figure 2-50 (Part 3 of 6). Format of the Command Processor Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following area is used when interfacing with the command processor cleanup transient:			
25	CPCMCU	1	Command processor cleanup parameter list interface
	or		
	CMCUSW1	1	Switch byte:
			Hex *Meaning*
			80 On—output prompt to be displayed Off—no output to be displayed
			40 On—input information available Off—no input information available
			20 On—roll screen specified number of lines Off—do not roll screen before
			10 On—log input or output information Off—do not log input and/or output information
			08 On—show message to system console also Off—show message only to work station
			04 On—include input line in roll Off—do not include input line in roll
			02 On—message substitution to be performed Off—no message substitution
			01 On—this is a message broadcast Off—this is not a broadcast
26	CMCUMIC	2	MIC number to be logged/displayed

Figure 2-50 (Part 4 of 6). Format of the Command Processor Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	CMCUSW2	1	Switch byte 2:
			Hex *Meaning*
			80 On—do not invite work station Off—invite work station
			40 On—issue display output Off—do not issue display output
			20 On—route only to console Off—do not route only to console
			10 On—if X'40' is on in CMCUSW1, do not update status Off—ignore
	or		
	CMCUMLEN	1	Length of output to #CPOC
29	CMCUMG@	2	Address of main storage message text or output to #CPOC
	or		
	CMCUMSD@	2	Address of message substitution data
The following area is a work area for the command processor transients:			
2B	CPWRKL	82	Command processor transient work area
The following area is for the command processor status fire control character:			
7D	CPFIREL	1	Start of fire field save area
7E	CPFIRER	2	End of fire field save area
The following area is the accept and log input area for the work station:			
80	CPWSDMIN	1	Start of input area
	or		
	CPINPDTA	1	Input field 1 start
81	CPINPDTE	119	Input field 1 end
F8	CPINPSTD	3	Input field 2 (status command)
	or		
	CPSTAT@	3	Status queue element address

Figure 2-50 (Part 5 of 6). Format of the Command Processor Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

The following static portion of the command processor work area must be retained:

FB	CPTUB	2	Terminal unit block address
FD	CP@TCB	2	Task control block address
FF	CPRSV	1	Reserved

Figure 2-50 (Part 6 of 6). Format of the Command Processor Work Area

Communications Specification Block (CSB)

A communications specification block (CSB) contains information required by the SNA, BSC, or MRJE tasks; its length is 54 bytes. Included are the task control block and the DTF addresses. A CSB is built and maintained by the scheduler and is chained to a specific job control block.

How to Find

Field JCBDCSBP in the JCB points to the first entry in the CSB chain. Field CSBDFCHN in the CSB points to the next CSB in the chain. Field $SNCSB@ in the SNA DTF contains the address of the CSB.

Format

Figure 2-51 shows the format of CSB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CSBDECM	1	Event control mask
01	CSBDMTCB	1	Monitor line owner task control block address (overlays event control mask)
02	CSBDLINO	1	Line number: *Hex* *Meaning* 04 Line number 4 03 Line number 3 02 Line number 2 01. Line number 1
03	CSBDDVCD	1	Device code: *Hex* *Meaning* 86 3270 device emulation BSC support 85 Interactive BSC 84 SSP-ICF SNA upline/SDLC tributary 83 SNA/primary SDLC 82 MRJE 81 SNA/secondary SDLC 80 BSC
04	CSBDSCAC	2	SCA chain field

Figure 2-51 (Part 1 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	CSBDAT1	1	Attribute byte 1: *Hex* *Meaning* 80 BSC I/O area allocated 40 Two IOBs required 20 Communications specification block has been opened 10 Communications specification block has been allocated 08 Monitor communications specification block 04 Japanese modem used on this line 02 Immediate exit 01 Communications specification block created by initiator
07	CSBDAT3	1	Attribute byte 3: *Hex* *Meaning* 80 User request in process (#SVTTC) 40 Termination in process (#BSER) 20 Switched network backup line initialization complete 10 #BSCM called from termination 08 X.21 on this line 04 Autocall being used 02 Communications specification block has been closed 01 CSBDIOSZ calculated with one IOB
Primary SDLC			
08	CSBDSC@	2	Address of SDLC common area

Figure 2-51 (Part 2 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	CSBDLST	1	Line status byte: *Hex* *Meaning* 80 Terminate/detach issued for remote work station 40 Terminate/detach issued for SNA peer 20 Terminate/detach issued for finance 10 Terminate/detach for SDLC station test 08 Line in termination 04 Sharable line 02 Reserved 01 Reserved
0B	CSBDTCB1	2	TCB address of task 1
0D	CSBDTCB2	2	TCB address of task 2
0F	CSBDTCB3	2	TCB address of task 3
11	CSBDTCB4	2	TCB address of task 4
13	CSBDRESV	5	Reserved
18	CSBDEMON	1	End of communications specification block for primary SDLC
Secondary SDLC			
08	CSBDFCHN	2	JCB chain field
0A	CSBDTCB@	2	Protocol task control block address
0C	CSBDUTCB	2	User task control block address
0E	CSBDDTF@	2	DTF address

Figure 2-51 (Part 3 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	CSBDRTNC	1	Task return code: *Hex* *Meaning* 33 Termination request operation code 22 Close request operation code 02 Link to message transient 01 Return to data management code 00 Return to user
11	CSBDMDSS	4	Message transient address:
SNA Entries			
15	CSBDSDCM	2	SDLC common area address
17	CSBDSNAC	2	SNA common area address
19	CSBDMONE	1	End of monitor communication specification for #SNA1

Figure 2-51 (Part 4 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1A	CSBDSTB1	1	SNA status byte 1: *Hex* *Meaning* 80 Request disconnect specified 40 Request disconnect not specified 20 CSBDMIC contains termination exit block address indicator 10 User is waiting on a check 08 Logical unit configured as single logical unit 04 Communications specification block at pre-initialization stage 02 User in wait stage 01 Message request with recall operation
1B	CSBDSTB2	1	SNA status byte 2: *Hex* *Meaning* 80 Queue of SNA common area required 40 Control cancel option taken 20 Disk error occurred while taking dump 10 No dump taken on abnormal termination 08 User running in unattended mode
1C	CSBDSDLC	2	SDLC task control block address
1E	CSBDMCD@	2	Address of allocated microcode area
20	CSBDMIC	2	MIC number associated with message request
22	CSBDPUB@	2	Physical unit block associated with line

Figure 2-51 (Part 5 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	CSBDREC@	2	Recall address associated with recall user operation
26	CSBDNAME	8	Communications file name
2E	CSBDWRKS	10	SNA work area
BSC Entries			
15	CSBDLNDX	1	Line initialization index for BSC
16	CSBDAT2	1	Attribute byte 2: *Hex* *Meaning* 80 ID area allocated 40 Exit flag from #BSCL to the post routine 20 Exit flag from #BSCL to the wait routine 10 Exit flag set by #BSL0 when going to the wait routine from #BSCL 08 Exit flag from #BSL0 to the post routine 04 Exit flag from #BSL0 to the wait routine 02 Transmit ID override 01 Receive ID override
17	CSBDIOSZ	2	Size of BSC I/O area
19	CSBDIO@	2	Address of BSC I/O area/MRJE communications and control table address
1B	CSBDTID@	2	Address of switched transmit ID in BSC I/O area
1D	CSBDLCS	5	Disk address for BSC line initialization transients

Figure 2-51 (Part 6 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
22	CSBDBMSI	1	Message index: Used in #BSOB and #BSOP (the BSC open transients) *Hex* *Meaning* 5E Invalid blank compression/truncation request 5D X.21 task not loaded, switched line 5C Flag for return to #BSOB label BSO00020 5B Flag for return to #BSOB label BSO01790 5A 3740 mode on multipoint line 59 Switch type not specified 58 Blank truncation request not valid 57 Blank compression request not valid 56 3740 request not valid 55 Buffer size exceeds 4096K 54 Unable to allocate buffer space 53 Block or record length of zero 52 Invalid transparent ITB request 51 Conversational request not valid 50 Record separator request not valid Used by batch BSC as a parameter list to the BSC message transient (#BSMD) *Hex* *Meaning* 2C Last communications specification block flag used in termination 2B 3209 message with 2 and 3 options 2A 3209 with 3 option 29 3210 message with no options 28 Set switch for Japanese modem 27 BSC task abort 26 3210 message with 2 and 3 options 25 IBM equipment test correct 24 IBM modem failure

Figure 2-51 (Part 7 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
22 (cont.)			*Hex* *Meaning* 23 IBM attachment error 22 Close error (0,2,3 options) 21 Operator dial 20 Operator answer message Used by MRJE BSC as a parameter list to the BSC message transient (#BSMD) *Hex* *Meaning* FC Phone parameter on invalid line type FB Call attempt with invalid phone list FA X.21 task not active F9 Autocall task not active F8 Operator answer required F7 No connection; autocall F6 Permanent MLCA processor check F5 Temporary MLCA processor check F4 No connection; nonswitched line F3 BSC unit check on ENQ F2 No connection; manual dial F1 Operator dial required F0 Mask for any MRJE message
23	CSBDCNFG	1	Configuration byte used by #BSCL
24	CSBDRSRV	3	Reserved
27	CSBDPRM1	1	BSC message parameter. *Hex* *Meaning* 80 Permanent error indicator for BSC 40 Retry operation taken to halt 20 This message displayed with halt 10 Message transient called from BSC wait 01 Assign retry with wait specified #BSOP

Figure 2-51 (Part 8 of 9). Format of the Communications Specification Block (CSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	CSBDNAM	4	Module that wants message displayed
2C	CSBDRID@	2	Address of switched receive (ID in BSC I/O area)
2E	CSBQHDR	1	IOB queue header and line definition
2F	CSBLDEF	1	Bytes saved by #BSOB
30	CSBDLNUM	1	Save area of the EBCDIC line number
31	CSBDIOB@	2	IOB pointer used by #BSER
33	CSBDIRS	1	Not used
34	CSBDPL@	2	Pointer to phone list
36	CSBDWORK	2	Work area for #BSOB
	or		
	CSBDAT4	1	Attribute byte. *Hex* *Meaning* 80 Autocall/X.21 task has been posted 40 Set permanent error indicator but display no message 20 Exit flag from #BSC2 to post 10 Autocall/X.21 being used on this line 08 Not used 04 MRJE informational message

Figure 2-51 (Part 9 of 9). Format of the Communications Specification Block (CSB)

Compiler Information Block

The 32-byte compiler information block (CIB) is created by the initiator in the system queue space area. It is used to pass information from the scheduler to the compiler.

Note: Programs using this control block must be privileged because it changes the program mode register.

How to Find

The job control block (JCB) field JCBDCIB@ contains the address of the compiler information block.

Format

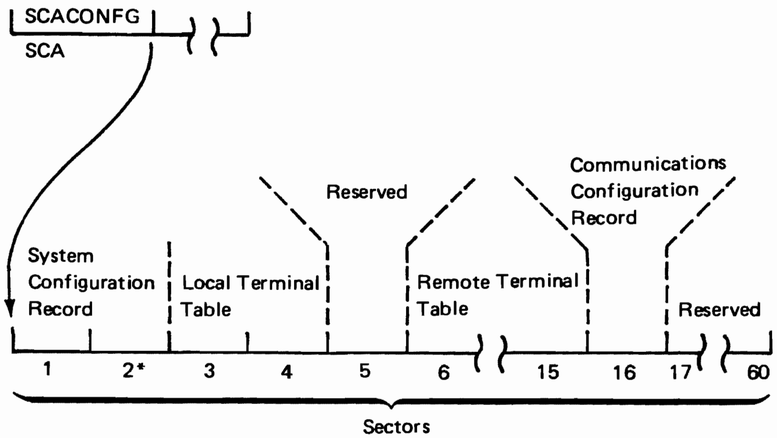
Figure 2-52 shows the format for the compiler information block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CIBDWSTR	3	Sector address of start of $WORK file
03	CIBDWEND	3	Sector address of end of $WORK file
06	CIBDWDEV	1	Device code for $WORK file
07	CIBDSSTR	3	Sector address of start of $SOURCE file
0A	CIBDSEND	3	Sector address of end of $SOURCE file
0D	CIBDSDEV	1	Device code for $SOURCE file
0E	CIBDOTLB	2	Address of OUTLIB format 1
10	CIBDMRTM	1	MRTMAX value
11	CIBDATTR	1	Attribute byte: *Hex* *Meaning* 40 Never ending program (NEP) yes specified
12	CIBD2STR	3	Sector address of start of $WORK2 file
15	CIBD2END	3	Sector address of end of $WORK2 file
18	CIBD2DEV	1	Device code for $WORK2 file
19	CIBDRESV	7	Reserved area

Figure 2-52. Format of a Compiler Information Block

Configuration Record—System

The configuration record is located in the system work area (#SYSWORK). It consists of three sectors that contain information about the System/34 configuration, including the work station configuration. Sector 1 (256-bytes) contains system information, sector 2 (256-bytes) contains work station environment information, and sector 3 (256-bytes) contains work station device information. A copy of sector 2 becomes the configuration record for each work station device. At MSIPL time, copies of sector 2 (one per display station) are stored in the work station work area and one per printer is stored in the system work area (#SYSWORK). Sector 3 contains a device ID for each work station device and the sector address for the display station records that are copied to the work station work area or the printer records that are copied to the system work area (#SYSWORK). The work station work area is part of the task work area.



*Sector 2 is copied to specified area determined by CONWSUID.

How to Find

Field SCACONFG of the system communication area (SCA) contains the 2-byte sequential sector address of the system configuration record. Within the local terminal table portion of the configuration record are the following pointers:

– Field CONWSCF@ contains the sector address of the printer configuration record that is copied to the system work area.
– Field CONWSWA@ contains the sector address of the work station work area associated with the display station.
– Field CONWSUID contains the device ID that identifies the specified device.

Format

Figure 2-53 shows the format of the configuration record including display stations and printer.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CONDMSIZ	1	Main storage size (see the system communications area—Figure 2-230)
01	CONDDEVC	1	Disk capacity (see the system communications area—Figure 2-230)
02	CONDID	1	System indicator (set at hex A5)
03	CONDCSIZ	1	Control storage size: *Hex* *Meaning* 04 16K words of control storage
04	CONDCFG1	1	Spool configuration: *Hex* *Meaning* 80 Auto writer supported 40 Reserved 20 Spool all printers 10 Reserved 08 Reserved 04 On—do not start job queue after IPL 02 Reserved 01 Allocate spool file on A2

Figure 2-53 (Part 1 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	CONDCFG2	1	Features configuration: *Hex* *Meaning* 80 Reserved 40 Password security feature 20 Job queue feature 10 Spool specified 0C Display station data management resident/transient 08 Display station data management transient 04 Display station data management resident 02 Keep informational messages 01 Reserved
06	CONDCFG3	1	Data communications: *Hex* *Meaning* 80 BSC has been selected 40 MRJE has been selected 20 SRJE has been selected 10 SNA/SDLC secondary selected 08 Remote work station support selected 04 SSP-ICF support selected 02 MLCA support selected 01 Autocall support selected

Figure 2-53 (Part 2 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
07	CONDCFG4	1	System configuration byte 4: *Hex* *Meaning* 80 Single program MSIPL mode 40 Use work station session printer 20 Reserved 10 Reserved 08 Reserved 04 CNFIGSSP or RELOAD procedure has executed 02 Model indicator 01 Reserved
08	CONDRELL	1	Release level (packed decimal)
09	CONDMODL	1	Modification level (packed decimal)
0A	CONSSTWA	2	Sector address of task work area
0C	CONTWASZ	2	Size of task work area
0E	CONFVTOC	2	Sector address of disk VTOC
10	CONFVTON	2	Size of disk VTOC
12	CONIVTOC	2	Sector address of diskette VTOC work area
	or		
	CONSSWRK	2	Sector address of system work area
14	CONIVTON	1	Size of diskette VTOC work area
	or		
	CONMDKWK		Work area size is 36 sectors
15	CONSSERT	2	Sector address of device logging tables
	or		
	CONSIOSS		Sector address of I/O table directory

Figure 2-53 (Part 3 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
17	CONDCFG6	1	Optional SSP features: *Hex* *Meaning* 80 Checkpoint/restart 40 Reserved 20 System management facility 10 Dump file analysis 08 I-exchange 04 Subconsole support 02 User access to spool file 01 Extended disk data management
18	CONDFSSP	1	Optional SSP save area: *Hex* *Meaning* 80 Checkpoint/restart 40 Reserved 20 System management facility 10 Dump file analysis 08 I-exchange 04 Subconsole support 02 User access to spool file 01 Extended disk data management
19	CONDAMI1	1	Address mapping byte 1: *Hex* *Meaning* 80 Exam 0—reserved 40 Exam 1—extended index data management 20 Exam 2—MLCA SMF 10 Exam 3—reserved 08 Exam 4—reserved 04 Exam 5—reserved 02 Exam 6—reserved 01 Exam 7—reserved

Figure 2-53 (Part 4 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1A	CONDAMI2	1	Address mapping byte 2: *Hex* *Meaning* 80 Exam 8—reserved 40 Exam 9—reserved 20 Exam 10—reserved 10 Exam 11—reserved 08 Exam 12—reserved 04 Exam 13—reserved 02 Exam 14—reserved 01 Exam 15—reserved
1B	CONDRSV5	1	Reserved
1C	CONGTSKS	1	EXTN task size in 2K pages
1D	CONDWTDF	1	World Trade feature byte (hex 80 = EXTN task swappable)
1E	CONDCFSZ	1	Size of configuration record(s)
1F	CONCONFG	2	Sector address of configuration record
21	CONSHIST	2	Start of sequential sector of history file
23	CONHFSIZ	2	Size of history file
25	CONDSDIR	3	Sector address of system library (#LIBRARY)

Figure 2-53 (Part 5 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	CONDMCFG	1	Data management features: *Hex* *Meaning* 80 Extended disk data management (deleted record feature) 40 Extended index data management 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
29	CONDSPSZ	2	Spool file size *Byte* *Bits* *Meaning* 29 0-3 Spool file segment size (blocks-1) 2A 4-15 Number of spool file segments per extent
2B	CONDJQSZ	1	Job queue file size (number of jobs)
2C	CONDCFG7	1	History file wrap configuration: *Hex* *Meaning* 80 Auto wrap history file 1—auto wrap history file 0—do not auto wrap history file 40 Reserved 20 Reserved 10 Overflow file preferred location 1—spindle A1 0—spindle A2 0F Overflow file size in multiples of history file size (1—15) (last 4 bits contain multiple value)

Figure 2-53 (Part 6 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2D	CONDCFG8	1	SSP-ICF selected subsystems: *Hex* *Meaning* 80 Intra 40 BSC IMS/VS 20 BSC BSCEL 10 BSC CICS/VS 08 BSC CCP 04 SNA upline 02 SNA peer 01 BSC 3270 subsystem
2E	CONDWSBF	1	Work station buffer size in 256-byte blocks
2F	CONDSPBF	2	Reserved
31	CONDRES1	1	Reserved
32	CONDSPRY	1	Reserved
33	CONDAFSZ	1	System queue space size in 256-byte blocks
34	CONDTRSZ	1	Trace buffer size in 256-byte blocks
35	CONDRES2	2	Reserved
37	CONDSPWB	2	Spool writer buffer size
39	CONDCFG5	1	SSP and PP support and optional features: *Hex* *Meaning* 80 Linkage editor selected 40 COBOL execution time support selected 20 FORTRAN execution time support selected

Figure 2-53 (Part 7 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
39 (cont.)			*Hex* *Meaning* 10 Security package selected 08 MICR support selected (SUBR08) 04 HELP support selected 02 MICR support selected (SUBR25) 01 History file scroll selected
3A	CONDSSPF	1	SSP feature indicators: *Hex* *Meaning* 80 Ideographic support 01 X.21 feature
3B	CONDCFG9	1	General configuration flags: *Hex* *Meaning* 80 Not used 40 Not used 20 Not used 10 Not used 08 Not used 04 RWS support is swappable 02 RWS devices configured 01 Not used
3C	CONDCOMS	1	Communications support save area: *Hex* *Meaning* 80 BSC has been selected 40 MRJE has been selected 20 SRJE has been selected 10 SNA/SDLC secondary selected 08 Remote work station support selected 04 SSP-ICF support selected 02 MLCA support selected 01 Autocall support selected

Figure 2-53 (Part 8 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3D	CONDOSSP	1	Optional SSP save area: *Hex* *Meaning* 80 Linkage editor selected 40 COBOL execution time support selected 20 FORTRAN execution time support selected 10 Security package selected 08 MICR support selected (SUBR08) 04 Help support selected 02 MICR support selected (SUBR25) 01 History file scroll selected
3E	CONDUTIL	1	Utility flags (install): *Hex* *Meaning* 80 DFU 40 SORT 20 WSU 10 SEU 08 SDA 04 Ideographic support—sort 02 Ideographic support—character generator utility 01 Not used

Figure 2-53 (Part 9 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3F	CONDPROD	1	Program product flags (install): *Hex* *Meaning* 80 RPG II 40 Assembler 20 FORTRAN 10 COBOL 08 BASIC 04 BSC 3270 device emulation 02 SNA 3270 device emulation 01 Not used
40	CONBMNAM	8	Batch remote work station member name
48	CONDSTUP	8	IPL startup procedure name
50	CONDSFLG	1	Security flag byte: *Hex* *Meaning* 80 Resource security feature 40 Badge security feature 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
51	CONDRSEC	3	Security use
54	CONDRSCZ	1	Security use
55	CONDSFSZ	1	Security use
56	CONDSFSS	3	Security use
59	COND#WSN	1	Number of configuration terminal unit blocks

Figure 2-53 (Part 10 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5A	CONDMCFS	1	Data management configuration save area: *Hex* *Meaning* 80 Extended disk data management (deleted record feature) 40 Extended index data management 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
5B	CNLINE1	7	Line 1
62	CNLINE2	7	Line 2
69	CNLINE3	7	Line 3
70	CNLINE4	7	Line 4

Note: Following is the format of the 7-byte area for each line:

00	CONDSTA@	1	SDLC station address
01	CONDXID	3	SDLC exchange ID
04	CONDCFLG	1	SNA/SDLC flag byte: *Hex* *Meaning* 80 Autocall 40 Manual call 20 Manual answer 10 Auto answer 08 On—SNA configured for single logical unit mode of operation Off—SNA configured for multiple logical unit mode of operation

Figure 2-53 (Part 11 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	COND#RBF	1	Number of receive buffers
06	COND#TBF	1	Number of transmit buffers
77	CONRLIN1	1	Line 1 attributes: *Hex* *Meaning* 80 Line defined 40 Manual call 20 Manual answer 10 Auto answer 02 Slow poll defined 01 Not used *Note:* Use bits 1, 2, and 3 to test for switched line
78	CONRLIN2	1	Line 2 attributes (same as line 1 attributes)
79	CONRLIN3	1	Line 3 attributes (same as line 1 attributes)
7A	CONRLIN4	1	Line 4 attributes (same as line 1 attributes)
7B	CONRPOL1	2	Line 1 polling interval
7D	CONRPOL2	2	Line 2 polling interval
7F	CONRPOL3	2	Line 3 polling interval
81	CONRPOL4	2	Line 4 polling interval
83	CONRCU#1	1	Number of controllers on line 1
84	CONRCU#2	1	Number of controllers on line 2
85	CONRCU#3	1	Number of controllers on line 3
86	CONRCU#4	1	Number of controllers on line 4

Figure 2-53 (Part 12 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
87	CONDCF92	1	SSP-ICF support work area: *Hex* *Meaning* 80 CCP, CICS, IMS, BSCEL 40 BSC 3270 20 SNA 3270 10 SNUF 08 SNA peer 04 Finance 02 Reserved 01 Reserved
88	CONDRU92	1	Reserved
89	CONDCPAK	1	Optional SSP packaging (comm): *Hex* *Meaning* 80 Print utility 40 Primary SDLC 20 Secondary SDLC 10 SNA 4/4 08 BSC interrupt handler 04 BSC interrupt handler 02 SNA presentation 01 Reserved
8A	CONDCPAS	1	Optional SSP packaging (comm) save area: *Hex* *Meaning* 80 Print utility 40 Primary SDLC 20 Secondary SDLC 10 SNA 4/4 08 BSC interrupt handler 04 BSC interrupt handler 02 SNA presentation 01 Reserved

Figure 2-53 (Part 13 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8B	CONDCFI3	1	SSP-ICF subsystems: *Hex* *Meaning* 80 SNA 3270 40 Finance 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 SSP-ICF control 01 SSP-ICF verification program

Configuration record—sector 2: Display stations and printers. One record for each device configured on a system is assigned.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0100	CONDWSID	2	Work station identification
0102	CONDFRMT	1	System date format: *Hex* *Meaning* 04 DDMMYY (World Trade) 02 MMDDYY (Domestic) 01 YYMMDD (International)
0103	CONDYEAR	1	System year
0104	CONDMMTH	1	System month
0105	CONDDAY or CONDDATE	1 3	System day System date
0106	CONDLINE	1	Number of lines per form

Figure 2-53 (Part 14 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0107	CONDPRTI	2	Printer ID
0109	CONDLIBR	8	User library
0111	CONDFORM	4	Forms number
0115	CONDIMEM	8	Printer image member name
011D	CONDWRGN	1	Work station region size in 2K blocks (if system region size is used, this field is set to zero)
011E	CONDSECC	2	Sector size of primary configuration record if remote display station; 0 if local display station
013F	CONDCHAR	1	Character set size: *Hex* *Meaning* C0 192 character set 80 128 character set 60 96 character set 40 64 character set 30 48 character set 00 Image area contains printer specification table
0140	and CONDIMAG or CONDSTAB	 192 24	 Line printer image Printer specification table

Figure 2-53 (Part 15 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

The following 24 bytes are the printer specification table:

00	CNPDPRID	2	Printer logical ID
02	CNPDFLAG	1	Flag byte:

Hex	*Meaning*
80	Reserved
40	Reserved
20	Reserved
10	Reserved
08	Inline printer image specified
04	Reserved
02	Reserved
01	Reserved

03	CNPDIMLN	2	Image length
05	CNPDIMUM	8	Image name
0D	CNPDRES1	1	Reserved
0E	CNPDTRNM	8	Translate table name
16	CNPDXTRA	2	Reserved

Configuration record—sector 3: Unit information:

0200	CONREC3	256	Terminal unit block (TUB) information table (locals)

Figure 2-53 (Part 16 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

Note: The following area is a unit information area. Each entry is 16 bytes long and is constructed by the reload and system configuration utilities.

00	CONWSATP	1	Attribute byte (printer):

Hex	*Meaning*
80	Must be zero
40	Reserved
20	Reserved
10	Reserved
08	Reserved
04	Reserved
02	Reserved
01	System printer

00	CONWSATR	1	Attribute byte (display station):

Hex	*Meaning*
80	System console
40	Alternate console
20	Command terminal
10	Reserved
08	Badge reader attached
04	960-character display screen
02	Reserved
01	Subconsole

01	CONWSLID	2	Logical ID
03	CONWSUID	1	Device ID:

Hex	*Meaning*
E5	Work station printer (5219)
E3	Work station printer (5224/5225)
E1	Work station printer (5256)
E0	Line printer (natively attached)
C0	Work station—system console

Figure 2-53 (Part 17 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	CONWSDID	1	Device type: *Hex* *Meaning* E0 Line printer (natively attached) C0 Work station device 00 End of TUB information area
05	CONWSPID	1	Unit address

If the device is a display station, the following 2 bytes are:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	CONWSDFP	2	Default printer logical ID

If the device is a printer, the following 2 bytes are:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	CONWSLGR	1	Language group number and flag bits: *Hex* *Meaning* 80 Must be zero 40 Must be zero 20 Not defined 10–01 Language group number (0–31)
07	CONWSPAT	1	Printer attributes: *Hex* *Meaning* 80 Resident spool writer 40 High priority spool writer 20-10 Number of separator pages for spool writer 08-01 Lines per inch for the 5224/5225 Printer
08	CONWSCF@ or CONWSWA@	2	Sector address of beginning of printer configuration record if this entry is for a printer Sector address of beginning of work station area if this entry is for a work station (to find the work station configuration record, add hex 2D to this address)

Figure 2-53 (Part 18 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	CONWSRSV	2	Reserved
0C	CONWSAT1	1	Additional attributes: *Hex* *Meaning* 80 Create extended printer TUB 40 IGC—capable work station 20 Reserved 10 Keyboard type: On—IGC keyboard Off—standard keyboard 08 Storage size: 0—64 1—512 04 Reserved 02 Subconsole assigned to printer 01 Subconsole disabled
0D	CONWSBID	2	Subconsole ID (hex 0000 indicates no subconsole assigned)
0F	CONWSTAT	1	Status byte: *Hex* *Meaning* 80 Duplicate logical ID error 40 Invalid default printer assigned 20 Subconsole ID error 10 Duplicate unit address error 08–01 Relative screen position 0–F
0300	CONDREC4	256	Terminal unit block information table (locals)

Figure 2-53 (Part 19 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

Note: The first 16 bytes contain the line printer entry if line printer is defined.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CONWSATR	1	Attribute byte: *Hex* *Meaning* 80 Must be zero 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 System printer
01	CONWSLID	2	Logical ID
03	CONWSUID	1	Device ID: *Hex* *Meaning* E5 Work station printer (5219) E3 Work station printer (5224/5225) E1 Work station printer (5256) E0 Line printer (natively attached) C0 Work station—system console
04	CONWSDID	1	Device type: *Hex* *Meaning* E0 Line printer (natively attached) C0 Work station device 00 End of TUB information area
05	CONWSPID	1	Unit address
06	CONWSDFP	2	Default printer logical ID

Figure 2-53 (Part 20 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	CONWSCF@ or CONWSWA@	2	Sector address of beginning of printer configuration record if this entry is for a printer Sector address of beginning of work station work area if this entry is for a work station (to find the work station configuration record, add hex 2D to this address)
0A	CONWSRSV	2	Reserved
0C	CONWSAT1	1	Additional attributes: *Hex* *Meaning* 80 Create extended printer TUB 40 IGC—capable work station 20 Reserved 10 Keyboard type: On—IGC keyboard Off—standard keyboard 08 Storage size: 0—64 1—512 04 Reserved 02 Subconsole assigned to printer 01 Subconsole disabled
0D	CONWSBID	2	Subconsole ID (hex 0000 indicates no subconsole assigned)
0F	CONWSTAT	1	Status bytes: *Hex* *Meaning* 80 Duplicate logical ID error 40 Invalid default printer assigned 20 Subconsole ID error 10 Duplicate unit address error 08—01 Relative screen position 0—F

Figure 2-53 (Part 21 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0400	CONDREC5	256	Reserved
0500	CONDREC6	256	Terminal unit block information (remotes)

Note: Each entry is 16 bytes long. The types of entries are control unit entries and remote work station entries. The arrangement of information in this area is one control unit entry, followed by from one to nine remote work station entries, followed by another control unit, followed by from one to nine remote work station entries, and so on. Following are the control unit entries:

00	RCUATTR1	1	Attribute byte one:

Hex	*Meaning*
80	On—control unit entry Off—device entry
70	Use to test for switched line. If switched, one bit is on
40	Manual call
20	Manual answer
10	Auto answer
08	On—polling yes
04	Reserved
02	Reserved
01	Reserved

01	RCUCOMLN	1	Communication lines:

Hex	*Meaning*
80	Primary line 1
40	Primary line 2
20	Primary line 3
10	Primary line 4
08	Secondary line 1
04	Secondary line 2
02	Secondary line 3
01	Secondary line 4
00	Used to test communication line slot for zero. If it is zero, there are no more remote work station entries

Figure 2-53 (Part 22 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	RCUCU@	1	Control unit address
03	RCULID	3	Control unit logical ID
06	RCU#DEV	1	Number of associated devices
07	RCURES	8	Reserved
0F	RCUSTAT	1	Status byte:

Hex	*Meaning*
80	Not used
40	Not used
20	Not used
10	Not used
08	Not used
04	Not used
02	Duplicate control unit ID error
01	Duplicate control unit address error

Note: The following is the format and content of a remote work station entry. Each entry is 16 bytes long.

00	REMATTR1	1	Attribute byte one (display station):

Hex	*Meaning*
80	On—control unit entry Off—device entry
40	Reserved
20	On—command Off—data
10	On—auto vary on at IPL
08	On—magnetic stripe reader
04	On—960-character display screen
02	On—display station stopped
01	Subconsole

Figure 2-53 (Part 23 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)	or REMATTR2	1	Attribute byte one (printer): *Hex* *Meaning* 80 Must be zero 40 Reserved 20 Reserved 10 On—auto vary on at IPL 08 Reserved 04 Reserved 02 Reserved 01 System printer
01	REMLID	2	Configured logical ID
03	REMDEVID	1	Device ID: *Hex* *Meaning* E5 Work station printer (5219) E3 Work station printer (5224/5225) E1 Work station printer (5256) C0 Display station
04	REMDEV@	1	Device address
05	REMLSID	1	Logical session ID
If the device is a display station, the following 2 bytes are:			
06	REMASPRT	2	Associated printer

Figure 2-53 (Part 24 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
If the device is a printer, the following 2 bytes are:			
06	REMWSLGR	1	Language group number and flag bits: *Hex* *Meaning* 80 Must be zero 40 Must be zero 20 Not defined 10—01 Language group number (0—31)
07	REMWSPAT	1	Printer attributes: *Hex* *Meaning* 80 Resident spool writer 40 High priority spool writer 20—10 Number of separator pages for spool writer 08—01 Lines per inch for the 5224/5225 Printer
08	REMPRISS	2	Primary work station configuration SS
0A	REMLIDSC	2	Secondary logical ID slot
0C	REMATTR3	1	Additional attributes: *Hex* *Meaning* 80 Create extended printer TUB 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Subconsole assigned to printer 01 Subconsole disabled

Figure 2-53 (Part 25 of 26). Format of the System Configuration Record Including Display Stations and Printers

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	REMSUBID	2	Subconsole ID (hex 0000 indicates no subconsole assigned)
0F	REMSTAT	1	Status byte: *Hex* *Meaning* 80 Duplicate logical ID error 40 Invalid default printer assigned 20 Subconsole ID error 10 Not used 08–01 Relative screen position 0–F

Figure 2-53 (Part 26 of 26). Format of the System Configuration Record Including Display Stations and Printers

Data File Area

The data file area comprises the major portion of a disk. The data files are allocated in blocks of 10 sectors each. These files are classified as permanent (P) or temporary (T) files. System/34 SSP supports P and/or T files in the disk VTOC. The type of disk drive and the number of tracks it has determine how many data files can be maintained at one time. Figure 2-54 shows the file organization and processing for files contained in the data file area.

Type of File Organization:	Sequential	Indexed	Direct
Type of Processing	1. Consecutive 2. Random by decimal relative record number 3. Random by binary relative record number (ADDROUT)	1. Consecutive (ignore keys) 2. Sequential by key 3. Sequential within limits 4. Random by key 5. Random by binary relative record number (ADDROUT)	1. Consecutive 2. Random by decimal relative record number 3. Random by binary relative record number (ADDROUT)

Figure 2-54. File Organization and Processing

DES Algorithm Control Block

This 17-byte area is used to pass data between a user's assembler program and #SBDE, a user-loadable routine which encrypts/decrypts data using the National Bureau of Standards DES algorithm.

Format

Figure 2-55 shows the format of the DES algorithm control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$DESDATA	8	Data block (user passes data to be encrypted/decrypted; on return, contains encrypted/decrypted data)
08	$DESKEY	8	Encryption/decryption key
10	$DESFLAG	1	Encryption/decryption indicator: *Hex* *Meaning* C5 Data is to be encrypted C4 Data is to be decrypted

Figure 2-55. Format of the DES Algorithm Control Block

Device Allocate Table

The device allocate table is used in the allocation of diskettes and BSC devices. For each task to which a device is allocated, an allocation queue element is queued to the device allocate table.

How to Find

Field SCADVICE in the system communications area contains the 2-byte address of the device allocate table.

Format

Figure 2-56 shows the format of the 7-byte device allocate table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	DVADEVCE	1	Device code for this entry: *Hex* *Meaning* FF End of device allocate table F4 Line 4 autocall adapter F3 Line 3 autocall adapter F2 Line 2 autocall adapter F1 Line 1 autocall adapter E0 Printer D0 Diskette C0 Work station A0 Disk 90 CRT 86 3270 device emulation support 85 Interactive BSC support 84 SSP-ICF SNA upline/SDLC tributary 83 SNA/SDLC primary 82 MRJE 81 SDLC secondary 80 BSC 71 BASIC 70 FORTRAN 50 1255 41 SMF 40 Concurrent maintenance 12 Keyboard 10 Console 0F–05 Reserved 04 Communication line 4 03 Communication line 3 02 Communication line 2 01 Communication line 1 00 Special DTF

Figure 2-56 (Part 1 of 2). Format of a System/34 Device Allocate Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	DVADSTAT	1	Status byte 1: *Hex* *Meaning* 80 Control storage allocate required 40 Control storage already allocated 20 Device varied offline 10 Control storage start is fixed 08 Autocall adapter control storage 04 Reserved 03 Default share level for enqueue
02	DVADSTA2	1	Status byte 2: *Hex* *Meaning* 10 Line is being monitored 08 High priority line 02 Normal priority line
03	DVADQHDR	2	Address of associated AQE
05	DVADSTRT	1	Control storage start page
06	DVADPAGE	1	Number of pages needed minus one

Figure 2-56 (Part 2 of 2). Format of a System/34 Device Allocate Table

Display Station Communications Configuration Record

A 1-sector configuration record is built for each display station attached to a System/34 that is configured for data communications. The first 128 bytes are used to define the BSC lines, and the second 128 bytes are used by SDLC. Within each 128-byte area are 32-byte configuration records for each line that is supported.

How to Find

The communications configuration record is located in the work station work area and is pointed to by label CONWSWA@ of the system configuration record.

Format

Figure 2-57 shows the format of the display station communications configuration record.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TSCTCF1	1	Line configuration byte: *Hex* *Meaning* 80 Japanese modem or autocall separation character 40 Internal clocking or autocall end-of-number character 20 IBM modem 10 World trade answer tone 08 Standby line 04 Multipoint line 02 Switched line 01 Nonswitched point-to-point line

Figure 2-57 (Part 1 of 4). Format of the Display Station Communications Configuration Record

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	TSCTQHDR	1	Queue header
02	TSCTCF2	1	Configuration byte 2: *Hex* *Meaning* 80 Half rate 40 NRZI 20 Wide band or 56K bps DDSA 10 Autocall unit 08 DDSA line 04 External modem 02 1200 bps integrated modem 01 4800 bps integrated modem

Following is the format of the display station communications configuration record for BSC and MRJE:

03	TSCBADDR	1	BSC tributary address
04	TSCBERC	1	Error retry count
05	TSCBDLY	2	Delay time
07	TSCBRCSP	1	Record separator

Figure 2-57 (Part 2 of 4). Format of the Display Station Communications Configuration Record

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	TSCBCFG1	1	BSC configuration byte 1: *Hex* *Meaning* 40 Manual answer 20 Auto answer 10 Manual call 08 Blank compression 04 Blank truncation 02 3740 multiple file support 01 MRJE trace active
09	TSCBRID	4	Remote switched ID
0D	TSCBTID	4	Local switched ID
11	TSCTCF3	1	Configuration byte 3 (reserved)
12	TSCTCF4	1	Configuration byte 4: *Hex* *Meaning* 08 X.21 adapter installed on this line 04 Autocall unit installed on port 4 03 Autocall unit installed on port 3 02 Autocall unit installed on port 2 01 Autocall unit installed on port 1
13	TSCTRSRV	13	Reserved

Figure 2-57 (Part 3 of 4). Format of the Display Station Communications Configuration Record

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

Following is the format of the display station communications configuration record for SDLC:

03	TSCSADDR	1	SDLC station address
04	TSCSXID	3	SDLC exchange ID
07	TSCSCFG1	1	SDLC configuration byte 1: *Hex* *Meaning* 80 Autocall 40 Manual call 20 Manual answer 10 Auto answer 08 SNA configured for a single logical unit mode of operation
08	TSCSRBNO	1	Number of receive buffers allocated
09	TSCSTBNO	1	Number of transmit buffers allocated
0A	TSCSRSVD	7	Reserved
11	TSCTCF3	1	Configuration byte 3 (reserved)
12	TSCTCF4	1	Configuration byte 4: *Hex* *Meaning* 08 X.21 adapter installed on this line 04 Autocall unit installed on port 4 03 Autocall unit installed on port 3 02 Autocall unit installed on port 2 01 Autocall unit installed on port 1
13	TSCTRSRV	13	Reserved

Figure 2-57 (Part 4 of 4). Format of the Display Station Communications Configuration Record

Display Station Sign-on Parameter List

This 48-byte area is required for input by the sign-on routine (#CPON). The parameter list is loaded into the command processor work area starting at field CPWSDMIN. Field SCADCPW@ of the system communications area points to the command processor work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SGNPLST or SGNBADGS	8	CRT parameter list for sign-on Start of badge field
08	SGNUSERS	8	Start of operator ID field
10	SGNCODE	4	Password security field
14	SGNMENUS	6	Start of menu field
1A	SGNLIBRS	8	Start of library field
22	SGNKANJI	1	IGC session field
23	SGNIPLDT	6	MSIPL date field: This 6-byte area contains one of the following date formats: *Label* *Description* *Bytes* MDYMNTH Date formats 1 MDYDAY Month/day/year 3 MDYYEAR Month/day/year 5 DMYDAY Day/month/year 1 DMYMNTH Day/month/year 3 DMYYEAR Day/month/year 5 YMDYEAR Year/month/day 1 YMDMNTH Year/month/day 3 YMDDAY Year/month/day 5
29	SGNIPLTM	6	MSIPL time field
2F	SGNIPLOV	1	MSIPL override field

Figure 2-58. Format of a Display Station Sign-on Parameter List

DTFs

A DTF control block is an area of main storage used as the primary interface between the application program and data management routines. When the user calls allocate and open, the before-open DTF is formatted to contain necessary information about the file. After the file information is formatted, the DTF status is after-open. After-open DTFs are chained together. Field JCBDDTF@ in the job control block (JCB) contains the address of the first DTF in the chain. Find the next DTF in the chain by referring to the chain field in the appropriate DTF. End of chain is indicated by hex FFFF. When a data management function is invoked, XR2 points to the specified DTF.

Format

The DTF format varies by unit type:

Unit	Length in Bytes	Figure
BSC	68	2-59
Disk	138	2-60
Diskette	85	2-61
MICR	34	2-62
Printer	42	2-63
SNA	34	2-64
Work station	68	2-65

Note: DTF formats that do not have an entry in the after-open description column have the same status as the before-open description (not changed). If the before-open description is blank, that column is not used until after the file has been allocated and opened.

BSC DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$BSDEV	1	Device code:
			Hex *Meaning*
			82 MRJE
			80 BSC
01	$BSDMA	2	Address of BSC communications specifications block

Figure 2-59 (Part 1 of 5). Format of a BSC DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	$BSUPS	1	External indicators (UPSI)
04	$BSCHA	2	DTF backward chain
06	$BSCHB	2	DTF forward chain (address of next DTF in chain, hex FFFF if last DTF in chain)
08	$BSWKB	2	Logical record address
0A	$BSCMP	1	Completion code:
			Hex *Meaning*
			59 MLCA permanent error
			58 MLCA temporary error
			57 EOT abort
			56 Forward abort received
			55 Adapter check
			54 Response not valid
			53 Lost connection
			52 Lost data
			51 Data check
			50 No response
			4F Permanent error
			4E Delay count exceeded
			4D Request not valid
			4C No connection
			4B ASCII character not valid
			4A Request ignored
			43 ID not valid (switched line)
			42 End of file
			41 User error
			40 Normal completion
			00 BSC task not active

Figure 2-59 (Part 2 of 5). Format of a BSC DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	$BSOPC	1	Operation code: *Hex* *Meaning* 81 Get a block 80 Get 42 Put end of file 41 Put end of block 40 Put 22 Close file
0C	$BSAT1	1	Attribute byte 1: *Hex* *Meaning* 80 Input file 40 Output file 20 ITB mode 10 Transparency mode 08 Get file 04 ASCII mode 02 Assembler DTF
0D	$BSAT2	1	Attribute byte 2: *Hex* *Meaning* 80 Multipoint line 40 Two IOBs required 20 Manual line 10 Answer line 08 Switched line 04 File used 02 File active 01 File opened

Figure 2-59 (Part 3 of 5). Format of a BSC DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	$BSAT3	1	Attribute byte 3: *Hex* *Meaning* 80 Record separator mode 40 Get with RVI 04 File allocated 02 Nucleus resident data management 01 Open required
0F	$BSAT4	1	Attribute byte 4: *Hex* *Meaning* 80 Compression/expansion 40 Truncation 20 Multiple file support—3740 10 First time indicator 08 Variable length records
10	$BSRCL	2	Logical record length
12	$BSNAM	8	File name
1A	$BSSIZ	1	Number of 2K blocks to allocate
1B	$BSRES	2	Reserved
1D	$BSPSC	2	Station address on multipoint line
1F	$BSDLY	2	Delay time
21	$BSBKL	2	Block length
23	$BSITB	2	ITB character count
25	$BSPRM	3	Permanent error indicator
28	$BSRVI	3	Record available indicator
2B	$BSERC	1	Error retry count

Figure 2-59 (Part 4 of 5). Format of a BSC DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2C	$BSRID	2	Receive ID address
2E	$BSRIDL	1	Receive ID length
2F	$BSTID	2	Transmit ID address
31	$BSTIDL	1	Transmit ID length
32	$BSSEP	1	Record separator character
33	$BSMAX	2	Reserved
35	$BSDBL	2	Data buffer length
37	$BSWKA	2	Pointer to BSC work area
39	$BSMRJ	1	BSC line number
3A	$BSPAD	2	Reserved
3C	$BSLGR	1	Reserved for RPG
3D	$BSTMP	7	Reserved

Figure 2-59 (Part 5 of 5). Format of a BSC DTF

Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
00	$F1DEV	1	Device code (set to hex A0)	Not changed
01	$F1DMA	2		Address of data management
03	$F1UPS	1	External indicators: The UPSI bits in the DTF are compared against the UPSI bits in the JCB at open time. If the corresponding bits are not on in the JCB, the file will not be opened	Not changed
04	$F1CHA	2		Backward chain address
06	$F1CHB	2	Forward chain address (hex FFFF if last DTF in chain)	
08	$F1WKB	2	Address of logical record buffer (leftmost byte)	Not changed
0A	$F1CMP	1	Completion code: *Hex* *Meaning* 99 File not opened (issued by router) 75 Undefined access type 70 End of extent	Not changed

Figure 2-60 (Part 1 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning*	
			62 Key out of sequence—indexed sequential processing	
			60 Duplicate key add attempted —indexed processing	
			53 Put to nondeleted record—direct processing	
			52 Override—deleted record found	
			50 Update key error—indexed and direct update	
			49 Invalid update/add/output	
			48 Record not found —direct processing	
			47 Block length not valid (ZPAM)	
			46 Key not valid—indexed random	
			45 Update—previous operation not an input	
			44 Record not found if indexed processing or record out of extent if direct processing	

Figure 2-60 (Part 2 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning*	
			43 Operation code not valid	
			42 End of file	
			41 Permanent disk error	
			40 Normal	
0B	$F1OPC	1	Operation code:	Not changed
			Hex *Meaning*	
			84 Get sequential forward (ISRI)	
			82 Get sequential backward (ISRI)	
			81 Get high, equal, or last (ISRI)	
			80 Get	
			40 Put	
			30 Delete	
			20 Update (output portion)	
			10 Sector dequeue	

Figure 2-60 (Part 3 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0C	$F1AT1	1	Attribute byte 1: *Hex* *Meaning* 80 Indexed 40 Sequential 20 Direct 10 Indexed sequential/random input 08 Input 04 Output 02 Update 01 Add *Note:* A value of hex F0 in attribute byte 1 means a dummy open is to be performed on the designated file.	Not changed
0D	$F1AT2	1	Attribute byte 2: *Hex* *Meaning* 80 Binary relative record number—direct 40 Offline multi-volume access 20 Random access 10 Access within limits 08 Double buffer—consecutive	

Figure 2-60 (Part 4 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0D (cont.)			*Hex* *Meaning* 04 Sector data management (ZPAM) 02 Bypass duplicate key checking 01	 File opened
0E	$F1AT3	1	Attribute byte 3: *Hex* *Meaning* 80 Data management loaded (ISRI, ZPAM, or PTAM) 40 PTAM access 20 File sharing allowed 10 Inquiry program DTF 08 SIAM active 01 Open required	 *Hex* *Meaning* 04 File allocated 02 Nucleus resident data management if not ZPAM or ISRI

Figure 2-60 (Part 5 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0F	$F1AT4	1	Attribute byte 4: *Hex* *Meaning* 80 On—IOS will issue error message for permanent disk error Off—no error message on permanent disk error 40 On—allow a 2 or 3 option on permanent disk errors Off—allow a 3 option only on permanent disk errors *Note:* If hex 80 is off, hex 40 is ignored. 20 File is delete capable 10 Override—get/put deleted records 08 File is extend capable 04 Offline multi-volume file open call to #DODM 02 Offline multivolume data management call to #DODM 01 Offline multi-volume close call to #DODM	Not changed
10	$F1RCL	2	Not changed	Record length
12	$F1NAM	8	File name	Not changed

Figure 2-60 (Part 6 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1A	$F1PBF	2		Start of physical I/O buffer aligned on 8-byte boundary
1C	$F1BFE	2		End of physical I/O buffer
1E	$F1IOB	2	Address of data IOB (I/O area)	Address of data IOB
20	$F1V1	2	Not changed	Data management variable (key length-1)
22	$F1BKL	2	Block length of data I/O buffer	Not changed
24	$F1PTR	2	Not changed	Previous output record in the I/O buffer (record 1 into the data I/O buffer)
26	$F1IPT	2	Not changed	Last byte of the next input record
28	$F1XTA	3	Not changed	Sequential sector address of data start extent
2B	$F1XTB	3	Not changed	Sequential sector address of data end of extent
2E	$F1RRN	4	Not changed	Relative record number save area

Figure 2-60 (Part 7 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
32	$F1AFA	2	Address of format 1 for this file	Not changed
34	$F1ND1	1	Not changed	Indicator byte 1: *Hex* *Meaning* 80 Add operation since last get 40 Previous operation add 20 First time output indicator 10 Index sequential EOF switch 08 Limits switch 04 Index buffer needs writing 02 Data buffer needs writing 01 First time input indicator
35	$F1ND2	1	Not changed	Indicator byte 2: *Hex* *Meaning* 80 File created as indexed 40 File created as sequential 20 File created as direct 10 Indexed with IFILE characteristic 08 Load to old allowed 04 Delete operation since last get

Figure 2-60 (Part 8 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
35 (cont.)				*Hex* *Meaning* 02 Reserved 01 On—enqueue requested Off—dequeue requested
36	$F1ND3	1	Not changed	Indicator byte 3: *Hex* *Meaning* 80 Previous operation—get 40 Previous operation—put 30 Previous operation—delete 20 Previous operation—update 10 Previous operation—sector dequeue 08 Sort required 04 Merge required 02 File located on drive A 01 File located on drive B
37	$F1NXR	4	Not changed	Next logical record pointer (RRRN)
3B	$F1EOF	4	Not changed	Pointer to the last record slot in the file (RRRN)

Figure 2-60 (Part 9 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
3F	$F1WAA	2	Not changed	Internal work area A
41	$F1WAB	2	Not changed	Internal work area B
43	$F1WAC	2	Not changed	Internal work area C
45	$F1WAD	2	Not changed	Internal work area D
47	$F1WAE	2	Not changed	Internal work area E
49	$F1WAF	2	Not changed	Internal work area F
4B	$F1WAG	3	Not changed	Internal work area G
4E	$F1C01	4	Internal data management constant (X'00000001')	
	or $F1C00	2	Internal data management constant (X'0000')	
52	$F1CFF	2	Internal data management constant (X'FFFF')	
	or $F1FP@	2	File position control block address for I-file processing	
54	$F1C03	2	Internal data management constant (X'0003')	
56	$F1SV1	2	Not changed	ARR save area for level 1 subroutines
58	$F1SV2	2	Not changed	ARR save area for level 2 subroutines
5A	$F1SV3	2	Not changed	ARR save area for level 3 subroutines

Figure 2-60 (Part 10 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
End of consecutive and ZPAM DTF				
5C	$F1KAD	2	Address of leftmost byte of requested key if index random, or address of leftmost byte of relative record number if direct	Address of rightmost byte of requested key if index random, or address of leftmost byte of relative record number if direct
End of direct DTF				
5E	$F1KPR	2		Current index buffer entry
60	$F1KXP	4		Address of end of original index (SSSD)
64	$F1NXK	4		Address of next index slot entry (SSSD)
68	$F1KXA	3		Address of start of index (SSS)
6B	$F1KXB	3		Address of end of index (SSS)
6E	$F1KBF	2		Address of index IOB
70	$F1KL	2	Key length	Not changed
72	$F1KD	2	Key displacement relative to zero (rightmost byte)	Not changed
74	$F1MIX	2	Address of master index for indexed random and indexed sequential within limits	Not changed

Figure 2-60 (Part 11 of 12). Format of a Disk DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
76	$F1BYT	2	Length of master index. Must be hex 0000 if no master index. If not hex 0000, $F1MIX must contain a valid main storage address	
78	$F1HKB	2		Address of high key buckets
End of indexed random DTF (nonsequential)				
7A	$F1CUR	2	Address of last current keys—index sequential add	Address of current key hold area, rightmost byte
7C	$F1HI	2	Address of high/low key hold area limits	Address of high key hold area, rightmost byte
7E	$F1LST	2		Address of previous key hold area (index sequential)
80	$F1LOW	2		Address of low key hold area rightmost byte (index sequential limits)
82	$F1SNP	3		Current index sector entry address (index sequential add and delete)
85	$F1SLA	3		Current index RRN address (index sequential update and add)
88	$F1SLP	2		Current index buffer entry (index sequential add)

Figure 2-60 (Part 12 of 12). Format of a Disk DTF

Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
00	$I1DEV	1	Device code (set to hex D0)	Not changed
01	$I1DMA	2	Data management address (address of where to load data management, user area)	Address of data management
03	$I1UPS	1	Reserved (data management work byte)	Not changed
04	$I1CHA	2		Address of previous DTF in chain (last on chain hex FFFF)
06	$I1CHB	2	Forward chain address (address of next DTF in chain, X'FFFF' if last DTF in chain)	Not changed
08	$I1WKB	2	Logical record address (leftmost byte of the logical record)	Not changed
0A	$I1CMP	1	Completion code: *Hex* *Meaning* 99 File not opened 70 End of volume 42 End of file 41 Diskette I/O error 40 Normal completion	Not changed

Figure 2-61 (Part 1 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0B	$I1OPC	1	Operation code: *Hex* *Meaning* 80 Get operation 40 Put operation	Not changed
0C	$I1ATR	4	Attribute bytes: Byte 1: *Hex* *Meaning* 80 System file on diskette 40 Basic exchange file on diskette 20 Include control record 10 I-exchange file 08 Input 04 Output 02 Reserved 01 Add Byte 2: *Hex* *Meaning* 80 Clean pack required 40 Skip MVF sequence check 20 Volume transition has occurred 10 Full track I/O request 08 Move mode	Not changed

Figure 2-61 (Part 2 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0C (cont.)			Byte 2 (continued) *Hex* *Meaning* 04 Sector data management 02 Optimum buffer request 01 File opened Byte 3: *Hex* *Meaning* 80 Data management is loaded 40 End of volume close 20 Reserved 10 Do not write VTOC to diskette 08 Allocate device only 04 Device allocated 02 Nucleus resident data management 01 Open required Byte 4: *Hex* *Meaning* 80 IOS issue permanent error message 40 Return to caller after IOS message	

Figure 2-61 (Part 3 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0C (cont.)			Byte 4: (continued) *Hex* *Meaning* 20 Flush buffer in record mode 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved	
10	$I1RCL	2	Record length in bytes	Not changed
12	$I1NAM	8	File name	Not changed
1A	$I1PBF	2		Address of the start of the I/O buffer
1C	$I1BFE	2		Pointer to the end of the physical I/O buffer
1E	$I1IOB	2	Address of IOB (address of leftmost byte of physical I/O area)	Address of IOB
20	$I1BRL	2		Record length of basic exchange file
22	$I1BKL	2		Block length (length of I/O buffer in bytes)
24	$I1PTR	2		Pointer to the record in the I/O buffer (rightmost byte)
26	$I1RSV	2	Address save work area	
28	$I1XTA	3		Sector address of data start extent

Figure 2-61 (Part 4 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
2B	$I1XTB	3		Sector address of data end extent
2E	$I1FIL	2		File application type
30	$I1SYS	1		System ID indicator
31	$I1CNV	1	Conversion work area	
32	$I1AFA	2		Address of the active format 1 for this file
34	$I1IND	3	Indicator bytes: Byte 1: *Hex* *Meaning* 80 Diskette multivolume indicator 40 Reserved 20 Embedded control record in file 10 EOV pending 08 Aligned on track boundary 04 Buffer end reached 02 First call to data management 01 Diskette output end of volume Byte 2: *Hex* *Meaning* 80 Reserved 40 Diskette 2D 20 Reserved	

Figure 2-61 (Part 5 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
34 (cont.)			Byte 2: (continued) *Hex* *Meaning* 10 Diskette 1 08 Diskette 2D extended format 04 Diskette 1 extended format 02 Diskette 2D basic format 01 Diskette 1 basic format Byte 3: *Hex* *Meaning* 80 Buffer needs writing 40 Buffer short indicator 20 Skip EOV mount message 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved	
37	$I1NXR	4		Address of the current record (SSDD)
3B	$I1EOD	4		Address of logical end of file (SSDD)
3F	$I1WAA	2	Internal work area A	Not changed

Figure 2-61 (Part 6 of 7). Format of a Diskette DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
41	$I1WAB	2	Internal work area B	Not changed
43	$I1WAC	2	Internal work area C	Not changed
45	$I1WAD	2	Internal work area D	Not changed
47	$I1RMA	2		Work area (buffer spanning record first part)
49	$I1RMB	2		Work area (buffer spanning record (second part)
4B	$I1NBS	2	IOB N-byte save area	Not changed
4D	$I1EDS	2		End of diskette address
4F	$I1SPT	2		Number of sector/track
51	$I1SLG	2		Sector length in bytes
53	$I1TLG	2		Track length in bytes

Figure 2-61 (Part 7 of 7). Format of a Diskette DTF

MICR DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPDEV	1	Device code (hex 00)
01	SPDMA	2	Address of data management
03	SPUPS	1	UPSI indicators
04	SPCHA	2	Backward chain pointer

Figure 2-62 (Part 1 of 3). Format of a Magnetic Character Reader DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	SPCHB	2	Forward chain pointer
08	SPLRA	2	Logical record address
0A	SPCMP	1	Completion code: *Hex* *Meaning* 42 End of file 41 Controlled cancel 40 Normal completion
0B	SPOPC	1	Operation code: *Hex* *Meaning* 80 Get 40 Put 20 Update 10 Close
0C	SPAT1	1	Attribute byte 1: *Hex* *Meaning* C0 Combined 80 Input file 40 Output file 20 Update file
0D	SPAT2	1	Attribute byte 2: *Hex* *Meaning* 08 Dual I/O 01 DTF open
0E	SPAT3	1	Attribute byte 3: Not used
0F	SPAT4	1	Attribute byte 4: Not used

Figure 2-62 (Part 2 of 3). Format of a Magnetic Character Reader DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	SPRCL	2	Record length
12	SPNAM	8	File name
1A	SPPBI	2	Physical input I/O address
1C	SPPBO	2	Physical output I/O address
1E	SPBKL	2	Block length
20	SPDTT	2	Address of array DTT if specified

Figure 2-62 (Part 3 of 3). Format of a Magnetic Character Reader DTF

Printer DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
00	$PRDEV	1	Printer device code (set to hex E0)	Not changed
01	$PRDMA	2	Data management address	Not changed
03	$PRUPS	1	External indicators (UPSI)	
04	$PRCHA	2	WSID if system request	Backward chain address (last DTF in chain, hex FFFF)
06	$PRCHB	2	Forward chain address (address of next DTF in chain, X'FFFF' if last DTF in chain)	

Figure 2-63 (Part 1 of 5). Format of a Printer DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
08	$PRWKB	2	Logical record address	Not changed
0A	$PRCMP	1	Completion code: *Hex* *Meaning* 99 File not opened (issued by data management router)	Completion code: *Hex* *Meaning* 48 Overflow 41 2 option selected in response to an error 40 Normal completion
0B	$PROPC	1	Operation code: *Hex* *Meaning* 40 Print operation	
0C	$PRAT1	1	Attribute byte 1: *Hex* *Meaning* 80 Alignment of the first line is requested (may be overridden by the ALIGN parameter of the // PRINTER OCL statement) 40 EXTN processing off 08 Call for work station data management print operation transient	04 Do not call print spool

Figure 2-63 (Part 2 of 5). Format of a Printer DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0C (cont.)			Attribute byte 1: (continued) *Hex* *Meaning* 02 Halt on unprintable characters 01 Do not wait on prints in printer data management	
0D	$PRAT2	1	Attribute byte 2: *Hex* *Meaning* 80 Reserved 7E Reserved for allocate	*Hex* *Meaning* 01 Printer device opened
0E	$PRAT3	1	Attribute byte 3: *Hex* *Meaning* 80 Printer is being spooled	*Hex* *Meaning* 40 On—no alignment required Off—forms alignment is required on the printing of this line (this bit is set by open based on the ALIGN DTF and OCL parameters) 04 Printer device allocated 02 Nucleus resident data management 01 Open required

Figure 2-63 (Part 3 of 5). Format of a Printer DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0F	$PRAT4	1	Attribute byte 4: *Hex* *Meaning* 80 ERP issue I/O error message 40 Allow 2 option on I/O error 08 Align requested by OCL 04 No align requested by OCL 03 Reserved for allocate	
10	$PRLRL	2	Logical record length	Unchanged unless record length not specified; then set to 132
12	$PRFNM	8	Printer file name	Printer file name
1A	$PRSKB	1	Skip before value	
1B	$PRSPB	1	Space before value	
1C	$PRSKA	1	Skip after value	
1D	$PRSPA	1	Space after value	
1E	$PRIOB	2		Address of printer IOB (real address)
20	$PRBUF	2	Physical buffer address	Physical buffer address (aligned on 8-byte boundary)
22	$PROFL	1	Page overflow value	Not changed—if overflow value specified: Set—to lines/page minus 6 if not specified before open

Figure 2-63 (Part 4 of 5). Format of a Printer DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
23	$PRLP	1	Lines per page	Not changed
24	$PRCLN	1		Current line number (set to 1)
25	$PRWAA	2	Address of TUB	Work area A
27	$PRWAB	2		Work area B

Figure 2-63 (Part 5 of 5). Format of a Printer DTF

SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
00	$SNDEV	1	Device code: *Hex* *Meaning* 81 SNA	
01	$SNCSB@	2	Communications specification block address	
03	$SNUPSI	1	External UPSI switches	
04	$SNBPTR	2	DTF backward chain address	
06	$SNFPTR	2	DTF forward chain address	
08	$SNRUBB@	2	Request unit buffer begin address	

Figure 2-64 (Part 1 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A.	$SNCMPC	1	Completion code: *Hex* *Meaning* 83 Put operation and response required from primary 82 Protocol state error 81 Get or put operation and response due 80 Response operation and no response required, or response not allowed, or positive response and negative response required 5E Data traffic state reset 5D Purging chain state exited 5C Transmit control usage error 5B Exception request received put negative response required 5A Positive response received on expedited flow 59 Negative response received on expedited flow 58 Negative response received on normal flow 57 Shutdown command received	

Figure 2-64 (Part 2 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning* 56 Signal command received 55 Bid command received 54 Chase command received 53 Cancel command received 52 Bind received 51 Start data traffic received 50 No data available on get request 48 Unbind received while initialization request was being processed 47 Logon failed—formatted message available in request unit buffer, or sense data in DTF 46 Logon failed—unformatted message available in request unit buffer 45 Bind command rejected by SNA—bind parameters available in request unit buffer	

Figure 2-64 (Part 3 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning* 44 Session not available 43 Request of SNA logical unit 1 not valid: • SNA DTF has not been opened • Initialization operation was not first operation requested of SNA • Put request to bind was not second operation requested of SNA • Request was initialization without logon, and SNA was not configured for single logical unit • Request was initialization without logon, but logical unit was not first requestor of the line • Operation code not valid • Incorrect RU length • Init with logon but not first user and running single logical unit	

Figure 2-64 (Part 4 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning* 42 Logical unit/logical unit session reset—one of the following commands has been received: UNBIND DACTLU ACTLU (cold) DACTPU ACTPU (cold) 41 SDLC link has been disabled or Using autocall, could not make the connection or MLCA processor check 40 Successful completion: • Requesting program is in transmit state, and operation was a put that was successfully queued to SDLC • Requesting program is in transmit state, and operation was a get, and a positive response was received on normal flow	

Figure 2-64 (Part 5 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0A (cont.)			*Hex* *Meaning* • Requesting program is in receive state, and function management data was received • Requesting program is in transmit state, and a valid put command operation was successfully queued to SDLC • Check data operation was recognized and accepted by SNA	
0B	$SNOPC	1	Operation code: *Hex* *Meaning* C1 Initialization without logon C0 Initialization with logon 83 Peek 82 Check (privileged tasks) 81 Get-no-wait 80 Get 72 Put shutdown complete 71 Put request shutdown 70 Put signal 63 Put ready to receive	

Figure 2-64 (Part 6 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0B (cont.)			*Hex* *Meaning* 62 Put logical unit status 61 Put chase 60 Put cancel 51 Put negative response 50 Put positive response 40 Put data	
0C	$SNAT1	1	Attribute byte 1: *Hex* *Meaning* 80 User running in unattended mode	
0D	$SNAT2	1	Attribute byte 2: *Hex* *Meaning* 08 Initialization pending 04 Session initialized (complete) 02 First call of SNA logical unit 1 01 1—SNA file (DTF) opened	
0E	$SNAT3	1	Attribute byte 3: *Hex* *Meaning* 08 SNA DTF able to be reallocated 04 SNA DTF allocated 01 Open required	

Figure 2-64 (Part 7 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0F	$SNAT4	1	Attribute byte 4 (reserved)	
10	$SNRUDLG	2	Request unit data length	
12	$SNNAME or	8	Communication filename	
	$SNRCTL1	1		Receive control byte 1: *Hex* *Meaning* 80 Header type indicator On—response Off—request 08 Format indicator 04 Sense data included indicator 02 Begin chain indicator 01 End chain indicator

Figure 2-64 (Part 8 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
13	$SNRCTL2	1		Receive control byte 2: *Hex* *Meaning* 80 Definite response 1 20 Definite response 2 10 Exception response indicator (request header only), or response type indicator (response header only) On—negative response Off—positive response
14	$SNRCTL3	1		Receive control byte 3: *Hex* *Meaning* 80 Begin bracket indicator 40 End bracket indicator 20 Change direction indicator 08 Code selection indicator

Figure 2-64 (Part 9 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
15	$SNTCTL1	1		Transmit control byte 1: *Hex* *Meaning* 80 Header type indicator On—response Off—request 08 Format indicator 04 Sense data included indicator 02 Begin chain indicator 01 End chain indicator
16	$SNTCTL2	1		Transmit control byte 2: *Hex* *Meaning* 80 Definite response 1 20 Definite response 2 10 Exception response indicator (request header only), or response byte indicator (response header only) On—negative response Off—positive response

Figure 2-64 (Part 10 of 11). Format of an SNA DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
17	$SNTCTL3	1		Transmit control byte 3: *Hex* *Meaning* 80 Begin bracket indicator 40 End bracket indicator 20 Change direction indicator 08 Code selection indicator
18	$SNSSNS	2		System sense data
1A	$SNASVD1	2		Reserved
	or			
	$SNUSNS	2		User sense data
1C	$SNLUB@	2		Logical unit control block address
1E	$SNSEQ#	2		Sequence number
	or			
	$SNLOG@	2		Logon message address
20	$SNRUBFL	2		Request unit buffer length

Figure 2-64 (Part 11 of 11). Format of an SNA DTF

Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
00	$WSDEV	1	Device code: *Hex* *Meaning* C0 Device code for work stations 90 Device code for CRT 12 Device code for keyboard 10 Device code for console	Not changed
01	$WSDMA	2	Data management address	Not changed
03	$WSUPS	1	External indicators (UPSI)	Not changed
04	$WSCHA	2	Backward chain address	Not changed
06	$WSCHB	2	Forward chain address (hex FFFF if last address in DTF chain)	
08	$WSWKB	2	Logical record address	Not changed
0A	$WSCMP	1	Completion code	Not changed
0B	$WSOPD	1	Operation code	Not changed

Figure 2-65 (Part 1 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
0C	$WSAT1	1	Attribute byte 1: *Hex* *Meaning* 80 Reset previous format index 40 Index contains format name list	
0D	$WSAT2	1	Attribute byte 2 (not used)	
0E	$WSAT3	1	Attribute byte 3 (not used)	
0F	$WSAT4	1	Attribute byte 4: *Hex* *Meaning* 80 Halt on permanent SSP-ICF errors	
10	$WSRLN	2	Record length	Not changed
12	$WSFILE	8	File name	Not changed
1A	$WSUPRM or $WSRSIQ	1	Start of user parameter list Status inquiry return code: *Hex* *Meaning* 30 Return value if completed invite(s) is outstanding 20 Completed invites outstanding 10 Invites outstanding	Not changed

Figure 2-65 (Part 2 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1B	$WSRTC	1	Return code:	Not changed

Note: See Figure 2-66 for the SSP-ICF major and minor return codes.

Hex	*Meaning*
80	Permanent I/O error occurred
52	Undefined IGC code
51	Invalid IGC code point
50	RAM full of IGC code points
48	Printer allocated on print operation
46	Print request from unlocked keyboard
45	Invalid ideographic character during print operation
44	Stop invite input failed
40	Requested terminal offline
38	Acquire failed—not waitable
34	Input rejected—buffer too small
32	Acquire failed—unauthorized user
28	Release of single request terminal requestor—reject
24	Terminal released by operator

Figure 2-65 (Part 3 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1B (cont.)				

Hex	*Meaning*
18	Acquire failed temporarily
14	Input rejected—keyboard disabled
11	Accept rejected—no invites
08	Acquire ok to owned terminal
02	Stop requested by system operator
01	Accept successful to requestor
00	Operation successful

1C	$WSOPM	1	Operation code modifier:	

Hex	*Meaning*
80	System component request
40	Override request or Evoke has function management data[1]
20	Roll request or Pass through modifier[1]
10	Unformatted request
08	Print request or Read screen modifier[1]

[1] Only applies to SSP-ICF operations

Figure 2-65 (Part 4 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1C (cont.)			*Hex* *Meaning* 06 Write error request 04 Save request or Read modified immediate[1] 02 Restore request 01 Put for read under format (auto) 00 Null operation modifier	
1D	$WSOPC	1	Work station operation code: *Hex* *Meaning* E8 End of session[1] 99 Special acquire request[1] 88 Evoke end of transaction[1] 85 Evoke, then invite[1] 81 Evoke, then get[1] 80 Clear screen request or Evoke operation[1] 45 Erase then invite input or Request change direction, then invite[1] 42 Put end of chain[1]	

[1] Only applies to SSP-ICF operations

Figure 2-65 (Part 5 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1D (cont.)			*Hex* *Meaning* 41 Erase then get data or Request change direction, then get[1] 40 Erase input fields 32 Put fail response[1] 25 Reset then invite input or Negative response, then invite[1] 22 Put end of file[1] 21 Reset then get data or Negative response, then get[1] 20 Reset keyboard request or Negative response[1] 1A Put end of transaction[1] 17 Stop invite, put, then invite or Put FMH, then invite[1] 16 Stop invite then put-no-wait 15 Cancel, then invite[1]	

[1] Only applies to SSP-ICF operations

Figure 2-65 (Part 6 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1D (cont.)			*Hex* *Meaning*	
			13 Stop invite, put, then get or Put FMH then get[1]	
			12 Stop invite, then put or Put FMH[1]	
			11 Cancel, then get[1]	
			10 Stop invite input request or Cancel[1]	
			0E Special read operation code	
			0D Extended get terminal attributes	
			0C Get terminal attributes	
			0B Set timer[1]	
			0A Release terminal request	
			09 Acquire terminal request	
			08 Accept input operation code	
			07 Put, then invite input	
			06 Put-no-wait	
			05 Invite input request	
			04 No wait operation	
			03 Put, then get request	

[1] Only applies to SSP-ICF operations

Figure 2-65 (Part 7 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
1D (cont.)			*Hex* *Meaning*	
			02 Put data operation code	
			01 Get data operation code	
1E	$WSOUTL	2	Output data length (put)	
	or $WSEFFL		Effective input length (get)	
20	$WSRECA	2		Record area address (must be on an 8-byte boundary for work station operations)
	or $WSINXA		Format index address	
22	$WSTUB	2		Terminal unit block address
	or $WSF1A		Library format 1 address	
24	$WS960	2	Address of compress mask (last byte of mask)	
	or $WSPLA		Evoke parameter list address	
26	$WSAID	1	Aid byte on input operations	
27	$WSIOPC	1	Internal operation code	
	or $WSFLAG1	1	SSP-ICF flag byte:	
			Hex *Meaning*	
			02 An associated evoke parameter list specified	

Figure 2-65 (Part 8 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
28	$WS#FMT	1	Maximum number of formats in index	
	or $WSROLF			Flags for roll: *Hex* *Meaning* 80 Roll up request 40 Roll down request 20 Clear vacated lines(s)
29	$WS#LNE	1	Number of lines to roll	
2A	$WSSLN	1	Start line number for roll	
2B	$WSELN	1	End line number for roll	
2C	$WSVSLN	1	Variable start line number	
2D	$WSIND@	2	Override indicators address	
2F	$WSFMBR	8	Format member name	
	or $WSFMTN			Format name
37	$WSINL	2	Maximum input length	
	or $WSPID			Printer ID for print operation (copy)
39	$WSNAME	2	Symbolic terminal name	

Figure 2-65 (Part 9 of 10). Format of a Work Station DTF

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description (before-open)	Description (after-open)
3B	$WSKMSK	1	Mask to ignore keys: *Hex* *Meaning* 80 Pass back the Print key 40 Pass back the roll keys 20 Pass back the Clear key 10 Return data with function keys 04 Pass back the Record Back-space key 02 Pass back the Help key 01 Disable format command/ function key masking	
3C	$WSEXTA	2	Address of RPG DTF extension	
3E	$WSTABL	2	Address of terminal ID table	
40	$WSTENL	1	Length of ID table entry	
41	$WSTNUM	1	Number of terminals in the file	
42	$WSRSVD	2	Reserved	

Figure 2-65 (Part 10 of 10). Format of a Work Station DTF

Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

The following return codes apply to SSP-ICF sessions. The major code is at $WSRTC (see Figure 2-65). The minor code is at $WSRTC minus 1. The following minor codes apply to major codes 0, 1, and 2:

00	This session controlled by this program; any op logically allowed; set by receipt of EOT, EOM, or change/direction
01	This is the 'controlled' side of the session; usually the program should continue to do input until the other side of the session sends change/direction (EOT in BSC); or else the program correctly anticipates the change/direction
03	End of chain or file (EOC or EOF) received
04	Function management header plus change/direction received
05	Function management header without change/direction received
07	Function management header with EOC received
08	End of transaction (EOX) received
0C	Function management header with EOX received
10	Request for change/direction received
12	Unsupported 3270 order in data stream
18	EOX received; session terminated (only returned with major code 01 [new requester])
20	Message in input buffer with change/direction
21	Message in buffer without change/direction
28	Message in buffer with EOX
30	Truncated message in buffer plus change/direction
31	Truncated message without change/direction
38	Truncated message with EOX

Figure 2-66 (Part 1 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

The following minor codes apply to major code 3 (no data, control information only):

00	Change/direction, end of transmission, or EOM received
01	This is the 'controlled' side of the session; usually the program should continue to do input until the other side of the session sends change/direction (EOT in BSC); or else the program correctly anticipates the change/direction
02	Put fail received
03	End of chain only
08	End of transaction only
10	Time interval expiration

The following minor codes apply to major code 4 (output exception condition):

02	Put fail received
11	Message waiting
12	Data pending

The following minor and major return codes can also be returned:

0008	Acquire of owned session or work station
0011	Accept issued with no invites
0028	SRT releasing requester (session)
0134	Input rejected—buffer too small

The following minor codes apply to major code 80 (catastrophic error—session is terminated—there is no recovery):

81	Subsystem or interrupt handler proc checked
82	Immediate disable in progress
83	MLCA controller check (transmit)
84	MLCA controller check (receive)
BD	X.21 task not active

Figure 2-66 (Part 2 of 8). Work Station DTF-ICF Major and Minor Return Codes ($WSRTC)

The following minor codes apply to major code 81 (permanent error—session is terminated);

36 Invalid switched line ID received; transmit

37 Invalid switched line ID received; receive

3B Protocol error

83 MLCA controller check (transmit)

84 MLCA controller check (receive)

85 Autocall unsuccessful—no numbers reached

86 Phone list exhausted

87 Protocol violation

91 Permanent line I/O error—transmit

92 Permanent line I/O error—receive

93 Disconnect received—transmit

94 Disconnect received—receive

95 Subsystem disk I/O error

96 SNA unbind received

97 Abort received—transmit

98 Abort received—receive

99 Delay count exceeded—transmit

9A Delay count exceeded—receive

9B Data exceeds line buffer size—transmit

9C Data exceeds line buffer size—receive

9D Unexpected data received

9E Abnormal shutdown received (CCP)

Figure 2-66 (Part 3 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

9F Normal shutdown received (CCP)

A3 No longer in session

B5 Maximum pacing count exceeded

B6 Remote system has quiesced session

B7 Log off received

B8 Record received exceeds maximum length—transmit

B9 Record received exceeds maximum length—receive

BA User data exceeds user buffer

BC Call attempt with invalid list type

The following minor codes apply to major code 82 (acquire failed—session not started—re-acquire may succeed):

0A ASCII and transparency mutually exclusive

0D Host in shutdown

13 Insufficient local resources—SSQS

15 Insufficient local resources—CQS

1E Unsupported or unrecognized operation code

33 Session ID unknown or not owned

36 Invalid switched line ID received

81 Subsystem or interrupt handler proc checked

82 Immediate disable in progress

83 MLCA controller check—transmit

85 Autocall unsuccessful—no numbers reached

86 Phone list exhausted

88 Requested session not active

Figure 2-66 (Part 4 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

89	Record separator—transparency conflict
8A	Record separator—ITB mode conflict
8B	Record length exceeds block length
8C	3740 multiple files—ITB mode conflict
8D	Compression—ITB mode conflict
8E	Truncation—ITB mode conflict
8F	Block length required with data format
90	Transparency—compression conflict
91	Permanent line I/O error
93	Disconnect received
96	SNA unbind received
97	Abort received from remote system
9B	Data received greater than line buffer size
9F	Normal shutdown received (CCP)
A0	Invalid record separator character
A1	Logon failed
A2	Sign-on failed
A5	Invalid combination of session statement parameters
A6	Bind failure
A7	Line in use—not available
A8	Maximum sessions already active
A9	Host not started (IMS/VS)
AA	Location not found
AB	Enable not complete

Figure 2-66 (Part 5 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

AC	Active sessions—batch job will not start
AD	Batch job already running
AE	Invalid session address or physical terminal specified
AF	Incoming session ID not acquirable
B0	Disable pending
B1	Specified session address unavailable
B2	Pool address unavailable
B3	No sessions available
B4	Acquire unable to allocate resources
BB	Requested LWSID unavailable
BC	Call attempt with invalid list type

The following minor codes apply to major code 83 (session still intact—recovery possible):

0B	Session not owned—acquire needed
0C	Unsupported FMH received
0D	Host in shutdown—transmit
0E	Host in shutdown—receive
13	Deficient local resources—transmit (SSQS)
14	Deficient local resources—receive (SSQS)
15	Deficient local resources (CQS)
16	Evoke failed
17	Maximum output message length exceeded
19	Operation failed—sense data waiting
1A	Operation rejected by remote system (MSG)
1B	Invalid sense data

Figure 2-66 (Part 6 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

1C	Invalid operation code—message or data waiting
1D	Output operations are not allowed for this session
1E	Unsupported or unrecognized operation code
1F	Output exceeds maximum record length
20	Batch output record length greater than 256
22	Operation invalid while transmitting
23	Operation invalid while receiving
24	Output operation invalid while in chains
25	Negative response invalid at this time
26	Operation invalid between chains
27	Transaction does not exist
29	Operation invalid for evoked program
2A	Both half sessions attempting input
2B	Record length zero on first put
2C	Command partner tried to release invited session
2D	Operation to an invited session is invalid
2E	Program cancel received (CCP)
2F	Invalid operation—transaction not complete
30	Cancel with change direction
31	Cancel without change direction
32	Cancel with EOX
33	Invalid or unknown session ID

Figure 2-66 (Part 7 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

34	Invalid evoke parameters
38	Invalid command/format received from host
39	Conversational response to status was suppressed
3A	Remote printer error
3C	Output invalid with transparent—ITB
83	MLCA controller check—transmit
84	MLCA controller check—receive
85	Autocall unsuccessful—no numbers reached
86	Phone list exhausted
91	Permanent line I/O error—transmit
92	Permanent line I/O error—receive
97	Abort received—transmit
98	Abort received—receive
99	Delay count exceeded—transmit
9A	Delay count exceeded—receive
9B	Data received greater than line buffer size—transmit
9C	Data received greater than line buffer size—receive
A7	Line in use—not available
B0	Disable pending

Figure 2-66 (Part 8 of 8). Work Station DTF SSP-ICF Major and Minor Return Codes ($WSRTC)

Dump Area on Disk

The dump file is located in the control storage library portion of the disk and consists of three separate files, not necessary contiguous:

Area	System Communications Area Pointer
Main storage	SCADSSMS
Control storage	SCADSSCS
I/O controller	SCADSSIO

The areas are variable in size, determined by CUSTOMIZ and are allocated to contain all of main, control, and I/O controller storage. They are used to display storage dumps and other data areas required to diagnose system and/or task abnormal terminations.

Duplicate Key Display Parameter List

The duplicate key display parameter list is required when the duplicate key display routine (#CSDK) is called. The caller of #CSDK must place the address of the left-most byte of the parameter list in XR1. Figure 2-67 shows the format of the duplicate key display parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	DKHDFLAG	1	Flag byte: *Hex* *Meaning* 80 Key address real 40 Message address real 08 Option 0 04 Option 1 02 Option 2 01 Option 3
01	DKHDKEYA	2	Key address (left byte)
03	DKHDMSGA	2	Message address (left byte)
05	DKHDCOMP	4	Component ID

Figure 2-67 (Part 1 of 2). Format of the Duplicate Key Display Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	DKHDMICN	2	MIC number
0B	DKHDF1AD	2	Format 1 address

Figure 2-67 (Part 2 of 2). Format of the Duplicate Key Display Parameter List

Error Information Block

This 96-byte area is used to pass error message information from SYSLOG to the subsystems via termination. The error information block contains the alpha code, the MIC number, and the message text of the message SYSLOG just processed.

How to Find

If field JCBDSCH4 in the job control block has hex 01 on, a queue header (QHDEIB) contains the address of the first error information block on the chain.

Format

Figure 2-68 shows the format of the error information block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	EIBDALPH	4	Alpha code (right justified)
04	EIBDHYPH	1	Hyphen between code and MIC number
05	EIBDMIC#	4	The message ID code in zoned decimal
09	EIBDBLNK	1	Blank following the MIC number
0A	EIBDMSGT	75	The message text in EBCDIC
55	EIBDRSV1	7	Reserved

Figure 2-68 (Part 1 of 2). Format of the Error Information Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5C	EIBCHAIN	2	Chain field
5E	EIBDTCB@	2	TCB address

Figure 2-68 (Part 2 of 2). Format of the Error Information Block

Error Log Area (Disk)

The 32-word error log area is in control storage at location X'2100'. It contains the associated disk IOB and the disk file control block (FCB) for a specific disk error. See the IOB and file control block in this section for the format of the control blocks associated with this area.

Error-Logging Tables Directory

The error-logging tables directory area contains the entries of the logging tables for the control processor, the main storage processor, each drive of the disk, the diskette, the line printer, the work station controllers, the work station terminals (work station attached printers and display stations), each binary synchronous communication line, each synchronous data link control line, the 1255 magnetic character reader, the MLCA controller, and each autocall unit port.

The 8-byte directory entry is used by control storage logging transients to update error counters and to record error history information. The 8-byte entry is also used by the error recording analysis procedure (ERAP) when it displays, prints, and/or prints and resets that data. The logging table directory contains hex FE at the end of the used portion.

How to Find

Field SCALOGSS of the system communication area contains the address of the logging tables directory.

Format

Figure 2-69 shows the logging tables directory organization and Figure 2-70 shows the format of a directory entry.

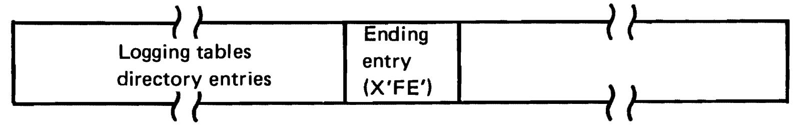


Figure 2-69. Logging Tables Directory Organization

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LOGTDDID	1	Device ID (a device ID of X'00' identifies a deleted entry)
01	LOGTDDAD	1	Device address
02	LOGTDUAD	1	Unit address
03	LOGTDECS	2	Sequential sector address of error counter table for this device
05	LOGTDECD	1	Displacement in that sector where the error counter table for this device begins
06	LOGTDEHS	2	Sequential sector address of the error history table for this device

Figure 2-70. Format of a Logging Tables Directory Entry

Logging Tables

CSIPL ($IPW) initializes the logging tables based on the devices described in the UDT and the configuration record. The tables are updated by the control storage logging transient for a device. However, the error counter tables may be reset by the error recording analysis procedure (ERAP). ERAP also uses these tables when it prints and/or displays information about a device.

Note: The error counter tables for the communication line contain I/O counts as well as error counts.

How to Find

Each of the following tables has its own entry in the logging tables directory. The location of an error counter table is specified as a sequential sector address (LOGTDECS) with the displacement (LOGTDECD) into the sector where the error counter table for the device begins. The location of an error history table is represented as a sequential sector address in field LOGTDEHS.

Format

Figures 2-71 through 2-99 shows the formats of the error counter tables and error history tables for the various devices.

Device	Error Counter Table Figure	Error History Table Figure
Autocall	2-71	2-84
BSC	2-72	2-85
Control processor	–	2-86
Disk (62EH)	2-73	2-87
Disk (62PC)	2-74	2-88
Diskette (basic)	2-75	2-89
Diskette (autoloader)	2-76	2-90
Line printer (5211)	2-77	2-91
Line printer (3262)	2-78	2-91
Magnetic character reader	2-79	2-92
Main storage processor	–	2-93
MLCA controller	–	2-86
SDLC	2-80	2-94
Work station terminal (local)	2-81	2-95
Work station terminal (remote)	–	2-96
Work station controller (local)	2-82	2-97
Work station controller (remote)	–	2-98
Work station control expansion C	–	2-97
X.21	2-83	2-99

Autocall Error Counter Table (20 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
I/O counters:			
00	AUCTRPCA	2	Number of total phone call attempts
02	AUCTRDTI	3	Date (YYMMDD) on which the I/O counters in this table were reset through ERAP
05	AUCTRRS1	1	Reserved
Error counters:			
06	AUCTRDLO	2	Number of data line occupied errors
08	AUCTRACR	2	Number of abandon call and retry errors
0A	AUCTRPND	2	Number of present next digit errors
0C	AUCTRDSC	2	Number of distant station connected errors
0E	AUCTRPWI	2	Number of power indicate errors
10	AUCTRDT2	3	Date (YYMMDD) on which the error counters in this table were reset through ERAP
13	AUCTRRS2	1	Reserved

Figure 2-71. Autocall Error Counter Table

BSC Error Counter Table (92 bytes)

Either BSC or MRJE programs can update the following counters with the exceptions of BSCTRJER, BSCTRCER, BSCTRJTO, and BSCTRCTO. These four counters are only updated by BSC support. The terms *job* and *cumulative* in this table correspond to the terms *current* and *history*, respectively, in the ERAP procedure. This table contains I/O counts as well as error counts. When a system has more than one BSC line, there is a unit definition table (UDT) entry for each line. Each line has its own counter table and its own entry in the logging tables directory.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
I/O counters:			
00	BSCTRJBT	2	Text blocks transmitted for this job
02	BSCTRCBT	4	Cumulative text blocks transmitted
06	BSCTRJBR	2	Text blocks received for this job
08	BSCTRCBR	4	Cumulative text blocks received
0C	BSCTRDT1	3	Date (YYMMDD) on which the I/O counters in this table were reset through ERAP
0F	BSCTRRS1	1	Reserved
Error counters:			
10	BSCTRJNK	2	Negative acknowledgements received for this job
12	BSCTRCNK	4	Cumulative negative acknowledgements received
16	BSCTRJDC	2	Data checks received for this job
18	BSCTRCDC	4	Cumulative data checks received
1C	BSCTRJFA	2	Forward aborts received for this job
1E	BSCTRCFA	4	Cumulative forward aborts received
22	BSCTRJAB	2	Aborts received for this job
24	BSCTRCAB	4	Cumulative aborts received
28	BSCTRJAT	2	Adapter checks during transmission for this job
2A	BSCTRCAT	4	Cumulative adapter checks during transmission

Figure 2-72 (Part 1 of 2). BSC Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2E	BSCTRJAR	2	Adapter checks while receiving for this job
30	BSCTRCAR	4	Cumulative adapter checks while receiving
34	BSCTRJIR	2	Not valid responses received for this job
36	BSCTRCIR	4	Cumulative not valid responses received
3A	BSCTRJER	2	Enquiries received as affirmative acknowledgement for this job
3C	BSCTRCER	4	Cumulative enquiries received as affirmative acknowledgements
40	BSCTRJLD	2	Lost data errors for this job
42	BSCTRCLD	4	Cumulative lost data errors
46	BSCTRJDT	2	Disconnect timeouts for this job
48	BSCTRCDT	4	Cumulative disconnect timeouts
4C	BSCTRJRT	2	Receive timeouts for this job
4E	BSCTRCRT	4	Cumulative receive timeouts
52	BSCTRJTO	2	Transmission timeouts for this job
54	BSCTRCTO	4	Cumulative transmission timeouts
58	BSCTRDT2	3	Date (YYMMDD) on which the error counters in this table were reset through ERAP
5B	BSCTRRS2	1	Reserved

Figure 2-72 (Part 2 of 2). BSC Error Counter Table

Disk (62EH) Error Counter Table (96 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FDECTTNR	4	Temporary disk not ready checks (2 bytes) and permanent disk not ready checks (2 bytes)
04	FDECTTSS	4	Temporary sector sync checks (2 bytes) and permanent sector sync checks (2 bytes)
08	FDECTTOT	4	Temporary off-track checks (2 bytes) and permanent off-track checks (2 bytes)
0C	FDECTTCR	4	Temporary cyclic redundancy checks (2 bytes) and permanent cyclic redundancy checks (2 bytes)
10	FDECTTPP	4	Temporary DBO parity checks (2 bytes) and permanent DBO parity checks (2 bytes)
14	FDECTTWE	4	Temporary write data echo checks (2 bytes) and permanent write data echo checks (2 bytes)
18	FDECTTCO	4	Temporary cycle steal overruns (2 bytes) and permanent cycle steal overruns (2 bytes)
1C	FDECTTDU	4	Temporary data unsafe checks (2 bytes) and permanent data unsafe checks (2 bytes)
20	FDECTTSA	4	Temporary not valid seek address checks (2 bytes) and permanent not valid seek address checks (2 bytes)

Figure 2-73 (Part 1 of 3). Disk (62EH) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	FDECTTEC	4	Temporary attachment equipment checks (2 bytes) and permanent attachment equipment checks (2 bytes)
28	FDECTTNF	4	Temporary no records found (2 bytes) and permanent no records found (2 bytes)
2C	FDECTTSE	4	Temporary seek checks (2 bytes) and permanent seek checks (2 bytes)
30	FDECTTSD	4	Temporary serdes checks (2 bytes) and permanent serdes checks (2 bytes)
34	FDECTTWC	4	Temporary write checks (2 bytes) and permanent write checks (2 bytes)
38	FDECTTCT	4	Temporary channel transfer checks (2 bytes) and permanent channel transfer checks (2 bytes)
3C	FDECTTPS	4	Temporary PLO out of sync checks (2 bytes) and permanent PLO out of sync checks (2 bytes)
40	FDECTTTI	4	Temporary interrupt timeout checks (2 bytes) and permanent interrupt timeout checks (2 bytes)
44	FDECTTSC	4	Temporary sector checks (2 bytes) and permanent sector checks (2 bytes)
48	FDECTTSU	4	Temporary select unsafe checks (2 bytes) and permanent select unsafe checks (2 bytes)

Figure 2-73 (Part 2 of 3). Disk (62EH) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4C	FDECTTWU	4	Temporary write unsafe checks (2 bytes) and permanent write unsafe checks (2 bytes)
50	FDECTTBF	4	Temporary brake failure checks (2 bytes) and permanent brake failure checks (2 bytes)
54	FDECTTSV	4	Temporary servo unsafe checks (2 bytes) and permanent servo unsafe checks (2 bytes)
58	FDECTTIA	4	Temporary not valid I/O buffer address checks (2 bytes) and permanent not valid I/O buffer address checks (2 bytes)
5C	FDECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
5F	FDECTRES	1	Reserved

Figure 2-73 (Part 3 of 3). Disk (62EH) Error Counter Table

Disk (62PC) Error Counter Table (92 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FDECTTAC	4	Temporary adapter checks (2 bytes) and permanent adapter checks (2 bytes)
04	FDECTTOC	4	Temporary channel overrun checks (2 bytes) and permanent channel overrun checks (2 bytes)

Figure 2-74 (Part 1 of 3). Disk (62PC) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	FDECTTTP	4	Temporary tag parity checks (2 bytes) and permanent tag parity checks (2 bytes)
0C	FDECTTCP	4	Temporary common adapter/channel interface attachment (CA) data bus parity checks (2 bytes) and permanent common adapter/channel interface attachments (CA) data bus parity checks (2 bytes)
10	FDECTTFE	4	Temporary forced end operations (2 bytes) and permanent forced end operations (2 bytes)
14	FDECTTBA	4	Temporary brake applied checks (2 bytes) and permanent brake applied checks (2 bytes)
18	FDECTTTU	4	Temporary track unavailable checks (2 bytes) and permanent track unavailable checks (2 bytes)
1C	FDECTTCC	4	Temporary command checks (2 bytes) and permanent command checks (2 bytes)
20	FDECTTBD	4	Temporary data unsafe checks (2 bytes) and permanent data unsafe checks (2 bytes)
24	FDECTTSI	4	Temporary seek incomplete checks (2 bytes) and permanent seek incomplete checks (2 bytes)
28	FDECTTNP	4	Temporary disk not ready checks (2 bytes) and permanent disk not ready checks (2 bytes)
2C	FDECTTCY	4	Temporary cyclic redundancy checks (2 bytes) and permanent cyclic redundancy checks (2 bytes)

Figure 2-74 (Part 2 of 3). Disk (62PC) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	FDECTTCA	4	Temporary common adapter parity checks (2 bytes) and permanent common adapter parity checks (2 bytes)
34	FDECTTIP	4	Temporary common interface parity checks (2 bytes) and permanent common interface parity checks (2 bytes)
38	FDECTTCE	4	Temporary write gate return checks (2 bytes) and permanent write gate return checks (2 bytes)
3C	FDECTTNO	4	Temporary no record found (2 bytes) and permanent no records found (2 bytes)
40	FDECTTIC	4	Temporary not valid command parameter checks (2 bytes) and permanent not valid command parameter checks (2 bytes)
44	FDECTTMP	4	Temporary missing sector pulse checks (2 bytes) and permanent missing sector pulse checks (2 bytes)
48	FDECTTTO	4	Temporary timeout checks (2 bytes) and permanent timeout checks (2 bytes)
4C	FDECTTNA	4	Temporary file not attached checks (2 bytes) and permanent file not attached checks (2 bytes)
50	FDECTTIB	4	Temporary not valid I/O buffer address check (2 bytes) and permanent not valid I/O buffer address check (2 bytes)
54	FDECTTIE	4	Temporary 62PC interface errors (2 bytes) and permanent 62PC interface errors (2 bytes)
58	FDECTDTE	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
5B	FDECTRSV	1	Reserved

Figure 2-74 (Part 3 of 3). Disk (62PC) Error Counter Table

Diskette (Basic) Error Counter Table (60 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDECTTAM	4	Temporary missing data address marks (2 bytes) and permanent missing data address marks (2 bytes)
04	RDECTTIR	4	Temporary ID cyclic redundancy checks (2 bytes) and permanent ID cyclic redundancy checks (2 bytes)
08	RDECTTDR	4	Temporary data cyclic redundancy checks (2 bytes) and permanent data cyclic redundancy checks (2 bytes)
0C	RDECTTHM	4	Temporary head mismatches (2 bytes) and permament head mismatches (2 bytes)
10	RDECTTRN	4	Temporary record mismatches (2 bytes) and permanent record mismatches (2 bytes)
14	RDECTTLM	4	Temporary record length mismatches (2 bytes) and permanent record length mismatches (2 bytes)
18	RDECTTNP	4	Temporary no-op conditions (2 bytes) and permament no-op conditions (2 bytes)
1C	RDECTTIC	4	Temporary not valid control record checks (2 bytes) and permanent not valid control record checks (2 bytes)
20	RDECTTVM	4	Temporary write verify mismatches (2 bytes) and permanent write verify mismatches (2 bytes)
24	RDECTTDF	4	Temporary fast checks (2 bytes) and permanent fast checks (2 bytes)
28	RDECTTWE	4	Temporary write errors (2 bytes) and permanent write errors (2 bytes)
2C	RDECTTNO	4	Temporary ID not found (2 bytes) and permanent ID not found (2 bytes)

Figure 2-75 (Part 1 of 2). Diskette (Basic) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	RDECTTRO	4	Temporary read overrun checks (2 bytes) and permanent read overrun checks (2 bytes)
34	RDECTTEP	4	Temporary unexpected erase current present checks (during operations other than a write—2 bytes) and permanent unexpected erase current present checks (during operations other than a write—2 bytes)
38	RDECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
3B	RDECTRES	1	Reserved

Figure 2-75 (Part 2 of 2). Diskette (Basic) Error Counter Table

Diskette (Autoloader) Error Counter Table (84 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDECTTMA	4	Temporary missing data address marker checks (2 bytes) and permanent missing data address marker checks (2 bytes)
04	RDECTTDC	4	Temporary data cyclic redundancy checks (2 bytes) and permanent data cyclic redundancy checks (2 bytes)
08	RDECTTNC	4	Temporary no-op conditions (2 bytes) and permament no-op conditions (2 bytes)
0C	RDECTTCR	4	Temporary not valid control record checks (2 bytes) and permanent not valid control record checks (2 bytes)

Figure 2-76 (Part 1 of 3). Diskette (Autoloader) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	RDECTTWM	4	Temporary write verify mismatches (2 bytes) and permanent write verify mismatches (2 bytes)
14	RDECTTFS	4	Temporary diskette fast checks (2 bytes) and permanent diskette fast checks (2 bytes)
18	RDECTTWC	4	Temporary write errors (2 bytes) and permanent write errors (2 bytes)
1C	RDECTTNI	4	Temporary ID not found checks (2 bytes) and permanent ID not found checks (2 bytes)
20	RDECTTOR	4	Temporary buffer underrun checks (2 bytes) and permanent buffer underrun checks (2 bytes)
24	RDECTTEC	4	Temporary erase current present checks (during operations other than a write—2 bytes) and permanent erase current present checks (during operations other than a write—2 bytes)
28	RDECTTPC	4	Temporary parity checks (2 bytes) and permanent parity checks (2 bytes)
2C	RDECTTIQ	4	Temporary not valid command checks (2 bytes) and permanent not valid command checks (2 bytes)
30	RDECTTTO	4	Temporary timeout checks (2 bytes) and permanent timeout checks (2 bytes)
34	RDECTTCF	4	Temporary carriage bed failures (applies only to orient and includes carriage bed stuck at or off of home—2 bytes) and permanent carriage bed failures (applies only to orient and includes carriage bed stuck at or off of home—2 bytes)
38	RDECTTPF	4	Temporary picker failures (includes picker stuck in magazine or in drive—2 bytes) and permanent picker failures (includes picker stuck in magazine or in drive—2 bytes)

Figure 2-76 (Part 2 of 3). Diskette (Autoloader) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3C	RDECTTFE	4	Temporary failure to eject checks (2 bytes) and permanent failure to eject checks (2 bytes)
40	RDECTTFP	4	Temporary failure to pick checks (2 bytes) and permanent failure to pick checks (2 bytes)
44	RDECTTMF	4	Temporary window magnet failures (includes diskette window stuck open or closed—2 bytes) and permanent window magnet failures (includes diskette window stuck open or closed—2 bytes)
48	RDECTTSE	4	Temporary operation out of sequence errors (2 bytes) and permanent operation out of sequence errors (2 bytes)
4C	RDECTTER	4	Temporary write/erase current present checks (2 bytes) and permanent write/erase current present checks (2 bytes)
50	RDECTDTE	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
53	RDECTRSV	1	Reserved

Figure 2-76 (Part 3 of 3). Diskette (Autoloader) Error Counter Table

Line Printer (5211) Error Counter Table (42 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LPECTPCE	2	Number of printer controller unit checks
02	LPECTDTC	2	Number of data transfer checks (system/controller)
04	LPECTFTC	2	Number of fire tier checks
06	LPECTPSE	2	Number of print subscan emitter checks
08	LPECTAHC	2	Number of any hammer on checks
0A	LPECTHEC	2	Number of hammer echo checks
0C	LPECTBSC	2	Number of belt sync checks
0E	LPECTBSP	2	Number of belt speed checks
10	LPECTTBU	2	Number of temporary belt up to speed checks
12	LPECTPBU	2	Number of permanent belt up to speed checks
14	LPECTEPB	2	Number of printer busy too often checks
16	LPECTPBT	2	Number of printer busy too long checks
18	LPECTCC1	2	Number of carriage check 1 checks (carriage sync checks)
1A	LPECTCC2	2	Number of carriage check 2 checks (carriage speed check—space)
1C	LPECTJAM	2	Number of forms jam checks
1E	LPECTRCK	2	Number of ribbon checks
20	LPECTDPC	2	Number of data parity checks (printer input bus)
22	LPECTCIC	2	Number of cable interlock checks

Figure 2-77 (Part 1 of 2). Line Printer (5211) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	LPECTPPF	2	Number of printer power checks
26	LPECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
29	LPECTRES	1	Reserved

Figure 2-77 (Part 2 of 2). Line Printer (5211) Error Counter Table

Line Printer (3262) Error Counter Table (46 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LPECTPCU	2	Number of printer controller unit checks
02	LPECTDXF	2	Number of data transfer checks (system/controller)
04	LPECTFIR	2	Number of fire tier checks
06	LPECTPSS	2	Number of print subscan emitter checks
08	LPECTAHO	2	Number of any hammer on checks
0A	LPECTHEP	2	Number of hammer echo checks
0C	LPECTBSN	2	Number of belt sync checks
0E	LPECTBSE	2	Number of belt speed checks
10	LPECTBSU	2	Number of belt up to speed checks
12	LPECTPBL	2	Number of print busy too long checks
14	LPECTCPC	2	Number of carriage pedestal checks
16	LPECTCR1	2	Number of carriage check 1 checks (also referred to as a deceleration or sync check)

Figure 2-78 (Part 1 of 2). Line Printer (3262) Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18	LPECTCR3	2	Number of carriage check 3 checks (also referred to as a carriage full speed check)
1A	LPECTCR4	2	Number of carriage check 4 checks (also referred to as an acceleration check)
1C	LPECTFMJ	2	Number of forms jam checks
1E	LPECTRBC	2	Number of ribbon checks
20	LPECTDAP	2	Number of data parity checks (printer input bus)
22	LPECTCBL	2	Number of cable interlock checks
24	LPECTTC1	2	Number of thermal check 1 checks
26	LPECTTC2	2	Number of thermal check 2 checks
28	LPECTPNO	2	Number of printer not powered on checks
2A	LPECTDTE	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
2D	LPECTRSV	1	Reserved

Figure 2-78 (Part 2 of 2). Line Printer (3262) Error Counter Table

Magnetic Character Reader Error Counter Table (18 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCECTMRD	2	Number of misreads without rejects[1]
02	MCECTMRR	2	Number of misreads with rejects[1]
04	MCECTDAR	2	Number of document auto rejects[1]
06	MCECTSTC	2	Number of abnormal stop conditions (includes stacker command errors, document jams, and interlock checks)
08	MCECTDBP	2	Number of MICR control unit data bus in/data bus out (CDBI/CDBO) parity checks
0A	MCECTAMP	2	Number of MICR control unit memory parity checks
0C	MCECTLTC	2	Number of MICR control unit long timeout checks
0E	MCECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
11	MCECTRES	1	Reserved

[1]This counter is updated at end-of-file only.

Figure 2-79. Magnetic Character Reader Error Counter Table

SDLC Error Counter Table (80 bytes)

This table contains I/O counts as well as errors. The terms *job* and *cumulative* correspond to the terms *current* and *history,* respectively, in the ERAP procedure. When a system has more than one SDLC line, each line has a unit definition table (UDT) entry. Each line has its own counter table and its own entry in the logging tables directory.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
I/O counters:			
00	SDCTRJIT	2	Job I-frames transmitted
02	SDCTRCIT	4	Cumulative I-frames transmitted
06	SDCTRJIX	2	Job I-frames retransmitted
08	SDCTRCIX	4	Cumulative I-frames retransmitted
0C	SDCTRJIR	2	Job I-frames received
0E	SDCTRCIR	4	Cumulative I-frames received
12	SDCTRJFT	2	Job total frames transmitted
14	SDCTRCFT	4	Cumulative total frames transmitted
18	SDCTRJFR	2	Job total frames received
1A	SDCTRCFR	4	Cumulative total frames received
1E	SDCTRDT1	3	Date (YYMMDD) on which the I/O counters in this table were reset through ERAP
21	SDCTRRS1	1	Reserved
Error counters:			
22	SDCTRJBC	2	Job cyclic redundancy checks
24	SDCTRCBC	4	Cumulative cyclic redundancy check
28	SDCTRJIF	2	Job not valid frames received
2A	SDCTRCIF	4	Cumulative not valid frames received
2E	SDCTRJDT	2	Job lost data set ready checks
30	SDCTRCDT	4	Cumulative lost data set ready checks

Figure 2-80 (Part 1 of 2). SDLC Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34	SDCTRJRT	2	Job nonproductive receive time outs
36	SDCTRCRT	4	Cumulative nonproductive receive time outs
3A	SDCTRJAC	2	Job adapter checks
3C	SDCTRCAC	4	Cumulative adapter checks
40	SDCTRJID	2	Job idle detect timeout checks
42	SDCTRCID	4	Cumulative idle detect timeout checks
46	SDCTRJIP	2	Job frame sequence errors
48	SDCTRCIP	4	Cumulative frame sequence errors
4C	SDCTRDT2	3	Date (YYMMDD) on which the error counters in this table were reset through ERAP
4F	SDCTRRS2	1	Reserved

Figure 2-80 (Part 2 of 2). SDLC Error Counter Table

Note: Error counter tables are not maintained for remote work stations.

Work Station Terminal (Local) Error Counter Table for Display Station and Work Station Attached Printer (8 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WSECTRPC	2	Number of receive parity checks (attachment controller detected)
02	WSECTLPC	2	Number of line parity checks
04	WSECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
07	WSECTRES	1	Reserved

Figure 2-81. Work Station Terminal (Local) Error Counter Table for Display Station and Work Station Attached Printer

Error counter tables are not maintained for remote work station controllers.

Work Station Controller (Local) Error Counter Table (8 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WCECTDBP	2	Number of work station controller DBO/DBI parity checks
02	WCECTSPC	2	Number of work station controller storage parity checks
04	WCECTDAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
07	WCECTRES	1	Reserved

Figure 2-82. Work Station Controller (Local) Error Counter Table

Note: This work station controller error counter table does not apply to work station control expansion C.

X.21 Error Counter Table (68 bytes)

This table contains I/O counts as well as errors. When a system has more than one X.21 line, each line has its own counter table and its own entry in the logging table directory.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
I/O counters:			
00	XTCTRSCL	2	Number of successful calls
02	XTCTRDT1	3	Date (YYMMDD) on which the I/O counter in this table was reset through ERAP
05	XTCTRRSI	1	Reserved
Error counters:			
06	XTCTRDCL	2	DCE clear
08	XTCTRDNR	2	DCE not ready
0A	XTCTRPER	2	Parity errors
0C	XTCTRACK	2	Adapter checks
0E	XTCTRT1T	2	T1 time-outs
10	XTCTRT2T	2	T2 time-outs
12	XTCTRT3A	2	T3A time-outs
14	XTCTRT3B	2	T3B time-outs
16	XTCTRTC	2	Terminal called
18	XTCTRRDC	2	Redirected calls

Figure 2-83 (Part 1 of 2). X.21 Error Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1A	XTCTRCWF	2	Correct when free
1C	XTCTRNCN	2	No correction
1E	XTCTRNMB	2	Number busy
20	XTCTRSSP	2	Selection signal procedure errors
22	XTCTRSST	2	Selection signal transmission errors
24	XTCTRACB	2	Access barred
26	XTCTRCNB	2	Changed number
28	XTCTRNOB	2	Not obtainable
2A	XTCTROOR	2	Out of order
2C	XTCTRCNR	2	Controlled not ready
2E	XTCTRUNR	2	Uncontrolled not ready
30	XTCTRDPO	2	DCE power off
32	XTCTRIFR	2	Invalid facility request
34	XTCTRNFL	2	Network fault in local loop
36	XTCTRCIS	2	Call information service
38	XTCTRIUC	2	Incompatible user class of service
3A	XTCTRNWC	2	Network congestion
3C	XTCTRLNC	2	Long term network congestion
3E	XTCTRROR	2	RPOA out of order
40	XTCTRDT2	3	Date (YYMMDD) on which the error counters in this table were reset through ERAP
43	XTCTRRS2	1	Reserved

Figure 2-83. (Part 2 of 2). X.21 Error Counter Table

Autocall Error History Table (34 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	AUEHTSTA	1	Status byte
01	AUEHTRCT	1	Retry count
02	AUEHTCLN	1	Communications line number/autocall unit number
03	AUEHTPNM	22	Phone number
19	AUEHTPRO	1	Protocol
1A	AUEHTDAT	3	Date (YYMMDD) on which the error occurred
1D	AUEHTRES	1	Reserved
1E	AUEHTTOD	4	Time of day (in timer units)

Figure 2-84. Autocall Error History Table

BSC Error History Table (14 bytes)

This table is updated only by BSC programs. Two disk sectors are reserved for a BSC error history table, in which there can be a maximum of 25 entries. When a system has more than one BSC line, each line has a unit definition table (UDT) entry. Each line has its own error history table and its own entry in the logging tables directory.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	BSEHTQBY	1	Command code
01	BSEHTRBY	1	Command modifier
02	BSEHTSIO	1	Sense information byte 1 (see BSC IOB)
03	BSEHTERC	1	Error retry count
04	BSEHTCOM	1	BSC completion code (see BSC DTF)
05	BSEHTTAD	2	Terminal address
07	BSEHTDAT	3	Date (YYMMDD) on which the error occurred
0A	BSEHTTOD	4	Time of day (in timer units)

Figure 2-85. BSC Error History Table

Control Processor Error History Table and MLCA Controller Error History Table (32 bytes)

Note: The control processor error history table and the MLCA controller error history table are separate tables even though the labels and descriptions are the same.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CSEHTPCR	1	Processor condition register
01	CSEHTPIL	1	Coded processing interrupt level on which the error occurred (if bits 5 through 7 are on, the error occurred while processing on the main program level and the contents of CSEHTWR1 are to be disregarded): *Hex* *Meaning* 80 IL5 40 IL4/base cycle steal 20 Base cycle steal/burst cycle steal 10 IL3 08 IL2 04 IL1/burst cycle steal 02 Not used 01 Main program level
02	CSEHTCPC	1	Processing unit check byte (also referred to as byte 0)
03	CSEHTCHC	1	Channel check byte (also referred to as byte 1)
04	CSEHTWR0	2	WR0 of level on which the error occurred
06	CSEHTWR1	2	WR1 of level on which the error occurred
08	CSEHTWR2	2	WR2 of level on which the error occurred
0A	CSEHTWR3	2	WR3 of level on which the error occurred
0C	CSEHTWR4	2	WR4 of level on which the error occurred
0E	CSEHTWR5	2	WR5 of level on which the error occurred

Figure 2-86 (Part 1 of 2). Format of Control Processor Error History Table and MLCA Controller Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	CSEHTWR6	2	WR6 of level on which the error occurred
12	CSEHTWR7	2	WR7 of level on which the error occurred
14	CSEHTMAR	2	MAR of level on which the error occurred
16	CSEHTMAB	2	MAB of level on which the error occurred
18	CSEHTDAT	3	Date (YYMMDD) on which the error occurred
1B	CSEHTRES	1	Reserved
1C	CSEHTTOD	4	Time of day (measured in timer units) of the MSIPL following the control processor error

Note: Two sectors are reserved for the control processor error history table, in which there can be a maximum of 16 entries.

Figure 2-86 (Part 2 of 2). Format of Control Processor Error History Table and MLCA Controller Error History Table

Disk (62EH) Error History Table (26 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FDEHTQBY	1	Q-byte of actual operation (command code)
01	FDEHTRBY	1	R-byte of actual operation (command modifier)
02	FDEHTSI0	1	Sense information byte 0 (see disk IOB)
03	FDEHTSI1	1	Sense information byte 1 (see disk IOB)
04	FDEHTSI2	1	Sense information byte 2 (see disk IOB)

Figure 2-87 (Part 1 of 2). Disk (62EH) Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	FDEHTSI3	1	Sense information byte 3 (see disk IOB)
06	FDEHTSI4	1	Sense information byte 4 (see disk IOB)
07	FDEHTSI5	1	Sense information byte 5 (see disk IOB)
08	FDEHTCCY	2	Current cylinder reached by the seek
0A	FDEHTPCY	2	Previous cylinder before the seek
0C	FDEHTCFD	6	Control field of sector to be processed: N—N-byte F—F-byte C—cylinder high byte C—cylinder low byte H—head byte S—sector byte
12	FDEHTERC	1	Error retry count
13	FDEHTDAT	3	Date (YYMMDD) on which the error occurred
16	FDEHTTOD	4	Time of day (in timer units)

Note: Two disk sectors are reserved for a disk (62EH) EHT, in which there can be a maximum of 19 EHT entries.

Figure 2-87 (Part 2 of 2). Disk (62EH) Error History Table

Disk (62PC) Error History Table (30 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FDEHTQBT	1	Q-byte of actual operation (command code)
01	FDEHTRBT	1	R-byte of actual operation (command modifier)
02	FDEHTSN0	1	Sense information byte 0
03	FDEHTSN1	1	Sense information byte 1
04	FDEHTSN2	1	Sense information byte 2
05	FDEHTSN3	1	Sense information byte 3
06	FDEHTSN4	1	Sense information byte 4
07	FDEHTSN5	1	Sense information byte 5
08	FDEHTSB0	1	Disk status byte 0
09	FDEHTSB1	1	Disk status byte 1
0A	FDEHTSB2	1	Disk status byte 2
0B	FDEHTRSV	1	Reserved
0C	FDEHTCUC	2	Current cylinder reached by the seek
0E	FDEHTPVC	2	Previous cylinder before the seek
10	FDEHTCTL	6	Control field of sector to be processed: N—N-byte F—F-byte C—cylinder high byte C—cylinder low byte H—head byte S—sector byte

Figure 2-88 (Part 1 of 2). Disk (62PC) Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16	FDEHTRTY	1	Error retry count
17	FDEHTDTE	3	Date (YYMMDD) on which the error occurred
1A	FDEHTTIM	4	Time of day (in timer units)

Note: Two disk sectors are reserved for a disk (62PC) EHT, in which there can be a maximum of 17 entries.

Figure 2-88 (Part 2 of 2). Disk (62PC) Error History Table

Diskette (Basic) Error History Table (26 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDEHTVOL	6	Diskette volume ID
06	RDEHTRQB	1	R-byte/Q-byte of the actual operation
07	RDEHTSI0	1	Sense information byte 0 (see diskette IOB)
08	RDEHTSI1	1	Sense information byte 1 (see diskette IOB)
09	RDEHTSI2	1	Sense information byte 2 (see diskette IOB)
0A	RDEHTSI3	1	Sense information byte 3 (see diskette IOB)
0B	RDEHTERC	1	Error retry count
0C	RDEHTPCY	1	Previous cylinder before the seek
0D	RDEHTSCY	1	Starting cylinder

Figure 2-89 (Part 1 of 2). Diskette (Basic) Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	RDEHTCFD	4	Control field of cylinder arrived at: C — cylinder H — Head R — record N — sector size
12	RDEHTDAT	3	Date (YYMMDD) on which the error occurred
15	RDEHTRES	1	Reserved
16	RDEHTTOD	4	Time of day (in timer units)

Note: Two disk sectors are reserved for the diskette error history table, in which there can be a maximum of 19 entries.

Figure 2-89 (Part 2 of 2). Diskette (Basic) Error History Table

Diskette (Autoloader) Error History Table (28 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDEHTVLI	6	Diskette volume ID
06	RDEHTSLT	1	Diskette slot number
07	RDEHTRQC	1	R-byte or Q-byte of actual operation
08	RDEHTSB0	1	Sense information byte 0
09	RDEHTSB1	1	Sense information byte 1
0A	RDEHTSB2	1	Sense information byte 2
0B	RDEHTSB3	1	Sense information byte 3

Figure 2-90 (Part 1 of 2). Diskette (Autoloader) Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	RDEHTSB4	1	Sense information byte 4
0D	RDEHTSB5	1	Sense information byte 5
0E	RDEHTRTY	1	Error retry count
0F	RDEHTPCL	1	Previous cylinder before the seek
10	RDEHTSCL	1	Starting cylinder
11	RDEHTCYD	4	Control field of cylinder arrived at: C — cylinder H — head R — record N — sector size
15	RDENTDTE	3	Date (YYMMDD) on which the error occurred
18	RDEHTTIM	4	Time of day (in timer units)

Note: Two disk sectors are reserved for the diskette (autoloader) error history table, in which there can be a maximum of 18 entries.

Figure 2-90 (Part 2 of 2). Diskette (Autoloader) Error History Table

Line Printer Error History Table (14 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LPEHTSB0	1	Line printer status byte 0 (see TUB)
01	LPEHTSB1	1	Line printer status byte 1 (see TUB)
02	LPEHTSB2	1	Line printer status byte 2 (see TUB)
0B	LPEHTSB3	1	Line printer status byte 3 (see TUB)
04	LPEHTSB4	1	Line printer status byte 4 (see TUB)
05	LPEHTSB5	1	Line printer status byte 5 (see TUB)
06	LPEHTDAT	3	Date (YYMMDD) on which the error occurred
09	LPEHTRES	1	Reserved
0A	LPEHTTOD	4	Time of day (in timer units)

Notes:
1. One disk sector is reserved for the line printer error history table, in which there can be a maximum of 18 EHT entries.
2. The error history table entries for the 5211 and 3262 line printers are the same.

Figure 2-91. Line Printer Error History Table

Magnetic Character Reader Error History Table (12 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCEHTQBY	1	Command code (Q-byte of actual operation)
01	MCEHTRBY	1	Command modifier (R-byte of actual operation)
02	MCEHTSI0	1	Sense information byte 0 (see MICR IOB)
03	MCEHTSI1	1	Sense information byte 1 (see MICR IOB)
04	MCEHTDAT	3	Date (YYMMDD) on which the error occurred
07	MCEHTRES	1	Reserved
08	MCEHTTOD	4	Time of day (measured in timer units)

Note: One disk sector is reserved for the magnetic character reader error history table, in which there can be a maximum of 21 entries.

Figure 2-92. Magnetic Character Reader Error History Table

Main Storage Processor Error History Table (32 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MSEHTIAR	2	Instruction address register
02	MSEHTARR	2	Address recall register
04	MSEHTXR1	2	Index register 1
06	MSEHTXR2	2	Index register 2
08	MSEHTOP1	2	Operand 1
0A	MSEHTOP2	2	Operand 2

Figure 2-93 (Part 1 of 2). Format of Main Storage Processor Error History Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	MSEHTIAT	1	IARs address translation register
0D	MSEHTAT1	1	Operand 1 address translation register
0E	MSEHTAT2	1	Operand 2 address translation register
0F	MSEHTOPC	1	Operation code
10	MSEHTQBY	1	Actual Q-byte
11	MSEHTPMR	1	Program mode register
12	MSEHTPSR	1	Program status register
13	MSEHTMS0	1	Main storage processor status byte 0
14	MSEHTMS2	1	Main storage processor status byte 2
15	MSEHTMS3	1	Main storage processor status byte 3
16	MSEHTFAD	3	Failing address
19	MSEHTDAT	3	Date (YYMMDD) on which the error occurred
1C	MSEHTTOD	4	Time of day (in timer units)

Note: Two disk sectors are reserved for the main storage processor error history table, in which there can be a maximum of 16 entries.

Figure 2-93 (Part 2 of 2). Format of Main Storage Processor Error History Table

SDLC Error History Table (14 bytes)

When a system has more than one synchronous data link control (SDLC) line, each line has a unit definition table (UDT) entry. Each line has its own error history table and its own entry in the logging tables directory. Two disk sectors are reserved for each SDLC error history table, in which there can be a maximum of 25 entries.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SDEHTQBY	1	Q-byte of the operation
01	SDEHTSI0	1	Sense information byte 0
02	SDEHTSI1	1	Sense information byte 1
03	SDEHTCTL	1	SDLC control field *Note:* For receive operations in which the error indicates that the transmission was not received or was improperly received, the control field printed may not be valid.
04	SDEHTADF	1	SDLC station address field
05	SDEHTQHD	1	Q header (line number)
06	SDEHTDAT	3	Date (YYMMDD) on which the error occurred
09	SDEHTRES	1	Reserved
0A	SDEHTTOD	4	Time of day (in timer units)

Figure 2-94. SDLC Error History Table

Work Station Terminal (Local) Error History Table for Display Station and Work Station Attached Printer (14 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WSEHTERC	2	Error code: High byte: *Hex* *Meaning* 02 Printer 01 Display station Low byte: Hex value of error determined by bytes 2 through 6.
02	WSEHTCHS	1	Controller/host interface status (see TUB)
03	WSEHTCSC	1	Cable interface status (controller) (see TUB)
04	WSEHTCSD	1	Cable interface status (station/device) (see TUB)
05	WSEHTDS0	1	Device status 0 (see TUB)
06	WSEHTDS1	1	Device status 1 (see TUB)
07	WSEHTDAT	3	Date (YYMMDD) in which the error occurred
0A	WSEHTTOD	4	Time of day (in timer units)

Note: One disk sector is reserved for each work station (local) error history table, in which there can be a maximum of 18 entries per table.

Figure 2-95. Work Station Terminal (Local) Error History Table for Display Station and Work Station Attached

Work Station Terminal (Remote) Error History Table (16 bytes)

There are two remote work station terminal error history tables. One is reserved for all remotely attached display stations, the other for all remotely attached printers. Six disk sectors are reserved for each of these error history tables, in which there can be a maximum of 96 entries; however, only 95 of these entries ever contain data. One entry is always null to identify the end of the entries and the place at which the next new entry is to be recorded.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WSEHTSTA	1	Station address
01	WSEHTLIU	1	Logical unit ID
02	WSEHTERR	2	Error code
04	WSEHTSB0	1	Status byte 0
05	WSEHTSB1	1	Status byte 1
06	WSEHTSB2	1	Status byte 2
07	WSEHTSB3	1	Status byte 3
08	WSEHTSB4	1	Status byte 4
09	WSEHTDTE	3	Date (YYMMDD) on which this error was recorded
0C	WSEHTTIM	4	Time of day (in timer units) at which this error was recorded

Figure 2-96. Work Station Terminal (Remote) Error History Table

Work Station Controller (Local) Error History Table (10 bytes)

Note: Not applicable to Work Station Control Expansion C

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WCEHTCHI	1	Controller/host interface status (see TUB: TUBSENS0)
01	WCEHTRSB	1	Work station controller return status (see TUB: TUBSENS4)
02	WCEHTDAT	3	Date (YYMMDD) on which the error occurred
05	WCEHTRES	1	Reserved
06	WCEHTTOD	4	Time of day (in timer units)

Note: One disk sector is reserved for the work station controller (local) error history table, in which there can be a maximum of 25 entries.

Note: Applicable to Work Station Control Expansion C Only

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WCEHTCHI	1	Sense byte 4 (see TUB)
01	WCEHTRSB	1	Sense byte 5 (see TUB)
02	WCEHTDAT	3	Date (YYMMDD) on which the error occurred
05	WCEHTRES	1	Reserved
06	WCEHTTOD	4	Time of day (in timer units)

Figure 2-97. Work Station Controller (Local) Error History Table

Work Station Controller (Remote) Error History Table (16 bytes)

There is one remote work station controller error history table for all remotely attached work station controllers. Three disk sectors are reserved for this error history table, in which there can be a maximum of 48 entries; however, only 47 of these entries ever contain data. One entry is always null to identify the end of the entries and the place at which the next new entry is to be recorded.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WCEHTSTA	1	Station address
01	WCEHTLIU	1	Logical unit ID
02	WCEHTERC	2	Error code
04	WCEHTSB0	1	Sense byte 0
05	WCEHTSB1	1	Sense byte 1
06	WCEHTSB2	1	Sense byte 2
07	WCEHTSB3	1	Sense byte 3
08	WCEHTSB4	1	Sense byte 4
09	WCEHTDTE	3	Date (YYMMDD) on which this error was recorded
0C	WCEHTTIM	4	Time of day (in timer units) at which this error was recorded

Figure 2-98. Work Station Controller (Remote) Error History Table

X.21 Error History Table (26 bytes)

When a system has more than one X.21 line, each line has its own error history table and its own entry in the logging tables directory. One disk sector is reserved for each X.21 error history table in which there can be a maximum of nine entries.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	XTEHTSTO	1	Status byte 0
01	XTEHTCPS	1	Call progress signal
02	XTEHTCLN	1	Communications line number
03	XTEHTCNM	14	Phone number
11	XTEHTDVC	1	Device code
12	XTEHTDAT	3	Date (YYMMDD) on which the error occurred
15	XTEHTRES	1	Reserved
16	XTEHTTOD	4	Time of day (in timer units)

Figure 2-99. X.21 Error History Table

Error Request Block (ERB)

Error request blocks (ERB) are used for communicating between the control storage code for a device, and the main storage transient for displaying a device error message.

How to Find

For printers and display stations, the 10-byte ERB is embedded in the terminal unit block (TUB) for the device, starting at the TUBCHAIN field. The 12-byte 1255, disk, and diskette ERBs are located in the variable nucleus of main storage. They are chained together from field QHDERB in the queue header area of main storage.

Note: ERBs are not created for BSC.

Format

Figure 2-100 shows the format of an ERB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ERBDCHN	2	Chain field
02	ERBDDVI	1	Device ID
03	ERBDQHD	1	Queue header displacement

Figure 2-100 (Part 1 of 4). Format of an Error Request Block (ERB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	ERBDCTL	1	Error recovery procedure control:
			Hex *Meaning*
			F0 Mask to set off zone bits to check function
			80 The error request block is in use, awaiting main storage action
			40 Control storage router operation completed
			20 Main storage error request block operation has been completed
			10 Ready response was a second error
			0F ERB in process if any bit on
			08 Reserved
			07 Get error MIC number
			06 Perform error recovery
			05 Issue message
			04 Wait for not-ready to ready or message response
			03 Device readied—erase previously sent message
			02 Reserved
			01 Reserved
			00 Function not valid (do not use)

Figure 2-100 (Part 2 of 4). Format of an Error Request Block (ERB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	ERBDFLG	1	Flag byte: *Hex* *Meaning* 80 Place terminal ID in the message 40 Place 4-byte error code in the last four positions of the text message 20 No response required for informational message 10 Do not attempt to log this error For display station error recovery: 08 Terminal unit block posted complete with error (command processor only) 04 This error recovery block is in retry mode 03 Resources unavailable 02 Hardware error 01 Programming error 00 Reserved For diskette, disk and 1255 error recovery: 01 Error task is swappable For MLCA error recovery: 01 Log to CE trace area 00 Log to user trace area
06	ERBDCPA	1	Command processor AID (old equate value)
	or ERBDERA	1	Error AID byte (new equate value): *Hex* *Meaning* 01 I/O error has occurred 00 Normal error request AID byte value
07	ERBDMIC	2	MIC number

Figure 2-100 (Part 3 of 4). Format of an Error Request Block (ERB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	ERBDOPT	1	MIC options: *Hex* *Meaning* F0 D option was selected 80 Option 0 was selected 40 Option 1 was selected 20 Option 2 was selected 10 Option 3 was selected 08 Option 0 is allowed 04 Option 1 is allowed 02 Option 2 is allowed 01 Option 3 is allowed
0A	ERBDLN1	1	Length of work station terminal unit block error request block
	or ERBDACE	2	Action control element address
0B	ERBDLEN	1	Length of ERB

Figure 2-100 (Part 4 of 4). Format of an Error Request Block (ERB)

Event Control Block

This 4-byte area is used to control the status of system events. These include input/output events such as disk and diskette as well as events defined to provide communications between main storage tasks.

How to Find

Event control masks are the first two bytes of each IOB. For any active event, the field ACEXR1 of the ACE points to the event control mask.

Format

Figure 2-101 shows the format of an event control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ECMPARM	1	Parameter byte offset: *Hex* *Meaning* 80 Do not skip on multiple wait indicator 40 Data address in IOB is real indicator 28 Syslog indicator 27 CSB transfer indicator 26 Test and set indicator 25 OCL command indicator 24 Timer event control mask indicator 23 Job queue detach indicator 22 Inquiry indicator 21 I/O error indicator 20 Task-task communications indicator 00 Not used
01	ECMMASK	1	Event control mask offset: *Hex* *Meaning* 80 Event active 40 Event control block complete 20 Reserved 10 Lock bit 08—01 Completion code
02	ECMGW	2	Event control mask — general wait mask field (The bits in this field correspond to the bits in fields TCBWMASK and TCBWMSK2 of the task control block.)

Figure 2-101. Format of the Event Control Block

Evoke List

The evoke list is passed from SSP-ICF data management to the subsystem. This 24-byte area is used to communicate the evoke operation parameters from the user program to the subsystem.

How to Find

Label XSBXPRM@ in the translated session unit block and label SUBXPRM@ in the session unit block contain the address of the evoke list with an evoke operation from SSP-ICF data management.

Format

Figure 2-102 shows the format of the evoke list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ICEUID	8	User ID
08	ICELNAM	8	Library name
10	ICEPWRD	8	Password

Figure 2-102. Format of the Evoke list

Evoke Parameter List

The evoke parameter list is in user program area. This 10-byte area is used to communicate the evoke parameters between the user program and SSP-ICF data management.

How to Find

If the operation code is EVOKE, the work station DTF used to issue the request points to the evoke parameter list (label $WSPLA).

Format

Figure 2-103 shows the format of the evoke parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$EVKPNM@	2	Address of procedure name
02	$EVKUID@	2	Address of user ID
04	$EVKLNM@	2	Address of library name
06	$EVKPWD@	2	Address of password
08		2	End of list indication
0A	$EVKULNG		Length of evoke parameter list

Figure 2-103. Format of the Evoke Parameter List

Extended Subsystem Configuration Record (XSCR)

An extended subsystem configuration record exists for each active SSP-ICF subsystem.

How to Find

The SSP-ICF common queue space contains extended subsystem configuration records. SSP-ICF common queue space is a non-swappable translatable area in main storage allocated when the first SSP-ICF subsystem is enabled. This SSP-ICF common queue space is addressable by each SSP-ICF subsystem task.

To find an extended subsystem configuration record, first find the subsystem control table. The subsystem control table contains the address of the extended subsystem configuration record.

On entry to the subsystem at initial enable, XR1 points to the leftmost byte of the extended subsystem configuration record. On a subsequent enable or on a disable, XR2 points to the leftmost byte of the extended subsystem configuration record. Also, label SUBXSCR@ in the session unit block contains the address of the leftmost byte of the extended subsystem configuration record associated with that session.

Format

Figure 2-104 shows the format of the extended subsystem configuration record.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to all subsystems:			
00	XSCDFLAG	1	Flag bits for subsystem set by enable or disable: *Hex* *Meaning* 80 Enable request 40 First enable request for subsystem 20 First enable request for a protocol—SNA or BSC 10 Subsystem is completely enabled (ready for acquires, subsystem sets) 08 Disable request 04 If bit 6 is on, bit 5 has the following meanings: On—initial post for disable pending from disable ($IEDS) Off—post for disable pending is complete—no more sessions from ICSDM If bit 6 is off, bit 5 has the following meaning: On—abnormal termination 02 Pending the disable—do not allow any new sessions 01 Terminate active sessions
01	XSCDICFR	2	Reserved for SSP-ICF control
03	XSCDLIN# and XSCDTRCE	1	The numeric portion of this byte contains the line number (0 for intra). The zone portion of this byte contains the trace information (if bit 0 is on, log trace is active; if bit 1 is on, extended trace is active).
04	XSCDC#AS	1	Current number active sessions (Set by subsystems, checked by subsystems. Not used by disable or ICSDM. Session unit block chain is scanned to determine active sessions.)

Figure 2-104 (Part 1 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	XSCDTCB@	2	Address of subsystem task control block (set before communication protocol called)
07	XSCDSCT@	2	Address of subsystem control table—for program start
09	XSCDQSQ@	2	Address of subsystem queue space queue header (0—no subsystem queue space, use common queue space) (subsystem queue space queue header is at 24K or more so just check left byte for zero)
0B	XSCDLGSS	3	SSS of push area for SYSLOG
0E	XSCDTB@	2	Address of trace buffer entry
10	XSCDTBL	1	Length of trace buffer entry (16/32)
11	XSCDLOC@	2	Address of location name element (0 for peer)
13	XSCDSRS1	3	Reserved
16	XSCDFLG2	1	Flag byte 2 for subsystems: *Hex* *Meaning* 80 Allow second disable 40 Nonsubsystem sessions active 01 Automonitor line at termination
17	XSCDSRES	3	Reserved
The following fields come from the subsystem configuration record:			
1A	XSCDSBID	1	Task ID for the subsystem
1B	XSCDQSSZ	1	Size of subsystem queue space in 2K pages

Figure 2-104 (Part 2 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C	XSCDCNFG	1	Flag bits from subsystem configuration record: *Hex* *Meaning* 80 On—subsystem is swappable
1D	XSCDRSV	2	Reserved
1F	XSCDCNTR	2	SCR count for subsequent enable
21	XSCDCRES	4	Reserved
The following fields are only for the intra subsystem:			
25	XSCDISNS	8	Sense buffer
2D	XSCDIEIB	2	EIB queue header
The following fields are common to all communications subsystems:			
25	XSCDMXRL	2	Maximum user record length
27	XSCDST@	1	Station address (address of this line on a multipoint network)
	or XSCDLS@	1	Local (SDLC) station address
28	XSCDLTYP	1	Line type byte—shared with switch type using bits 4—7 for line type: *Hex* *Meaning* 0C Switched point-to-point line 08 Multipoint line 04 Nonswitched point-to-point line 00 Direct attach bits (all numeric being off—twinaxial)

Figure 2-104 (Part 3 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28 (cont.)	and XSCDSTYP	1	Switch type byte—shared with line type (using bits 0–3 for switch type): *Hex* *Meaning* 40 Manual call 20 Manual answer 10 Auto answer
29	XSCDCF1	1	Hardware byte 1, from the communications configuration record for the system console: *Hex* *Meaning* 80 Japanese modem 40 Clocking 20 IBM modem 10 World Trade answer tone 08 Switched network backup 04 Multipoint line 02 Switched line 01 Nonswitched point-to-point
2A	XSCDQHDR	1	Communications line queue header
2B	XSCDCF2	1	Format as in the communications configuration record for the system console (see Figure 2-57)
2C	XSCDCF4	1	Hardware byte 4, from the communications configuration record: *Hex* *Meaning* 08 Subsystem on X.21 line 04 Autocall installed on port 4 03 Autocall installed on port 3 02 Autocall installed on port 2 01 Autocall installed on port 1

Figure 2-104 (Part 4 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to the BSC subsystems:			
2D	XSCDTRN@	2	Translate code—address in common queue space
2F	XSCDTR1@	2	Translate table one—address in common queue space
31	XSCDTR2@	2	Translate table two—address in common queue space
33	XSCDBIQH	2	IOB queue header for interrupt handler
35	XSCDBIDQ	2	Switch line remote ID queue header
The following 5 bytes are for a dummy BSC unit block:			
37	XSCDBSBI	1	Subsystem task ID
38	XSCDBIHI	1	Interrupt handler task ID
39	XSCDBRTC	1	BSC unit block return code
3A	XSCDBMOD	1	BSC unit block modifier
3B	XSCDBOP	1	BSC unit block operation code
3C	XSCDBERC	1	Error retry count
3D	XSCDBWKA	2	Work area for IMS
	or		
	XSCDBAST	2	Address of active session table—CCP and CICS
3F	XSCDBLST	2	Length of active session table
41	XSCDBPN@	2	Address of phone list

Figure 2-104 (Part 5 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
43	XSCDBFLG	1	BSC flag byte: *Hex* *Meaning* 80 On—use ASCII code (not applicable to IMS) 40 On—send SSP-ICF messages (not applicable to IMS, CICS, or CCP) 20 On—multiple session at subsystem 10 On—transparency (not applicable to IMS) 08 Error-processing transient has run to clean up sessions 04 Refresh phone list
44	XSCDBWTM	2	Wait time (always 999 for IMS)
46	XSCDBLID	15	Local switched ID (not applicable for IMS) (for CCP, the incoming local ID)
55	XSCDBRID	15	Remote switched ID (not applicable to IMS) (not applicable to BSCEL if multiple remote IDs)
The following fields are common to the BSC IMS subsystem:			
46	XSCDMPRC	8	Name of procedure for inactive destination file
4E	XSCDMLIB	8	Library that contains procedure
56	XSCDMRPT	2	Remote physical terminal
58	XSCDMPT1	2	Local physical terminal 1
5A	XSCDMPT2	2	Local physical terminal 2
5C	XSCDMPT3	2	Local physical terminal 3
5E	XSCDMPT4	2	Local physical terminal 4
60	XSCDMPT5	2	Local physical terminal 5

Figure 2-104 (Part 6 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
62	XSCDMPT6	2	Local physical terminal 6
64	XSCDMPT7	2	Local physical terminal 7
66	XSCDMPT8	2	Local physical terminal 8
68	XSCDMPT9	2	Local physical terminal 9
6A	XSCDMPTA	2	Local physical terminal 10
6C	XSCDMPTB	2	Local physical terminal 11
6E	XSCDMPTC	2	Local physical terminal 12
70	XSCDMPTD	2	Local physical terminal 13
72	XSCDMPTE	2	Local physical terminal 14
74	XSCDMPTF	2	Local physical terminal 15
76	XSCDMDC0	2	Stopper for physical terminals—always 0
The following field is common to the BSCEL subsystem:			
64	XSCDQFLG	1	BSCEL flag byte: *Hex* *Meaning* 80 Reserved 40 On—multiple remote IDs 20 On—partner attribute Off—normal 10 ITB mode 08 3740 multiple files 04 Reserved 02 Truncation 01 Compression 00 No compression/truncation
65	XSCDQRCS	1	Record separator character

Figure 2-104 (Part 7 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
66	XSCDQBLK	2	Block length
68	XSCDQLW@	90	Line work area (66 bytes) and message control element (24 bytes)

The following fields are common to the BSC CICS subsystem:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
64	XSCDCPF1	1	Pool address byte 1: *Hex* *Meaning* 80 Address AA in the pool 40 Address BB in the pool 20 Address CC in the pool 10 Address DD in the pool 08 Address EE in the pool 04 Address FF in the pool 02 Address GG in the pool 01 Address HH in the pool
65	XSCDCPF2	1	Pool address byte 2: *Hex* *Meaning* 80 Address II in the pool 40 Address JJ in the pool 20 Address KK in the pool 10 Address LL in the pool 08 Address MM in the pool 04 Address NN in the pool 02 Address OO in the pool 01 Reserved

Figure 2-104 (Part 8 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
66	XSCDCDF1	1	Defined address byte 1: *Hex* *Meaning* 80 Address AA is defined 40 Address BB is defined 20 Address CC is defined 10 Address DD is defined 08 Address EE is defined 04 Address FF is defined 02 Address GG is defined 01 Address HH is defined
67	XSCDCDF2	1	Defined address byte 2: *Hex* *Meaning* 80 Address II is defined 40 Address JJ is defined 20 Address KK is defined 10 Address LL is defined 08 Address MM is defined 04 Address NN is defined 02 Address OO is defined 01 Reserved
68	XSCDCPRC	8	Name of procedure for inactive destination file
70	XSCDCLIB	8	Library that contains procedure
78	XSCDCFLG	1	Flag byte for CICS
79	XSCDCWRK	30	CICS work field

Figure 2-104 (Part 9 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Following is a description of this 30 byte work field:			
00	MCEECM	2	Event control mask save area
02	MCESV1	2	Caller's XR1 save area
04	MCESV2	2	Caller's XR2 save area
06	MCEARR	2	Caller's ARR save area
08	LOCATION	8	Location name in XSCR work area
10	IBCXSCRA	2	Forward XSCR chain pointer
12	IBCXSCRB	2	Backward XSCR chain pointer
14		10	Reserved
The following fields are common to all BSC CCP subsystems:			
64	XSCD3PF1	1	Pool address byte 1: *Hex* *Meaning* 80 Address AA in the pool 40 Address BB in the pool 20 Address CC in the pool 10 Address DD in the pool 08 Address EE in the pool 04 Address FF in the pool 02 Address GG in the pool 01 Address HH in the pool

Figure 2-104 (Part 10 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
65	XSCD3PF2	1	Pool address byte 2: *Hex* *Meaning* 80 Address II in the pool 40 Address JJ in the pool 20 Address KK in the pool 10 Address LL in the pool 08 Address MM in the pool 04 Address NN in the pool 02 Address OO in the pool 01 Reserved
66	XSCD3DF1	1	Defined address byte 1: *Hex* *Meaning* 80 Address AA is defined 40 Address BB is defined 20 Address CC is defined 10 Address DD is defined 08 Address EE is defined 04 Address FF is defined 02 Address GG is defined 01 Address HH is defined

Figure 2-104 (Part 11 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
67	XSCD3DF2	1	Defined address byte 2: *Hex* *Meaning* 80 Address II is defined 40 Address JJ is defined 20 Address KK is defined 10 Address LL is defined 08 Address MM is defined 04 Address NN is defined 02 Address OO is defined 01 Incoming address defined
68	XSCD3FLG	1	Flag byte: *Hex* *Meaning* 80 On—sign on at enable Off—sign on at acquire 40 On—queueing yes
69	XSCD3LID	15	Outgoing local ID
78	XSCD3PAS	6	CCP password
7E	XSCD3DME	6	Data mode escape sequence
84	XSCD3DHM	1	Displacement of unsolicited host messages: *Hex* *Meaning* 80 Display at system console 40 Log to history file only 00 Ignore if bits 0 and 1 are off
85	XSCD3WRK	30	Work field for CCP

Figure 2-104 (Part 12 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Following is a description of this 30 byte work field:			
00	LINEID	1	ID of session currently owning line
01	LINETCB	2	TCB address of user owning line
03		1	Not used
04	XSCRPNAM	8	Last procedure started by CCP
0C	XSCRMLN	1	Length of last CCP message received
0D	LINSW	1	Line switch: *Hex* *Meaning* 04 Disconnect received 02 Error message displayed 01 CCP shutdown received
0E	XSCRMCE	11	BSC CCP message control element
19	LASTMSG	3	ID of last message received from CCP
1C	CMNDBFR@	2	Address of command buffers
The following fields are common to SNA subsystems:			
2D	XSCDSDLC	1	Number of 2K pages for SDLC buffers
2E	XSCDS#XB	1	Number of transmit buffers (upline)
	or XSCDS#XP	1	Number of pages for transmit buffers (peer)

Figure 2-104 (Part 13 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2F	XSCDS#RB	1	Number of receive buffers (upline)
	or XSCDS#RP	1	Number of pages for receive buffers (peer)
30	XSCDSXID	3	Local ID (XID) (upline only)
33	XSCDSM#S	1	Maximum number of active sessions
34	XSCDSRPC	1	Maximum receive pacing count
35	XSCDSTAT	1	SNA status byte (upline only)
36	XSCDSATR	1	SDLC address translation register buffer value (upline)
37	XSCDSBUF	2	SDLC buffer start address (upline)
39	XSCDSCSE	3	Communications work area (COMWA) file begin extent
3C	XSCDSCEE	3	Communications work area (COMWA) file end extent
3F	XSCDSCAT	2	Communications work area allocation table address
41	XSCDSSNC	2	SNA common area address
43	XSCDSSDC	2	SDLC common area address (upline)
45	XSCDSNA@	2	SNA task control block address (upline)
47	XSCDSDL@	2	SDLC task control block address
49	XSCDS#SN	1	Current number of SNA unit blocks on SNA unit block chain (upline only)
4A	XSCDPSTQ	2	Station entry queue header

Figure 2-104 (Part 14 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to the SNA upline subsystems (SNUF and SNA 3270):			
4C	XSCDFLUL	8	Logical unit configuration library name
54	XSCDFLUM	8	Logical unit configuration member name
5C	XSCDFFLG	1	SNA upline flag byte: *Hex* *Meaning* 80 Message request pending 40 Final post complete 20 SNA must post subsystem 10 First request of #IUND
5D	XSCDFPTR	2	SNA unit block chain queue header
5F	XSCDFRES	2	Reserved
61	XSCDFMDF	1	Options taken by operator on message requests
62	XSCDFCHN	2	SNA upline XSCR chain field
64	XSCDFMIC	2	MIC number associated with message request
66	XSCDFMG@	2	Message IOB address
The following fields are common to the SNA upline facility (SNUF) subsystem:			
68	XSCDFLG	1	Flag byte (not used)
69	XSCDFPRC	8	Name of procedure for inactive destination
71	XSCDFLIB	8	Library that contains procedure
79	XSCDFAID	8	Default VTAM application ID (used when ID is not specified on session OCL statement)

Figure 2-104 (Part 15 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
81	XSCDFHNM	1	Default host name (used when host name is not specified on session OCL statement): *Hex* *Meaning* 80 Other protocol specified 40 IMS protocol specified 20 CICS protocol specified
82	XSCDECM@	2	ECM address returned by SYSLOG on message request
84	XSCDSFS1	1	SNA upline facility extended subsystem configuration record status byte 1: *Hex* *Meaning* 80 SSP-ICF upline SNA issued message request 40 Abnormal termination of line 20 Termination pending for line 10 Recovery in progress 08 Disable in progress
85	XSCDRCAL	2	Extended subsystem configuration record recall address
87	XSCDSFCH	2	SNA upline facility chain field for extended subsystem configuration records
89	XSCDLU#1	2	Address of SNA unit block for logical unit 1
8B	XSCDLU#2	2	Address of SNA unit block for logical unit 2
The following fields are common to the SNA peer subsystem:			
4C	XSCDP#ST	1	Number of station entries
4D	XSCDPRPC	1	Receive pacing count

Figure 2-104 (Part 16 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4E	XSCDPFLG	1	Peer flag byte: *Hex* *Meaning* 80 On—primary Off—secondary 40 Auto disconnect 20 On—configuration stays up Off—configuration goes down 10 6-sector format (used by configuration) 08 Reserved 04 Reserved 02 Reserved 01 Reserved
4F	XSCDPRES	6	Reserved
55	XSCDPLCN	8	Local location name
5D	XSCDPBS1	1	Line status: *Hex* *Meaning* 80 Pending XID RSP 40 Pending SNRM complete 20 Line is active 10 Pending disconnect 08 Pending terminate complete 04 Reserved 02 Reserved 01 Reserved

Figure 2-104 (Part 17 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5E	XSCDPBS2	1	Connection status:
			Hex *Meaning*
			80 QSESS sent
			40 QSESS received
			20 Reserved
			10 Reserved
			08 Reserved
			04 RLOCID failed
			02 RLOCID +RSP sent
			01 RLOCID +RSP received
5F	XSCDPBS3	1	Configuration status:
			Hex *Meaning*
			80 Acquire was pended
			40 Hardware error occurred
			20 Re-enable this configuration
			10 Active location disabled
			08 Reserved
			04 Set on line allocated bit
			02 Return to enable after message
			01 SDLC is attached to line
60	XSCDPBS4	1	Reserved
61	XSCDPIOQ	2	Transmit IOB queue header (hex 0000—no transmit IOBs)
63	XSCDPIOB	2	Message IOB address
65	XSCDPECM	2	Event control mask address message
67	XSCDPARR	2	Address to return to after message response
69	XSCDPOPT	1	Option taken to message
6A	XSCDPRQQ	2	IOB request queue (SNA SPUBs)

Figure 2-104 (Part 18 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6C	XSCDPPUQ	2	Physical unit SVC SPUB queue header
6E	XSCDPLDS	2	Length in each disk subarea in COMWA
70	XSCDPSID	1	SDLC task control block task ID
71	XSCDPOLL	2	Address of primary SDLC poll list
73	XSCDPEIO	2	Address of error IOB for asynchronous error transient usage
75	XSCDPRQH	2	Receive IOB restart queue header
77	XSCDPPSB	2	Pseudo SPUB address
79	XSCDPSSV	2	Station entry address save area (switched line)
7B	XSCDSVXS	2	Address of XSUB save area during pended acquire on switched line (CQS)
7D	XSCDRWPL	2	Address of #PDLH parameter list (SQS)
7F	XSCDPPCT	1	Global disable post count
80	XSCDPBUF	2	Internal buffer address
82	XSCDPWTQ	2	Buffer wait queue header
84	XSCDPCNT	1	Buffer request count
85	XSCDPRSW	3	Reserved
The following fields are common to all BSC 3270 device emulation subsystems:			
2D	XSCD7WTM	2	Wait time
2F	XSCD7TPR	8	Printer translation table name
37	XSCD7TWS	8	Work station translation table

Figure 2-104 (Part 19 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3F	XSCD7TTL	8	Translation table library
47	XSCD7LBL	2	Line buffer length
49	XSCD7DAL	–	Beginning of device entry table

The following table contains 32 entries. Each entry is 5 bytes in length and of the following format:

00	XSCD7DID	2	Device ID
02	XSCD7DTP	1	Device type: *Hex* *Meaning* 10 Numeric lock for 3277 08 3277 04 UC/LC 02 3288 01 Program
03	XSCD7XTA	2	Reserved
E9	XSCD7ERC	1	Error retry count
EA	XSCD7LB1	2	Line buffer 1 address
EC	XSCD7LB2	2	Line buffer 2 address
EE	XSCD7HB@	2	Hold buffer address
F0	XSCD7RIB	2	RIT information block address
F2	XSCD7RIT	2	RIT address
F4	XSCD7XSB	2	XSUB address
F6	XSCD7XSS	2	XSSB address
F8	XSCD7SQF	2	XSBQ forward pointer

Figure 2-104 (Part 20 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
FA	XSCD7SQB	2	XSBQ backward pointer
FC	XSCD7FLG	1	3270 flag byte: *Hex* *Meaning* 04 RIT interlock bit 02 Interrupt handler attached

The following fields are common to all SNA 3270 device emulation subsystems:

68	XSCD0TPR	8	Printer translation table name
70	XSCD0TWS	8	Work station translation table
78	XSCD0TTL	8	Translation table library
80	XSCD0RS1	2	Reserved
82	XSCD0RS2	6	Reserved
88	XSCD0DAL	–	Beginning of device entry table

The following table contains 16 entries. Each entry is 6 bytes in length and of the following format:

00	XSCD0LU#	1	Logical unit number
01	XSCD0DID	2	Device ID
03	XSCD0DTP	1	Device type: *Hex* *Meaning* 10 Numeric lock for 3277 08 3277 04 UC/LC 02 3288
04	XSCD0XTA	2	Reserved

Figure 2-104 (Part 21 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
E8	XSCD0FL1	1	Flag byte 1: *Hex* *Meaning* 80 SNA 4/4 has terminated 40 SNA 4/4 message 20 'Drop link' requested by 3270 subsystem 10 Subsystem has posted SNA with terminate 08 Line error recovery in progress 04 Disable in progress 02 Non-pended base XSCR disable in progress 01 Last device emulator (post base XSCR to subsystem)
E9	XSCD0FL2	1	Flag byte 2
EA	XSCD0CHN	2	XSCR chain
EC	XSCD0RIT	2	RIT address
EE	XSCD0RCL	2	Recall address
F0	XSCD0SCH	2	XSCR SNUB chain
F2	XSCD0DE#	1	Number of active device emulation tasks
F3	XSCD0RS3	1	Reserved
F4	XSCD0MIC	2	MIC number
F6	XSCD0RS4	2	Reserved
F8	XSLS3270	1	Length of XSCR for SNA 3270

Figure 2-104 (Part 22 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to the finance subsystem:			
4C	XSCDZ#ST	1	Number of station entries
4D	XSCDZTLS	2	Total number of logical work stations
4F	XSCDZRES	6	Reserved
55	XSCDZLST	1	Line status: *Hex* *Meaning* F0 Reset mask (line closed) 80 Line is open 40 Line open in progress 20 Termination in progress 10 Detach to be sent 08 Reserved 04 Reserved 02 Reserved 01 Reserved
56	XSCDZWTD	1	Work to do: *Hex* *Meaning* 80 Activation 40 Deactivation 20 Processing SDLC hardware error 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
57	XSCDZTIQ	2	Transmit IOB queue header

Figure 2-104 (Part 23 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
59	XSCDZWIQ	2	Finance subsystem logical unit blocks waiting for transmit IOB queue
5B	XSCDZPL@	2	Poll list segment address
5D	XSCDZDAT	2	Disk allocation table address
5F	XSCDZMI@	2	Message IOB address
61	XSCDZBE@	2	Message event control mask address
63	XSCDZRSQ	2	Restart IOB queue header
65	XSCDZRSW	4	Reserved

The following equates map an XSCR station entry:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	XSCDPSTC	1	Station flag byte: *Hex* *Meaning* 80 On—delayed entry (finance subsystem) On—primary (SNA peer only) Off—secondary (SNA peer only) 40 On—automatic recovery (finance subsystem) 20 Activate system monitor session (finance subsystem) 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Location activated at enable
01	XSCDPLOC	8	Remote location name

Figure 2-104 (Part 24 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	XSCDPFL1	1	Station flag byte 1: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Station being enabled 10 Station enabled 08 Station disable request 04 If bit 6 is on, bit 5 has the following meanings: On—initial post for disable pending from disable ($IEDS) Off—post for disable pending is complete—no more sessions from ICFDM If bit 6 is off, bit 5 has the following meaning: On—abnormal termination 02 Pending the disable—do not allow any new sessions 01 Terminate active sessions 00 New station (not enabled)
0A	XSCDPFL2	1	Station flag byte 2: *Hex* *Meaning* 80 Flag SUBs—post users set by subsystem for #IED3 40 Non SUB sessions active 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Figure 2-104 (Part 25 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	XSCDPSEC	2	Station entry chain field (zeroes if this is the last station entry)
0D	XSCDPLC@	2	Address of location name element (LOC) in system queue space
0F	XSCDPBX@	2	Leftmost address of base XSCR
11	XSCDPPN@	2	Address of phone list
13	XSCDPLN#	1	Line number (trace bits in zone)
SNA peer subsystem only fields:			
14	XSCDPST@	1	SDLC station address
15	XSCDPMXA	1	Maximum number of sessions
16	XSCDPMXP	1	Number of pre-established sessions
17	XSCDSPOL	1	Remote station slow poll value
18	XSCDMLOC	1	Maximum number of I-frames sent before NSA
19	XSCDPRS1	10	Reserved
23	XSCDPACT	1	Active session count
24	XSCDPAVL	1	Pre-established session pool count

Figure 2-104 (Part 26 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
25	XSCDPSS1	1	Station line status: *Hex* *Meaning* 80 Not used at station level 40 Pending SNRM complete 20 Line is active 10 Pending disconnect 08 Not used at station level 04 Reserved 02 Reserved 01 Reserved
26	XSCDPSS2	1	Station connection status: *Hex* *Meaning* 80 QSESS sent 40 QSESS received 20 Reserved 10 Reserved 08 Reserved 04 RLOCID failed 02 RLOCID +RSP sent 01 RLOCID +RSP received

Figure 2-104 (Part 27 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
27	XSCDPSS3	1	Station action flags: *Hex* *Meaning* 80 Active sessions gone for auto-disconnect station 40 Free all SPUBs 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
28	XSCDPSS4	1	Reserved
29	XSCDPLSM	16	LSID in use mask table
39	XSCDPSB@	1	Subarea address
3A	XSCDPSTS	2	Physical unit status 1, 2: *Hex* *Meaning* 80 Active 40 De-activated 20 Response pending—active 10 Response pending—de-activated
3C	XSCDPSPB	2	SPUB chain queue header
3E	XSCDPRS2	5	Reserved
43	XSCDPFSM	1	Disable finite state machine: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Disconnect complete for station

Figure 2-104 (Part 28 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
43 (cont.)			*Hex* *Meaning* 10 Disconnect sent for station 08 Release complete for station 04 Release posted to logical unit successful for station 02 QSESS complete for station 01 QSESS sent for station 00 Finite state machine initial state
44	XSCDPSOP	1	Operator response flag: *Hex* *Meaning* 80 0 option taken 40 1 option taken 20 2 option taken 10 3 option taken
45	XSCDPSAR	2	Address to return to after global message response
47	XSCDPSEM	2	ECM address for station message
49	XSCDPSRW	4	Reserved
Finance subsystem only fields:			
14	XSCDZST@	1	SDLC station address
15	XSCDZMXA	1	Maximum number of sessions
16	XSCDZXID	3	Remote ID
19	XSCDZRS1	10	Reserved

Figure 2-104 (Part 29 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
23	XSCDZCS1	1	Controller status byte 1: *Hex* *Meaning* 80 Activate this physical unit 40 Physical unit activation in process 20 Physical unit active 10 Call logical unit activation 08 De-activate this physical unit 04 Activation/de-activation error 02 Option 2 taken to data set not ready message 01 De-activation in process
24	XSCDZCS2	1	Controller status byte 2: *Hex* *Meaning* 80 Station not communicating —permanent 40 Station not communicating —recoverable 20 Reactivate this physical unit 10 Delayed entry—this activation 08 Automatic recovery—this activation 04 Station address not unique 02 Error IOB received 01 Reserved
25	XSCDZPS	1	Primary session finite state machines—send
26	XSCDZPCN	1	Control normal finite state machines
27	XSCDZSE@	2	Syslog event control mask address
29	XSCDZEX@	2	ARR for option to message

Figure 2-104 (Part 30 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2B	XSCDZMIC	2	MIC number to be displayed
2D	XSCDZOPT	1	MIC options
2E	XSCDZFLQ	2	Finance subsystem logical unit block (FLUB) chain queue header
SNA 3270 subsystem and SNUF only fields:			
14	XSCDSSCP	2	SSCPID
16	XSCDFFLI	1	Station entry flag byte: *Hex* *Meaning* 80 Station count flag
17	XSCDNGRM	2	Next group member address
19	XSCDGRPH	2	Group header address
The following 5 fields are for SNA 3270 only:			
1B	XSCD0SQH	2	SNA unit block (SNUB) queue header
1D	XSCD0SF1	1	Station entry flag byte: *Hex* *Meaning* 80 Last device emulator—post station XSCR to subsystem 40 Last device emulator has posted subsystem
1E	XSCD0DV#	1	Number of active device emulation tasks
1F	XSCL0STN	1	Length of SNA 3270 station entry

Figure 2-104 (Part 31 of 31). Format of the Extended Subsystem Configuration Record (XSCR)

Extended Translated Address Mapping Control Block

The extended translated address mapping (EXAM) control block is a 40-byte area of main storage assigned from system queue space to track 2K pages of storage assigned to an EXAM space.

How to Find

Label QHDEXAM in the system queue header contains the address of the extended translated address mapping (EXAM) control block.

Format

Figure 2-105 shows the format of the extended translated address mapping control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	AMID	1	ID field
01	AMCHN	2	Chain field
03	AMSTART	1	Start position field
04	AM2KSIZE	1	2K size field
05	AMXTNDSZ	1	Extended size field
06	AMOWNERQ	2	Owner queuing field (AQE)
08	AMATRS	32	ATR entries

Figure 2-105. Extended Translated Address Mapping Control Block

EXTN Parameter List

This variable-length area is used to request an EXTN task to process the extended characters and maintain the RCL (RAM content list) of a work station.

How to Find

XR1 points to the EXTN parameter list in system queue space when the requesting program calls an EXTN task.

Format

Figure 2-106 shows the format of the EXTN parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	GPLECM	2	Event control mask for EXTN
02	GPLCODE	1	Operation code for EXTN task: *Hex* *Meaning* 80 CGU update/delete request 64 System restore request 60 User restore request 48 EXTN AID request The following three operation codes are to convert EXTN to RAM address 42 Output to printer 41 Last output to display 40 Output to display 24 System save request 20 User save request 10 Input from display (RAM address to EXTN conversion)
03	GPLFLAG	1	Error indication from EXTN task: *Hex* *Meaning* 88 Permanent error detected on load RAM to work station 84 Permanent error detected on load RAM to printer

Figure 2-106 (Part 1 of 2). Format of the EXTN Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03 (cont.)			*Hex* *Meaning* 48 #EXTN is not restored 44 #EXTN file is not allocated for this EXTN code 42 Undefined EXTN code 41 Invalid EXTN code 20 RAM full 14 Invalid RAM address 00 Normal completion
04	GPLTUBID	2	Logical TUB ID
If label GPLCODE is hex 42, 41, 40, or 10:			
06	GPLGJAD	1	Beginning of EXTN or RAM addresses (EXTN data addresses and delimiter): *Hex* *Meaning* FF Delimiter of EXTN parameter list for output or input request
If label GPLCODE is hex 60 or 20:			
06	GPLURSSS	3	Disk address for RAM contents list
If label GPLCODE is hex 80:			
06	GPLCGUGJ	2	EXTN code updated/deleted
If label GPLCODE is hex 64 or 24:			
06	GPLSYSOF	1	Offset of RCL save area

Figure 2-106 (Part 2 of 2). Format of the EXTN Parameter List

EXTN Terminal Unit Block

This 18-byte area is used to save work station data that is used to process extended characters.

How to Find

Fields TUBDGTUB (for display stations) and TUBPGTUB (for printers) in the terminal unit block (TUB) contain the address of the EXTN terminal unit block.

Format

Figure 2-107 shows the format of the EXTN terminal unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	GXTAID	2	EXTN hex code entered from the display station
02	GXTRSS@	2	Disk address of RCL save area
04	GXTRSTG@	2	RCL start address in EXTN task
06	GXTPTR1	2	Next available RAM entry in RCL
08	GXTPTR2	2	Next RAM entry used for a work station data management output operation
0A	GXTATTR1	1	Attribute byte: *Hex* *Meaning* 80 RCL must be built 40 Sync bit (all RAM entries available) 20 EXTN input AID pending 08 512 RAM installed 04 256 RAM installed

Figure 2-107 (Part 1 of 2). Format of the EXTN Terminal Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	GXTATTR2	1	Attribute byte: *Hex* *Meaning* 08 0 option taken on invalid EXTN 04 0 option taken on undefined EXTN 02 0 option taken on EXTN out of #EXTN 01 0 option taken on #EXTN not restored
0C	GXTSVCN@	2	Disk address of RCL save area for console mode
0E	GXTSVINQ	2	Disk address of RCL save area for inquiry mode
10	GXTUTCB@	2	Save area of owner TCB address of the display station
12	GXTRSVD	6	Reserved

Figure 2-107 (Part 2 of 2). Format of the EXTN Terminal Unit Block

File Control Block (62EH)

The 62EH file control block (FCB) is a 15-word control storage block built for each disk drive on the system. The FCB is used to pass parameters between FDIOS and FDIOCH and also as a save area for each of these routines for information pertinent to that disk drive. The entire FCB must be within a 256-byte boundary and is filled in by FDIOS before calling the FDIOCH routine.

How to Find

Fields D0FDACF@ and D0FDBCF@ in the control storage direct area 0 contain the address of the FCBs for drive A and drive B, respectively.

Format

Figure 2-108 shows the format for a 62EH FCB.

Displ of Leftmost Word in Hex	Label	Lng in Words in Dec	Description
00	FCBCSDA	1	Control status (H) device address (L): *Hex* *Meaning* 80 No-op all further operations 40 Alternate sector in process 20 Not valid seek 10 Equipment check 08 No record found 04 Last SIO had unsafe active 02 IL1 in use for this spindle 01 Seek check or error recovery procedure in process
Operation control field—ID of sector to be processed:			
01	FCBNF	1	N-byte (H)—ID flag byte (L)
02	FCBCC	1	ID cylinder address
03	FCBHS	1	H-byte (H)—sector byte (L)
Data area pointers and mapping information:			
04	FCBDFAB	1	Data field address register
05	FCBTCB@	1	Task control block address
Operation counters for this spindle:			
06	FCBRVC	1	Read verify count
07	FCBWRC	1	Write data count
08	FCBRDC	1	Read data/scan count
09	FCBSKC	1	Nonzero seek count

Figure 2-108 (Part 1 of 2). Format of a File Control Block (62EH)

Displ of Leftmost Word in Hex	Label	Lng in Words in Dec	Description
Current access location parameters:			
0A	FCBCHD	1	Current head (H)—not used (L)
0B	FCBCCYL	1	Current cylinder address
0C	FCBPVC	1	Previous cylinder address
Current operation parameters:			
0D	FCBRQ	1	R-byte (H)—Q-byte (L)
0E	FCBACE@	1	Action control element address

Figure 2-108 (Part 2 of 2). Format of a File Control Block (62EH)

File Control Block (62PC)

The 62PC file control block (FCB) is a 16-word control storage block built for each disk drive on the system. The FCB is used to pass parameters between FDIOS and FDIOCH and also as a save area for each of these routines for information pertinent to that disk drive. The entire FCB must be within a 256-word boundary and is filled in by FDIOS before calling the FDIOCH routine.

How to Find

Fields D0FDACF@, D0FDBCF@, D0FDCCF@, and D0FDDCF@ in the control storage direct area 0 contain the address of the FCBs for drive A, drive B, drive C, and drive D respectively.

Format

Figure 2-109 shows the format of a 62PC file control block.

Displ of Leftmost Word in Hex	Label	Lng in Words in Dec	Description
00	FCBCSDA	1	Control status (device address): *Hex* *Meaning* 40 Invalid I/O buffer address 10 Drive busy 08 Indicates this op uses ATRs 04 Indicates if op using data channel 02 ERP in process 01 File reset required
Current operation parameters:			
01	FCBRQ	1	R-byte (Q-byte)
02	FCBCMND	1	Reserved (cap command byte)
Operation control field—ID of sector to be processed:			
03	FCBNF	1	N-byte (F-byte)
04	FCBCC	1	Cylinder byte
05	FCBHS	1	H-byte (S-byte)
Data area pointers and mapping information:			
06	FCBDFAR	1	Data field address register
07	FCBTCB@	1	Task control block address
Operation counters for this spindle:			
08	FCBRVC	1	Read verify count
09	FCBWRC	1	Write data count
0A	FCBRDC	1	Read data/scan count
0B	FCBSKC	1	Non-zero seek count

Figure 2-109 (Part 1 of 2). Format of a File Control Block (62PC)

Displ of Leftmost Word in Hex	Label	Lng in Words in Dec	Description
Current access location parameters:			
0C	FCBCCYL	1	Current cylinder
0D	FCBPVC	1	Previous cylinder
Current operation parameters:			
0E	FCBACE@	1	ACE address
0F	FCBCIS	1	Reserved (channel interface status—adapter check)

Figure 2-109 (Part 2 of 2). Format of a File Control Block (62PC)

File Position Control Block

A file position control block (FPCB) is generated for each IFILE user processing the file sequentially by key.

How to Find

Field F1ADPCBQ in main storage resident IFILE format 1s is the beginning of a chain of file position control blocks—one for each appropriately open DTF.

Format

Figure 2-110 shows the format of the file position control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FPCBDCID	1	Parameter list ID (P)
01	FPCBDLEN	1	Length

Figure 2-110 (Part 1 of 3). Format of the File Position Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	FPCBFCHN	2	Forward chain pointer
04	FPCBDTF@	2	DTF address
06	FPCBF1AD	2	F1 (AFA) pointer
08	FPCBTCB@	2	TCB address
0A	FPCBRSV0	2	Reserved (must be zeros)
0C	FPCBCURK	1	Offset, current key (low order)
0D	FPCBPRMK	1	Offset, next—PRM key (low order)
0E	FPCBOVFK	1	Offset, next—OVF key (low order)
0F	FPCBFLG1	1	Flag byte 1: *Hex* *Meaning* 80 Dual index buffers 40 Next prime in buffer 20 Next overflow in buffer 10 Null overflow 08 End of prime reached 04 End of overflow reached 02 Gaps added since keysort 01 Next winner in overflow
10	FPCBFLG2	1	Flag byte 2 (reserved)
11	FPCBRSV1	1	Reserved (must be zeros)
12	FPCBRSV2	2	Reserved (must be zeros)
14	FPCBRSV3	4	Reserved (must be zeros)
18	FPCBCSDX	4	Relative index SSSD, current

Figure 2-110 (Part 2 of 3). Format of the File Position Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C	FPCBNSDP	4	Relative index SSSD, prime
20	FPCBNSDV	4	Relative index SSSD, overflow
24	FPCBELEN	1	Length equate—size of root FPCB

Figure 2-110 (Part 3 of 3). Format of the File Position Control Block

File Specification Block (FSB)

A file specification block (FSB) contains information about a disk file, diskette file, or a library. A 24-byte type 2 FSB is created when any of the last four parameters (EXTEND, DFILE, IFILE, and BYPASS) of the // FILE OCL statement are specified. An FSB is built and maintained by the scheduler and is chained to a specific job control block (JCB).

How to Find

Field JCBDFSBF in the JCB points to the first entry in the file FSB chain, and field JCBDFSBL in the JCB points to the first entry in the library FSB chain. Field FSBDFCHN in the FSB points to the next FSB in the chain.

Format

Figure 2-111 shows the format of an FSB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FSBDNAME	8	File name
08	FSBDSHAR	1	File share level: *Hex* *Meaning* FF Share level for diskette files FE Share level for remote files
09	FSBDATT1	1	Attribute byte 1: *Hex* *Meaning* 80 Block location specified 40 Size specified 20 File allocated 10 Disposition—old specified 08 Disposition—new specified 04 Disposition—share specified (if bits 3, 4, and 5 are all off, no disposition parameter was specified) 02 High key bucket assigned (used by termination) 01 Type two FSB (24 bytes)
0A	FSBDATT2	1	Attribute byte 2: *Hex* *Meaning* 80 New file being allocated 40 Key sort required 20 Duplicate file specification block for this file 10 Session library file specification block 08 File has been key sorted 04 DTF associated with this file specification block

Figure 2-111 (Part 1 of 2). Format of a File Specification Block (FSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			*Hex* *Meaning* 02 Library file specification block created by a library statement 01 Reserved
0B	FSBDFCHN	2	Forward chain pointer
0D	FSBDF1PT	2	Format 1 pointer
0F	FSBDATT3	1	Attribute byte 3: *Hex* *Meaning* 80 File has been opened 40 File has been closed 20 Reserve area compress required 10 Offline multivolume file 08 File access is for input 04 File access is for output 02 File access is for update 01 File access is for add
The following fields are only supported in a type two FSB:			
10	FSBDEXVL	3	File extend value
13	FSBDATT4	1	Attribute byte 4: *Hex* *Meaning* 80 DFILE parameter specified 40 DFILE-YES specified 20 IFILE parameter specified 10 IFILE-YES specified 08 BYPASS-YES specified
14	FSBDRES1	4	Reserved

Figure 2-111 (Part 2 of 2). Format of a File Specification Block (FSB)

Finance Logical Unit Block (FLUB)

The finance logical unit block (FLUB) is used to control an SSP-ICF—LU session and to contain session status.

How to Find

XSCR field XSCDPSTQ points to the first XSCR station entry. Field XSCDPSEC in the station XSCR entry will point to additional stations. Field XSCDZFLQ in each station XSCR entry points to the first FLUB on the chain.

Format

Figure 2-112 shows the format of the finance logical unit block (FLUB).

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FLFLUBC@	2	FLUB chain address
02	FLSXSCR@	2	XSCR station entry address
04	FLWAITQ	2	Queue of FLUBs waiting for transmit IOB
06	FLWAITAR	2	Return address for this waiting FLUB
Translated session unit block (XSUB) hold area			
08	FLXRCMIN	1	SSP-ICF completion code 1 (minor)
09	FLXRCMAJ	1	SSP-ICF completion code 2 (major)
0A	FLXCMOD	1	SSP-ICF op code modifier (hex 02—end of chain modifier)
0B	FLXCMND	1	SSP-ICF op code
0C	FLXDATA@	2	User data buffer address
0E	FLXOUTL or FLXEFFL	2 2	Output length Effective input length

Figure 2-112 (Part 1 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	FLXASGNL	2	Assigned buffer length
12	FLXSSB@	2	Address of OCL session specification block
14	FLXBXSCR	2	Base XSCR address
16	FLXFLUB@	2	Associated FLUB address
18	FLXBFFLG	1	SSP-ICF buffer status flag: *Hex* *Meaning* 80 Buffer preallocated 40 Data can be on disk 20 Data on disk 10 Negative response allowed 08 Pass through user 04 Parameter list assigned 02 User buffer assigned 01 Don't perform read flag (DM)
19	FLXFACT	2	Pad length for data to SSP-ICF data management
1B	FLXXPRM@	2	Parameter list address
1D	FLXRES1	1	Reserved
1E	FLXRES2	1	Reserved
1F	FLXRES3	1	Reserved
20	FLXRES4	1	Reserved
21	FLXASGN@	2	SSP-ICF assigned buffer address
23	FLXSUB@	2	Associated SUB address (for SSP-ICF control)
25	FLXDSK@	3	Received data disk area start address
28	FLXRECL	2	Maximum user record length

Figure 2-112 (Part 2 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2A	FLXXPRL	2	Length of associated parameter list
2C	FLXBFLG2	1	Buffer flag byte 2: *Hex* *Meaning* 80 Fail op supported
2C	FLXSBR		Rightmost location of XSUB within FLUB
Primary session finite state machines (SSCP, LU)			
2D	FLCPFSM	1	(SSCP, LU).PRI.SESS.SEND: *Hex* *Meaning* F8 Reset mask 80 Active 40 PEND.ACTC.FROM.RESET 20 PEND.RESET 10 PEND.ACTC.FROM.ACTIVE 08 PEND.ACTE 04 Reserved 02 Reserved 01 Reserved
2E	FLCPCFSM	1	(SSCP,LU).CNTL.NORM: *Hex* *Meaning* 80 CNTL.NORM.PEND 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Figure 2-112 (Part 3 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

Primary session finite state machines (LU, LU)

2F	FLLUFSM	1	(PLU,SLU).PRI.SESS.SEND:
			Hex *Meaning*
			E0 Reset mask
			80 Active
			40 PEND.ACTIVE
			20 PEND.RESET
30	FLDTFSM	1	SID.PRI.DT.SEND.TYPE1:
			Hex *Meaning*
			E0 Reset mask
			80 Active
			40 PEND.ACTIVE
			20 PEND.RESET
			10 Reserved
			08 Reserved
			04 Reserved
			02 Reserved
			01 Reserved
31	FLHXFSM	1	FSM.#HDX:
			Hex *Meaning:*
			C0 CONTENTION
			80 SEND
			40 RECEIVE
			20 Reserved
			10 Reserved
			08 Reserved
			04 Reserved
			02 Reserved
			01 Reserved

Figure 2-112 (Part 4 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
32	FLCRFSM	1	FSM.CHAIN.RCV:
			Hex *Meaning*
			C0 Reset mask for between chain
			80 In chain
			40 Purge chain
			20 Reserved
			10 Reserved
			08 Reserved
			04 Reserved
			02 Reserved
			01 Reserved
33	FLSDFSM	1	FSM.#SHUTD.SEND:
			Hex *Meaning*
			F0 Reset mask
			80 Active
			40 PEND.ACTIVE.RSP
			20 PEND.ACTIVE.SHUTC
			10 PEND.RESET
			08 Reserved
			04 Reserved
			02 Reserved
			01 Reserved

The following byte consists of any combination of these bits:

34	FLCSFSM	1	FSM.CHAIN.SEND:
			Hex *Meaning*
			80 IN CHAIN
	FLPRFSM		FSM.PAC.RQ.RCV:
			Hex *Meaning*
			40 PEND

Figure 2-112 (Part 5 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34 (cont.)	FLPSFSM		FSM.PAC.RQ.SEND: *Hex* *Meaning* 20 PACING RSP RECEIVED
	FLCNFSM		FSM.CNTL.NORM: *Hex* *Meaning* 10 PEND
	FLCEFSM		HSID.CNTL.IMMED.EXP: *Hex* *Meaning* 08 BLOCK.RQ
35	FL#TSST1	1	#SBTS status byte 1: *Hex* *Meaning* 80 Dequeue from send pacing queue 40 Send pacing response 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
36	FLSPACQ	2	Send pacing queue (queue to transmit IOBs)
38	FLBSPAC	1	Bind send pacing count

Figure 2-112 (Part 6 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
39	FLBRPAC	1	Bind receive pacing count
3A	FLSPACC	1	Send pacing counter
3B	FLSEQNI	2	Inbound sequence number
3D	FLSEQNO	2	Outbound sequence number
3F	FLRLUA	1	Remote logical unit address
40	FLLLUA	1	Local logical unit address
41	FLDEVTYP	1	Remote device type *Hex* *Meaning* 80 ELU0 device 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
42	FL#LUST1	1	#SBLU status byte 1: *Hex* *Meaning* 80 LU activation in progress 40 LU active 20 LU de-activation in progress 10 Disable pending indicator 08 Send Lustat pending 04 Security check only being performed 02 FLUB has been through #SBNR 01 Reserved

Figure 2-112 (Part 7 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
43	FL#LUST2	1	#SBLU status byte 2: *Hex* *Meaning* 80 Primary can send multiple element chains 40 Reserved 20 Primary bound definite response 10 Primary bound exception response 08 Reserved 04 Reserved 02 Reserved 01 Reserved
44	FL#LUSEQ	2	Network services sequence number save area
46	FL#LUIAR	2	Return address save area
48	FL#LUDAT	4	Lustat data save area
4C	FL#LUUID	8	User ID save area
54	FL#LULIB	8	User library save area
5C	FL#PSST1	1	#SBPS status byte 1: *Hex* *Meaning* 80 Active 40 Procedure start pending 20 Error recovery procedure in progress 10 Insufficient resource (-RSP sent) 08 Buffer too small (-RSP sent) 04 Procedure start rejected 02 Disk I/O error 01 Program start data is on disk

Figure 2-112 (Part 8 of 9). Format of a Finance Logical Unit Block (FLUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5D	FL#PSST2	1	#SBPS status byte 2: *Hex* *Meaning* 80 User waiting for data 40 Data waiting for user 20 Processing chain 10 Purging chain 08 On—write to disk Off—read from disk 04 User waiting for response 02 Reserved 01 Reserved
5E	FL#MGST1	1	#SBMG status byte 1: *Hex* *Meaning* 80 Log to history file only 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
5F	FL#PSMIC	2	MIC number to be displayed
61	FL#PSRAF	2	ARR for return from message
63	FL#PSBUF	2	Assigned buffer address
65	FL#PSABL	2	Assigned buffer length
67	FL#PSRCL	2	Record length (number of received bytes)

Figure 2-112. (Part 9 of 9). Format of a Finance Logical Unit Block (FLUB)

Finance Pacing Queue Control Table

The finance pacing queue control table is used to control the data received for paced sessions. The table contains pointers to data, the length of data, and information about the data.

How to Find

FLUB field FL#PSPQT contains the address of the FPACT.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FPACNEP1	2	Next entry pointer
02	FPACB1@	2	Buffer 1 address
04	FPACB1LG	2	Buffer 1 length of data
06	FPACB1F	1	Buffer 1 flag byte
07	FPACNEP2	2	Next entry pointer
09	FPACB2@	2	Buffer 2 address
0B	FPACB2LG	2	Buffer 2 length of data
0D	FPACB2F	1	Buffer 2 flag byte
0E	FPACNEP3	2	Next entry pointer
10	FPACB3@	2	Buffer 3 address
12	FPACB3LG	2	Buffer 3 length of data
14	FPACB3F	1	Buffer 3 flag byte
15	FPACNEP4	2	Next entry pointer

Figure 2-113 (Part 1 of 2). Format of a Finance Pacing Queue Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
17	FPACB4@	2	Buffer 4 address
19	FPACB4LG	2	Buffer 4 length of data
1B	FPACB4F	1	Buffer 4 flag byte
0C	FPACNEP5	2	Next entry pointer
0E	FPACB5@	2	Buffer 5 address
20	FPACB5LG	2	Buffer 5 length of data
22	FPACB5F	1	Buffer 5 flag byte
23	FPACNEP6	2	Next entry pointer
25	FPACB6@	2	Buffer 6 address
27	FPACB6LG	2	Buffer 6 length of data
29	FPACB6F	1	Buffer 6 flag byte
2A	FPACNEP7	2	Next entry pointer
2C	FPACB7@	2	Buffer 7 address
2E	FPACB7LG	2	Buffer 7 length of data
30	FPACB7F	1	Buffer 7 flag byte

Figure 2-113 (Part 2 of 2). Format of a Finance Pacing Queue Control Table

Find a Library Parameter List

This 12-byte parameter list is required to find a specific library (RIB=X'19'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FLBNAME	8	Library name
08	FLBF1A	2	Address of library format 1 in active format 1 area
0A	FLBDINDC	1	Indicator byte: *Hex* *Meaning* 80 Return if security check fails only CP, which cannot call SYSLG 40 Skip security check, only CPIQ 20 TUB address in F1 field—not JCB 02 Update level request 01 Read level request 00 Execute level request
0B	FLBDERCD	1	Security check fail error code—only if return is requested

Figure 2-114. Format of a Find a Library Parameter List

Format 1 Access Routine Parameter List

This 18-byte area is required for input by the active format 1 access routine (RIB=X'1A'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	AF1DFNCT	1	Function byte: *Hex* *Meaning* 80 Real I/O area address 40 Verify ID 20 Get by label 10 Get by address 08 Get by name 04 Put request 02 Verify date request 01 Move format 1 to user I/O area
01	AF1DRTRN	1	Return code: *Hex* *Meaning* 44 Request not met 41 Not valid request 40 Good completion
02	AF1DF1PT	2	Pointer to format 1
04	AF1DNMLB	8	Format 1 name or label
0C	AF1DUNIT	1	Unit: *Hex* *Meaning* FF No unit specified 10 Diskette format 1 unit 00 Disk format 1 unit
0D	AF1DDATE	3	Date
10	AF1DIOAR	2	Address of user I/O area

Figure 2-115. Format of a Format 1 Access Routine Parameter List

Format 1's (Active)

Active format 1's can be either 64-byte converted disk VTOC format 1's (Figure 2-116), or 56-byte converted diskette data set HDR1 labels (Figure 2-117). Consecutive or direct format 1's are only 40 bytes. The active format 1's are used by the scheduler to process files being accessed by programs currently running on the system. Disk files can be either libraries or data files. If field F1ADRECL is set to zero and field F1ADSFLG bit 2 is off, the disk file specified by field F1ADLABL is a library.

How to Find

To find an active format 1, refer to field SCADF1ST in the system communications area. This field points to the first active format 1 in the system and describes disk file type T and P (S if the file has been changed from T to S in the current job step). Field F1ADFCHN in the active format 1 points to the next active format 1 in the chain. Active format 1's are also pointed to by the file specification block (FSB). Field FSBDF1PT of the FSB points to the associated active format 1.

Format

Figure 2-116 shows the format for a disk active format 1 and Figure 2-117 shows the format for the diskette active format 1.

Disk Active Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	F1ADDFLG	1	Latest date indicator—if flagged with an asterisk (hex 5C) file has latest date for this label
01	F1ADLABL	8	File label (system file label must begin with X'01')
09	F1ADDATE or F1ADSDIR	3	Creation date Start of directory for a library

Figure 2-116 (Part 1 of 6). Format of a Disk AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	F1ADTYPE	1	File type: *Hex* *Value* 80 Indexed file 40 Sequential file 20 Direct file 10 On—diskette unit Off—disk unit 08 Permanent file (P) 04 Temporary file (T) 02 Job file (J) 01 Scratch file (S)
0D	F1ADSFLG	1	Flag byte: *Hex* *Meaning* 80 On—sort keys Off—sector mode librarian file if bit 7 is on, or secure library if F1ADRECL = X'0000' 40 Merge keys 20 New file 10 Unordered load (check duplicate keys) 08 Not valid index (keysort in process) 04 Spindle A1 requested originally 02 Spindle A2 requested originally (if bits 5 and 6 are off, no original spindle preference was specified) 01 On—librarian file

Note: Bit mask 0, 1, 3, and 4 are valid only if offset hex 80 in F1ADTYPE is on. Bit mask 0, 2, 5, and 6 are valid only if offset hex 80 in F1ADTYPE is off.

Figure 2-116 (Part 2 of 6). Format of a Disk AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	F1ADRECL	2	Record length
10	F1ADBLKN (if leftmost bit of field=1)	3	Blocks used to allocate the file
	or		
	F1ADRECN (if leftmost bit of field=0)	3	Records used to allocate the file
	or		
	F1ADLBOW and	2	Owner queue pointer if a library
	F1ADLBUS	1	Count of current users if a library
13	F1ADLSTR or	3	Relative record number of next record
	F1ADSMEM or		Start of members for a library
	F1ADRFST		Start sequential sector address of reserved area free space
16	F1ADSTDA	3	Start sector address of start of data
19	F1ADENDA	3	Start sector address of end of extent
1C	F1ADVTOC	2	Relative sector displacement of VTOC entry (see note near end of this figure)
1E	F1ADFCHN	2	Forward chain pointer

Figure 2-116 (Part 3 of 6). Format of a Disk AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
20	F1ADATT1	1	Attribute byte 1: *Hex* *Meaning* 80 Extend capable file
	or F1ALLGLB		Length of a library format 1 (32)
21	F1ADCONT	1	Count of current users
22	F1ADATTR	1	Attribute byte 3: *Hex* *Meaning* 80 File opened as output or add 40 Key bucket has been primed 20 Indexed portion of F1 has been freed by allocate 10 High key bucket assigned (not to be used by termination) 08 Nonformatted file (valid in the VTOC) 04 Invalid data area (valid in the VTOC) 02 File allocated in the reserved area 01 Offline multivolume file
23	F1ADATT2	1	Attribute byte 2: *Hex* *Meaning* 80 Secure file 40 Checkpoint active file 20 Delete capable file 10 Immediate access file (IFILE) 08 IFILE gaps added since last keysort

Figure 2-116 (Part 4 of 6). Format of a Disk AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	F1ADOWNR	2	Owner queue pointer
26	F1ADEDFQ	2	EDF queue pointer
	or		
	F1ADRFED		End of reserved area free space (3 bytes)
28	F1ALLGCD		Length of format 1 for consecutive or direct file (40)

The following fields are supported only for indexed files:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	F1ADKEYL	1	Key length
29	F1ADKEY0	2	Key location
2B	F1ADLSTK	4	Start sector address/displacement of next key
2F	F1ADSTIK	3	Start sector address of start of index
32	F1ADLSTP	4	Start sector address/displacement of last prime key
36	F1ADHOKY	4	Start sector address/displacement of highest key in overflow area
3A	F1ADKBKT	2	Key bucket pointer

Figure 2-116 (Part 5 of 6). Format of a Disk AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3C	F1ADPCBQ	2	File position control block pointer
3E	F1ADRES3	2	Reserved
40	F1ALLGIN		Length of a format 1 for an indexed file (64)

Note: The following fields are used by $FREE/$PACK to indicate a system failure or permanent I/O error occurred before $FREE/$PACK had completely moved the file. If $FREE/$PACK is able to move the file successfully, the fields are set to zero. The values stored in this area allow $FREE/$PACK to restart without losing any data if the above error occurred during execution.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1E	F1FLAG	1	Flag byte indicating that restart of $FREE/$PACK is required for this file: *Hex* *Meaning* FF On—restart is necessary
1F	F1SSTRT	3	Points to start sector address of data that has been moved by $FREE/$PACK
25	F1SSEND	3	Points to end sector address of data that has been moved by $FREE/$PACK

Figure 2-116 (Part 6 of 6). Format of a Disk AFA Format 1

Diskette Active Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IF1DLTDT	1	Reserved
01	IF1DLABL	8	File label
09	IF1DDATE	3	Creation date
0C	IF1DATT1	1	Attribute byte 1: *Hex* *Meaning* 80 File opened 40 File closed 20 File allocated 10 On—diskette unit Off—disk unit 08 Date specified 04 Records can span volume 02 Rewrite data set label 01 End of extent recorded
0D	IF1DATT2	1	Attribute byte 2: *Hex* *Meaning* 80 Auto not specified 20 New file 01 Librarian file

Figure 2-117 (Part 1 of 4). Format of a Diskette AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	IF1DSORG	1	Data set organization
0F	IF1DVFMK	1	Verify mark
10	IF1DTYPE	2	File type
12	IF1DRECL	2	Record length
14	IF1DRTPT	3	Retention period
17	IF1DSSLR	2	End of data
19	IF1DLSTR	2	Offset to next record
1B	IF1DWTPT	1	Write protect
1C	IF1DPACK	6	Pack identification
22	IF1DMVSV	2	Volume transition save area
24	IF1DVTOC	4	Sequential sector address displacement (SSS/D) of VTOC entry
28	IF1DINTL	1	Interchange level
29	IF1DSTDA	2	Begin of extent
2B	IF1DENDA	2	End of extent (SS)
2D	IF1DEXDT	3	Expiration date

Figure 2-117 (Part 2 of 4). Format of a Diskette AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	IF1DMVID	1	Multivolume indicator
31	IF1DMVNM	1	Multivolume sequence number
32	IF1DBPND	1	Bypass indicator
33	IF1DFILE	2	File application type: *Character* *Meaning* 1 $COPY—save/organize file 2 $MAINT—FROMLIBR sector mode file 3 $MAINT—FROMLIBR record mode file 4 $BACK—backup file 5 $FEAPR—APARFILE 6 $SPINT—security profile file 7 Offline multivolume support 8 IGC extended character file
35	IF1DSYID	1	System identification indicator: *Hex* *Meaning* FF Identifier—undefined 02 Identifier—System/34 01 Identifier—blanks 00 Identifier—binary zeros
36	IF1DLOCA	1	Current diskette location

Figure 2-117 (Part 3 of 4). Format of a Diskette AFA Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
37	IF1DOLOC	1	Original diskette location: *Hex* *Meaning* 17 Location M2.10 16 Location M2.09 15 Location M2.08 14 Location M2.07 13 Location M2.06 12 Location M2.05 11 Location M2.04 10 Location M2.03 0F Location M2.02 0E Location M2.01 0D Location M1.10 0C Location M1.09 0B Location M1.08 0A Location M1.07 09 Location M1.06 08 Location M1.05 07 Location M1.04 06 Location M1.03 05 Location M1.02 04 Location M1.01 03 Slot S3 02 Slot S2 01 Slot S1
The following 3 bytes are for I-exchange:			
38	IF1DHDR#	1	Number of data header labels
39	IF1DTRL#	1	Number of data trailer labels
3A	IF1DDELT	1	Logical record delete indicator
3B	IF1DBLKL	2	Block length
3D	IF1DRCDA	1	Record attribute
3E	IF1DRES1	2	Reserved
40	IF1LLIEX	1	Length of active format 1

Figure 2-117 (Part 4 of 4). Format of a Diskette AFA Format 1

Format 1 (RDVTOC) Diskette

The diskette VTOC format 1 contains the file label and diskette organization of the diskette as read via PREPARE diskette. Each format 1 is 128 bytes long (2 records per sector). The number of format 1s allowed depends on the type of diskette drive on the system; diskette 1 drive=19 (the remainder of the area is zero filled), diskette 2D drive=71 (remainder is reserved).

How to Find

The diskette VTOC format 1s are located in the diskette work area of the system work area (#SYSWORK). The diskette work area is pointed to from field SCAIVTOC in the system communications area (SCA).

Format

Figure 2-118 shows the format of a diskette VTOC format 1.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IF1DLTDT	1	Reserved
01	IF1DLABL	8	File label
09	IF1DDATE	3	Creation date
0C		1	Not used
0D		1	Not used
0E	IF1DSORG	1	Data set organization
0F	IF1DVFMK	1	Verify mark
10	IF1DTYPE	2	File type
12	IF1DRECL	2	Record length
14	IF1DRTPT	3	Retention period
17	IF1DSSLR	2	End of data

Figure 2-118 (Part 1 of 3). Format of a Diskette VTOC Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
19	IF1DLSTR	2	Offset to next record
1B	IF1DWTPT	1	Write protect
1C		6	Not used
22		2	Not used
24		4	Not used
28	IF1DINTL	1	Interchange level
29	IF1DSTDA	2	Begin of extent
2B	IF1DENDA	2	End of extent (SS)
2D	IF1DEXDT	3	Expiration date
30	IF1DMVID	1	Multivolume indicator
31	IF1DMVNM	1	Multivolume sequence number
32	IF1DBPND	1	Bypass indicator
33	IF1DFILE	2	File application type: *Character* *Meaning* 1 $COPY—save/organize file 2 $MAINT—FROMLIBR sector mode file 3 $MAINT—record mode file 4 $BACK—backup file 5 $FEAPR—APARFILE 6 $SPINT—security profile file 7 Offline multivolume support 8 IGC extended character file

Figure 2-118 (Part 2 of 3). Format of a Diskette VTOC Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
35	IF1DSYID	1	System identification indicator:
			Hex *Meaning*
			FF Identifier—undefined
			02 Identifier—System/34
			01 Identifier—blanks
			00 Identifier—binary zeros
36	IF1DLOCA	1	Current diskette location
37	IF1DOLOC	1	Original diskette location:
			Hex *Meaning*
			17 Location M2.10
			16 Location M2.09
			15 Location M2.08
			14 Location M2.07
			13 Location M2.06
			12 Location M2.05
			11 Location M2.04
			10 Location M2.03
			0F Location M2.02
			0E Location M2.01
			0D Location M1.10
			0C Location M1.09
			0B Location M1.08
			0A Location M1.07
			09 Location M1.06
			08 Location M1.05
			07 Location M1.04
			06 Location M1.03
			05 Location M1.02
			04 Location M1.01
			03 Slot S3
			02 Slot S2
			01 Slot S1
38	IF1DSYS1	13	Operating system ID
45		59	Reserved

Figure 2-118 (Part 3 of 3). Format of a Diskette VTOC Format 1

Format 1 (System)

The system format 1 area is a 5-sector area that contains up to twenty 64-byte format 1's. All entries in the system format 1 area must begin with X'01' so they cannot be referenced by the user VTOC. Files included in the system format 1 are the system library, history files, and spool files.

How to Find

Sectors X'0005' through X'0009' of the disk volume table of contents (VTOC) contain the system format 1's. Field F1ADLABL of each system format 1 contains the file label.

Format 1 (User)

The user format 1 area consists of 50 to 502 sectors, each of which contains four 64-byte format 1's. The 64-byte format 1 (format 1 record) describes each user data file and library maintained on disk. The format 1's are in consecutive order. The following chart shows the maximum number of user data files or user libraries that can be maintained on the disk at one time.

Drive	Number of Tracks	Number of User Files	Number of Tracks	Number of User Files
62EH	1	200 (default)	5	1160
62PC	1	216 (default)	5	1240
62EH	2	440	6	1400
62PC	2	472	6	1496
62EH	3	680	7	1640
62PC	3	728	7	1752
62EH	4	920	8	1880
62PC	4	984	8	2008

Sector 1	Sector 2	Sector 50	Sector 246
1st format 1	5th format 1	197th format 1	981st format 1
2nd format 1	6th format 1	198th format 1	982nd format 1
3rd format 1	7th format 1	199th format 1	983rd format 1
4th format 1	8th format 1	200th format 1	984th format 1

How to Find

Sectors X'000A' through X'003B' of the disk volume table of contents (VTOC) contain the user format 1's. Field F1ADLABL of each user format 1 contains the file label.

Format

Figure 2-119 shows the format of a disk format 1 entry.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	F1ADDFLG	1	Latest date indicator—if flagged with an asterisk (*), file has latest date for this label
01	F1ADLABL	8	File label (system file label must begin with hex 01)
09	F1ADDATE or	3	Creation date
	F1ADSDIR (if library)		Start of directory for a library
0C	F1ADTYPE	1	File type: *Hex* *Meaning* 80 Indexed file 40 Sequential file 20 Direct file 10 On—diskette unit Off—disk unit 08 Permanent file (P) 04 Temporary file (T) 02 Job file (J) 01 Scratch file (S)

Figure 2-119 (Part 1 of 4). Format of a Disk Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	F1ADSFLG	1	Flag byte: *Hex* *Meaning* 80 On if: – sort keys – sector mode librarian file – secure library Otherwise, this bit is off. 40 Merge keys 20 New file 10 Unordered load (check duplicate keys) 08 Index not valid (keysort in process) 04 Spindle A1 requested originally 02 Spindle A2 requested originally (if bits 5 and 6 are off, no original spindle preference was specified) 01 On—librarian file *Note:* Bit mask 0,1,3, and 4 are valid only if bit 1 in F1ADTYPE is on. Bit mask 0,2,5, and 6 are valid only if bit 1 in F1ADTYPE is off.
0E	F1ADRECL	2	Record length: 0 if a library
10	F1ADBLKN (if leftmost (bit of field=1) or	3	Blocks used to allocate the file
	F1ADRECN (if leftmost bit of field=0) or		Records used to allocate the file
	F1ADLBOW and	2	Owner queue pointer if library
	F1ADLBUS	1	Count of current users if library

Figure 2-119 (Part 2 of 4). Format of a Disk Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
13	F1ADLSTR or F1ADSMEM	3	Relative record number of next record Start of members for library
16	F1ADSTDA	3	Start sector address of start of data
19	F1ADENDA	3	Start sector address of end of extent
1C	F1ADVTOC	2	Relative sector displacement of VTOC entry
1E		5	Reserved
23	F1ADATT2	1	Attribute byte 2: *Hex* *Meaning* 80 Secure file 40 Checkpoint active file 20 Delete capable file 10 Immediate access I-file 08 I-file gaps added since last keysort
24		4	Reserved
The following fields are supported only for indexed files:			
28	F1ADKEYL	1	Key length
29	F1ADKEYO	2	Key location
2B	F1ADLSTK	4	Start sector address and displacement of next key
2F	F1ADSTIX	3	Start sector address of start of index and start of file
32	F1ADLSTP	4	Start sector address and displacement of last prime key (last sorted key)

Figure 2-119 (Part 3 of 4). Format of a Disk Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
36	F1ADHOKY	4	Start sector address and displacement of highest key in overflow area (unsorted keys)
3A		6	Reserved
Note: The following fields are used by $FREE/$PACK to indicate a system failure or permanent I/O error occurred before $FREE/$PACK had completely moved the file. If $FREE/$PACK is able to move the file successfully, the fields are set to zero. The values stored in this area allow $FREE/$PACK to restart without losing any data if the above error occurred during execution.			
1E	F1FLAG	1	Flag byte indicating that restart of $FREE/$PACK is required for this file: *Hex* *Meaning* FF Switch value that is placed in F1FLAG if restart is necessary
1F	F1SSTRT	3	Points to start sector address of data that has been moved by $FREE/$PACK
22	F1SSEND	3	Points to end sector address of data that has been moved by $FREE/$PACK

Figure 2-119 (Part 4 of 4). Format of a Disk Format 1

Format 1 System Library (#LIBRARY)

The resident system library format 1 is a 32-byte area that describes the system library. The format 1 is built at MSIPL and contains information pertaining to the system library (#LIBRARY).

How to Find

The system library format 1 is pointed to by field SCADLBF1 in the system communication area. The system library format 1 is in the fixed nucleus at hex location 02E0.

Format

Figure 2-120 shows the format of the resident system library format 1.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	F1ADDFLG	1	Latest date indicator—if flagged with an asterisk (*) file has latest date for this label
01	F1ADLABL	8	File label
09	F1ADSDIR	3	Start of directory
0C	F1ADTYPE	1	File type: *Hex* *Meaning* 80 Indexed file 40 Sequential file 20 Direct file 10 On—diskette unit Off—disk unit 08 Permanent file (P) 04 Temporary file (T) 02 Job file (J) 01 Scratch file (S)

Figure 2-120 (Part 1 of 2). Format of the Resident System Library Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	F1ADSFLG	1	Flag byte: *Hex* *Meaning* 80 On—sort keys 40 Merge keys 20 New file 10 Unordered load (check duplicate keys 08 Index not valid (keysort in process) 04 Spindle A requested originally 02 Spindle B requested originally (if bits 5 and 6 are off, no original spindle preference was specified) 01 On—librarian file *Note:* Bit masks 0, 1, 3, and 4 are valid only if bit 1 in F1ADTYPE is on. Bit masks 0, 2, 5, and 6 are valid only if bit 1 in F1ADTYPE is off.
0E	F1ADRECL	2	Record length
10	F1ADLBOW	2	Owner queue pointer
12	F1ADLBUS	1	Count of current users
13	F1ADSMEM	3	Start of members
	or F1ADRFST		Start sector address of reserved area free space
16	F1ADSTDA	3	Start sector address of start of data
19	F1ADENDA	3	Start sector address of end of extent
1C	F1ADVTOC	2	Relative sector displacement of VTOC entry
1E		2	Reserved

Figure 2-120 (Part 2 of 2). Format of the Resident System Library Format 1

Format 1 (Embedded Diskette)

When the $COPY utility copies a disk file to a diskette (for example, SAVE procedure), the first physical sector allocated for the file is reserved for the embedded diskette format 1. This embedded diskette format 1 occupies the first 91 bytes; an additional 37 bytes (for a total of 128 bytes) are reserved. The embedded diskette format 1 ensures that files copied from disk to diskette can be restored exactly as they appeared except for the entries overridden by the user.

How to Find

The embedded diskette format 1 is located in the first 87 bytes of the first data sector of the file on diskette.

Format

Figure 2-121 shows the format of an embedded diskette format 1.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	F1FMT1	4	Identifies this first sector as the embedded diskette format 1. Must be FMT1
04		3	Reserved
07	F1LABL	8	Label of the diskette file (usually equivalent to diskette header label)
0F	F1DATE	6	Date file was created on disk
15	F1RTIN	1	Disk retention (P, T, J or S)
16	F1TYPE	2	File type: *Hex* *Meaning* 0080 Indexed 0040 Sequential 0020 Direct

Figure 2-121 (Part 1 of 4). Format of Embedded Diskette Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18	F1RECL	2	Record length (must match record length in IH1DRECL)
1A	F1KEYL	1	Key length if F1TYPE is hex 8080
1B	F1KEYO	2	Key offset if F1TYPE is hex 0080 (relative offset of the rightmost byte of key)
1D		14	Reserved
2B	F1RECN or F1BLKN	3	Space allocated on disk (If allocated by records, the leftmost bit is zero; if allocated by blocks, the leftmost bit is one)
2E		15	Reserved
3D	F1UNIT	1	Spindle preference: *Hex* *Meaning* A4 Spindle A1 A2 Spindle A2 A0 No preference
3E		6	Reserved
44	F1XD#200	1	Number of groupings of 200 files (must be zero unless F1XDCTYP equals hex 03)
45	F1XDCQRT	1	Security indicator: *Hex* *Meaning* 80 Security file 20 Immediate access to add file 10 Delete capable file

Figure 2-121 (Part 2 of 4). Format of Embedded Diskette Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
46	F1XDATTR	1	File attributes: *Hex* *Meaning* 08 Non-formatted file 02 File allocated in reserve area 01 Offline multivolume file
47	F1XDCTYP	1	COPYALL indicator: *Hex* *Meaning* 03 COPYALL 00 Copy single
48	F1XDALNM	8	If zeros, no generic name; if nonzero, the name associated with the set of files copied via COPYALL (SAVE ALL)
50	F1XDALSQ		Sequence number of file in group of 200 files. This sequence number used with F1XD#200 ensures diskettes are mounted in proper sequence
51	F1XDOFSG	1	File sequence: *Hex* *Meaning* 00 Single file copy C3 More files remain in set of files to be copied via COPYALL D3 This is the last file in the set of files to be copied via COPYALL
52	F1XDNEXT	8	Label of next file in set of files to be copied via COPYALL. If binary zeros, (1) F1XDOFSG = L, or (2) this is a single file copy, or (3) this diskette was created on System/32

Figure 2-121 (Part 3 of 4). Format of Embedded Diskette Format 1

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5A	F1XDLIBR	1	Library file indicator: *Hex* *Meaning* 80 Sector mode file 01 Record mode file 00 Not a library file
5B		37	Reserved

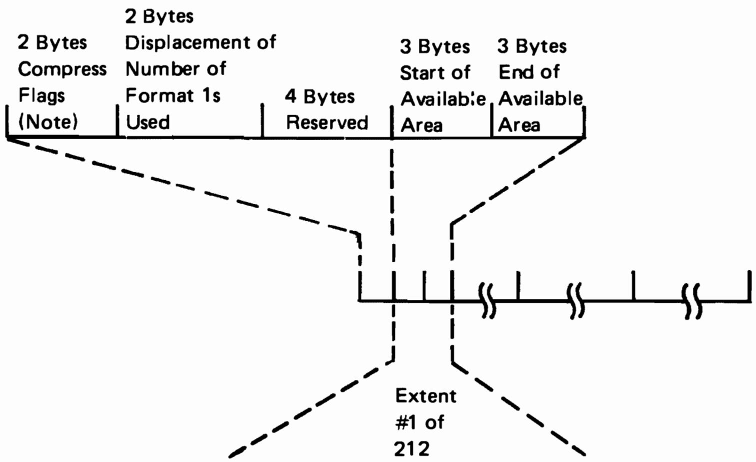
Figure 2-121 (Part 4 of 4). Format of Embedded Diskette Format 1

Format 5

The format 5 area consists of 5 sectors (1280 bytes). Format 5s define the disk area that is available for new files. The format of the 6-byte format 5 extent entries is two 3-byte relative sector numbers (SSS). The first 3-byte sequential sector address is the start of the available area. The second 3-byte sequential address is the end of the available area plus 1 sector. The relative sector numbers are always in block size increments. For example, 111—121 defines one available block. The format 5 can have up to 212 extent entries (1272 bytes). The first 4 bytes contain compress flags and the number of user VTOC format 1's used. The next 4 bytes are reserved and are set to zero. All unused entries in the format 5 are set to hex FF. Figure 2-122 shows the extent format of the 5-sector format 5 area.

How to Find

The format 5s are located in sectors hex 0000 through hex 0004 of the disk volume table of contents (VTOC).



Note: Compress flag equates:

Hex	*Meaning*
80	System failed during compress
8603	'ALL' failed
8402	'A,high' failed
8401	'A,low' failed
8202	'B,high' failed
8201	'B,low' failed
0603	'ALL' I/O error
0402	'A,high' I/O error
0401	'A,low' I/O error
0202	'B,high' I/O error
0201	'B,low' I/O error
0040	Mini-compress request

Figure 2-122. Extent Format of 5-Sector Format 5 Area

Forms Control Table (MRJE, SRJE, DCPRINT, and $DCSUP)

The forms control table is a disk file containing forms control information for use by MRJE, SRJE, DCPRINT, and $DCSUP. The user assigns a name to the forms control table when he runs the DCFORMS procedure command.

How to Find

The address of the disk file containing the forms control table can be found in the disk VTOC.

Format

Figure 2-123 shows the format of the forms control table (MRJE, SRJE, DCPRINT, and $DCSUP).

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FCTHOST	8	Host forms number
08	FCTLOCL	4	Local forms number
0C	FCTFLAG	1	Flag byte: *Hex* *Meaning* 80 Issue a halt when a forms number is processed 40 Carriage control information is included 20 Local forms number is specified 10 SPOOL-NO is specified 08 DEFER-YES is specified 04 DEFER-NO is specified 02 Reserved 01 Reserved
0D	FCTLINE	1	Number of lines/page
0E	FCTBOTM	1	Bottom margin

Figure 2-123 (Part 1 of 2). Format of a Forms Control Table (MRJE, SRJE, DCPRINT, and $DCSUP)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	FCTC1	1	Channel 1 equivalent line number
10	FCTC2	1	Channel 2 equivalent line number
11	FCTC3	1	Channel 3 equivalent line number
12	FCTC4	1	Channel 4 equivalent line number
13	FCTC5	1	Channel 5 equivalent line number
14	FCTC6	1	Channel 6 equivalent line number
15	FCTC7	1	Channel 7 equivalent line number
16	FCTC8	1	Channel 8 equivalent line number
17	FCTC9	1	Channel 9 equivalent line number
18	FCTC10	1	Channel 10 equivalent line number
19	FCTC11	1	Channel 11 equivalent line number
1A	FCTC12	1	Channel 12 equivalent line number
1B	FCTFLG2	1	Flag byte: *Hex* *Meaning* 80 8 lines per inch specified 40 4 lines per inch specified If hex 80 and 40 are off, 6 lines per inch was specified. 20 On—15 characters per inch specified Off—10 characters per inch specified

Figure 2-123 (Part 2 of 2). Format of a Forms Control Table (MRJE, SRJE, DCPRINT, and $DCSUP)

Function Management Header (Type 1)

The function management header (type 1) is the first 6 bytes of the request unit when the format indicator is on in the request/response header (RH).

Figure 2-124 shows the format of a function management header (type 1).

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$SFLEN	1	Length: *Hex* *Meaning* 06 Six
01	$SFTYPE	1	Type: *Hex* *Meaning* 80 0—function management header not concatenated 1—function management header concatenated 01 Type 1
02	$SFSEL	1	Select: *Hex* *Meaning* 60 Extended card 50 Extended printer 40 (Non-exchange) disk 30 Printer 20 Card 10 Exchange media 00 Console

Figure 2-124 (Part 1 of 2). Format of the Function Management Header (Type 1)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	$SFDSEL	1	Demand select: *Hex* *Meaning* 80 0—direct to receive stack 1—direct to send stack
04	$SFPROP	1	Properties: *Hex* *Meaning* A0 End/abort destination selection 80 Suspend destination selection 60 Begin/end destination selection 40 Begin destination selection 20 End destination selection 10 0—transmission exchange format 1—basic exchange format 04 0—no compression 1—compression 02 0—no compaction 1—compaction 00 Resume destination selection
05	$SFERCL	1	Exchange record length

Figure 2-124 (Part 2 of 2). Format of the Function Management Header (Type 1)

Function Management Header (PDIR)

The peripheral data information record (PDIR) is a type 2 function management header. A type 2 header presents further information relative to the destination previously selected via the type 1 header. The PDIR is used by SRJE to handle forms mount requests and multiple copy functions.

How to Find

The function management header (PDIR) is the first 100 bytes of the request unit when the format indicator is on in the request/response header (RH).

Format

Figure 2-125 shows the format of the function management header (PDIR).

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FMHDLEN	1	Length of header
01	FMHDTYPE	1	Header type: *Hex* *Meaning* 80 FM header is concatenated 02 Type 2
02	FMHDCODE	1	Stack reference indicator and FM header code: *Hex* *Meaning* 80 Stack reference indicator 01 PDIR
03	PDIRDID	1	PDIR identifier: *Hex* *Meaning* 02 System message PDIR 01 Job separator PDIR 00 Standard PDIR
04	PDIRDDAT	8	Data set creation date (MM/DD/YY)
0C	PDIRDTIM	8	Data set creation time (HH.MM.SS)
14	PDIRDFRM	8	Forms name
1C	PDIRDFCB	8	Forms control buffer name (not used by S/34)
24	PDIRDTRN	8	Print train name
2C	PDIRDCOP	8	Number of additional copies (in EBCDIC)

Figure 2-125 (Part 1 of 2). Format of the Function Management Header (PDIR)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34	PDIRDVIO	8	Volume of I/O (for example, number of records, in EBCDIC)
3C	PDIRDJOB	8	Jobname
44		8	Stepname (not used by S/34)
4C		8	Procstep (not used by S/34)
54		8	DDNAME (not used by S/34)
5C		8	SPINNO (not used by S/34)

Figure 2-125 (Part 2 of 2). Format of the Function Management Header (PDIR)

Header 1 (Diskette HDR1 Label)

Each data set allocated on a diskette must be described by a data set label (HDR1) on that diskette. For a detailed discussion of the fields in this area see *IBM Diskette General Information Manual,* GA21-9182. The number of format 1's allowed depends on the type of diskette drive on the system; diskette 1=19 format 1's (the remainder is zero-filled), diskette 2D=71 (the remainder is reserved). When the diskette is processed, its HDR1's are converted to a 128-byte format 1 (Figure 2-118) that is stored in the diskette VTOC work area on the disk.

How to Find

Diskette 1: The HDR1's are located at cylinder 0, head 0, sector address hex 0008 through 001A.

Diskette 2D: The HDR1's are located the same as diskette 1, plus there are an additional 52 HDR1's located at cylinder 0, head 1, sector address hex 0001 through 001A.

Format

The format of an HDR1 is shown in Figure 2-126.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IH1DSTRT and IH1DLBID	3	Beginning of diskette header 1 Label identifier (HDR)
03	IH1DLBNM or IH1DLIDR	1	Label number (1) Label identifier number
04	IH1DRSV1	1	Reserved area
05	IH1DATID	8	Data set identifier
0D	IH1DRSV2	9	Reserved
16	IH1DBKLN	5	Block length
1B	IH1DRCAT	1	Record attribute: *Character* *Meaning* R Blocked/spanned attribute mask
1C	IH1DBGEX	5	Begin of extent
21	IH1DSCTS	1	Physical record length indicator (constant): *Character* *Meaning* b̸ 128-byte sectors 1 256-byte sectors 2 512-byte sectors 3 1024-byte sectors
22	IH1DENEX	5	End of extent
27	IH1DRBFM	1	Record/block format
28	IH1DBPND	1	Bypass indicator
29	IH1DATSC	1	Data set security

Figure 2-126 (Part 1 of 3). Format of a Diskette VTOC Header 1 Label

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2A	IH1DWTPT	1	Write protect=C'P'
2B	IH1DINTL	1	Interchange level indicator: *Character* *Meaning* ƀ Standard interchange level for diskette 1 I I format H Standard interchange level for diskette 2 E System file
2C	IH1DMVID	1	Multivolume data set indicator (constant): *Character* *Meaning* ƀ Blank—complete on this volume C Continued on another volume L Last volume of this multivolume file
2D	IH1DMVNM	2	Multivolume sequence number
2F	IH1DCRDT	6	Creation date
35	IH1DRDLN	4	Record length
39	IH1DONRN	5	Offset to next record space
3E	IH1DRSV7	4	Reserved
42	IH1DEXDT	6	Expiration date
48	IH1DVFMK	1	Verify mark
49	IH1DSORG	1	Data set organization
4A	IH1DEDAT	5	End of data
4F	IH1DRSV8	16	Reserved

Figure 2-126 (Part 2 of 3). Format of a Diskette VTOC Header 1 Label

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5F	IH1DOSYS	13	Operating system code
6C	IH1DFTYP	2	File application type
6E	IH1DRSV9	12	Reserved
The following 1 byte is for I-exchange:			
7A	IH1DDELT	1	Logical record delete indicator
7B	IH1DRSVA	5	Reserved

Figure 2-126 (Part 3 of 3). Format of a Diskette VTOC Header 1 Label

History File

The history file contains information such as job run time, printer run time, OCL entered, utility control statements entered, error messages displayed, and operator responses to error messages. The history file occupies a system defined minimum of 120 sectors (2 tracks). During RELOAD the user is prompted for history file size, at which time any number of sectors from the system minimum to the maximum number of 9960 sectors can be specified.

The entire history file may be displayed and optionally reset at the end of the display. Resetting masks the entries from any further viewing. Work station display and resetting of entries with a particular job name are restricted to the work station and operator issuing the request.

How to Find

The address of the history file is in field SCASHIST of the system communication area and in field CONSHIST of the configuration record. Field SCAHFCUR contains the address of the current sector of the history file.

Format

Figure 2-127 shows the format of the history file sector header; figure 2-128 shows the format of a history file entry.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	HFCDSCAN	1	Hex FE equals the current sector (else will contain hex 00)
01	HFCDOFFE	1	Offset to the rightmost byte of the most current entry in this sector
02	HFCDGAPE	1	Gap between the newest and oldest entry if history file has wrapped (else will contain hex 00)
03	HFCDOLDE	1	Offset to the rightmost byte of the oldest entry in sector if history file has wrapped (else will contain hex 00)

Note: A reset sector will contain hex FE000000.

Figure 2-127. Format of the History File Sector Header

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
These entries begin in the fifth byte of each sector. The entries do not span sectors.			
00	HFTDLNGH	1	Length of entry including 22 bytes of control information
01	HFTDLINP	1	Length of original text

Figure 2-128 (Part 1 of 3). Format of a History File Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	HFTDCTLS	1	Control information for system console access to the history file entry:
			Hex / *Meaning*
			80 On—entry was output to all terminals; Off—entry was directed to one terminal
			40 On—entry is from a work station terminal (see HFTDCTLW for pertinent controls); Off—entry is from the system console
			20 Operator saw the entry before it was put in the history file
			10 Operator previously was shown this entry via HISTORY CURRENT DISPLAY
			08 Operator requested all entries be made unavailable via HISTORY RESET
			04 Entry came from job queue

Figure 2-128 (Part 2 of 3). Format of a History File Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	HFTDCTLW	1	Control information for work station access of the history file entry: *Hex* *Meaning* 20 Operator saw the entry before it was put in the history file 10 Operator previously was shown this entry via HISTORY CURRENT DISPLAY 08 Operator requested all entries be made unavailable via HISTORY RESET 04 Entry came from job queue *Note:* If bits 2, 3, and 4 are on in field HFTDCTLS, the operator is at the system console. If they are on in field HFTDCTLW, operator is at a work station.
04	HFTDUSER	8	Identification (operator)
0C	HFTDUTID	2	Identification (operator terminal)
0E	HFTDJOB#	2	Job (task) ID prefix
10	HFTDJOBN	3	Hours, minutes and seconds in packed format that provides a unique job name when unpacked and appended
13	HFTDCTOD	3	Current time of day in packed format
16	HFTDTEXT	1–132	Beginning of input text
17 or 98	HFTMAXLN or HFTMINLN	154 23	Maximum history file entry Minimum history file entry

Figure 2-128 (Part 3 of 3). Format of a History File Entry

History File Put Parameter List

This 10-byte area is required as input to the history file put routine (no RIB). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	HFPDRETN	2	Normal return code: X'FFFF'
02	HFPDDISP	1	Control byte: *Hex* *Meaning* 80 On—entry was output to all terminals (broadcast indicator) Off—entry was directed to one terminal 40 Free the assign free area upon completion 20 On—operator saw the entry before it was put in the history file Off—operator did not see entry before it was put in the history file 04 On—job control block address specified in HFPDJCB@ Off—terminal unit block address specified in HFPDTUB@ 03 Four lines input 02 Three lines input 01 Two lines input 00 One line input
03	HFPDLENG	1	Length of lines (maximum buffer length is 132 bytes)
04	HFPDADDR	2	Address of input
06	HFPDTUB@ or HFPDJCB@	2 2	Terminal unit block (TUB) address Job control block (JCB) address

Figure 2-129 (Part 1 of 2). Format of History File Put Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	HFPDBUF@	2	User supplied buffer address for @HFPUT or @HFPTR includes (X'FFFF'= buffer area is at the end of the included modules; not used by #HFPUT)

Figure 2-129 (Part 2 of 2). Format of History File Put Parameter List

IGC Communication Area

This 16-byte area is used to describe IGC-related fields.

How to Find

Field SCADKKK@ in the system communication area will contain the address of the IGC communication area.

Format

Figure 2-130 shows the format of the IGC communication area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	KKKDGPAG	2	EXTN file page limits
02	KKKDGTCB	2	EXTN task TCB address
04	KKKDGFSS	2	EXTN file start address

Figure 2-130 (Part 1 of 2). Format of the IGC Communication Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	KKKDGFSZ	2	EXTN file size (sectors)
08	KKKDGTSZ	1	EXTN task size (2K blocks)
09	KKKDGAT1	1	EXTN task attributes: *Hex* *Meaning* 80 EXTN task swappable 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
0A	KKKDFLAG	1	Flag byte: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 EXTN task not started 02 OXRF has run since last IPL 01 At least 1 IGC capable device
0B	KKKDWORK	2	IPL save/work area
0D	KKKDRESV	3	Reserved

Figure 2-130 (Part 2 of 2). Format of the IGC Communication Area

IGC Transient Parameter List

This 8-byte area is used by the IGC record handling routine. When the record handling routine (#IGCX) is requested, XR1 contains the address of the IGC transient parameter list.

Format

Figure 2-131 shows the format of the IGC transient parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IGCDFUNC	1	Function byte: *Hex* *Meaning* 80 Adjust data for display 40 Adjust data for concatenation 01 Error in data being processed
01	IGCDINP@	2	Input data area address
03	IGCDINPL	1	Input data area length
04	IGCDOUT@	2	Output data area address
06	IGCDOUTL	1	Output data area length
07	IGCDSPLY	1	Length of data being displayed or concatenated

Figure 2-131. Format of the IGC Transient Parameter List

Information Parameter List

The 7-byte information parameter list is used by either a get or put request to access desired system information for a user program in main storage. Index register 2 points to the leftmost byte of the parameter list describing the data requested by the user.

Format

Figure 2-132 shows the format of an information parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$INFFUNC	1	Function byte: *Hex* *Meaning* 80 On—put operation Off—get operation 40 On—terminal ID given Off—terminal ID not given
01	$INFREQ	1	Request type byte: *Hex* *Meaning* 10 JCB return code field (get/put) (2-byte field in form 'XXXX') 0F Unpacked program date field (get) (6-byte field in date format) 0E User message member number 1 (put) (8-byte field) 0D Number of lines per page (1-byte hex value) 0C Maximum number of requestors (get) (1-byte hex value) 0B Program attribute indicator (get) Y—never ending program (NEP) N—not a never ending program 0A Compiler information block address (get) (2-byte storage address) 09 Local area (get/put) (variable size) 08 Program message member number 2 (put) (8-byte field) 07 Program message member number 1 (put) (8-byte field) 06 Language compiler byte (get/put) (1-byte field)

Figure 2-132 (Part 1 of 2). Format of an Information Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01 (cont.)			*Hex* *Meaning* 05 Inquiry latch indication (get) Y—inquiry latch on N—inquiry latch off 04 External switch byte (get/put) (1-byte field) 03 Session date request (get) (3-byte field in YMD format) 02 Program date request (get) (3-byte field in YMD format) 01 Date format request: D—DMY format M—MDY format Y—YMD format
02	$INFBUFF	2	User's buffer address
04	$INFID	2	Terminal ID (if information is to be retrieved from other than the primary program terminal)
06	$INFRET	1	Parameter list return code: *Hex* *Meaning* 80 Terminal ID was given and the terminal is not attached 40 Terminal ID was given and the terminal is only a data terminal 20 Terminal ID was given and could not be found in any terminal unit block 10 Terminal ID was given but ID was for a printer device 00 Successful completion

If $INFREQ is hex 09, the following two bytes are created:

07	$INFLEN	1	Length for local request
08	$INFDISP	1	Offset for local request

Figure 2-132 (Part 2 of 2). Format of an Information Parameter List

Input Job Queue

The input job queue places batch work station jobs on a queue for execution by the system The default size of the queue allows 20 jobs and a maximum of 120 through a system configuration option. Only one job from the input job queue can execute at a time. All SYSLOG output is directed to the system console. Field SCADCFG1 in the system communication area indicates the job status.

How to Find

Field SCADSSJQ of the system communication area contains the sector address of the start of the input job queue file.

Format

Figure 2-133 shows the format of each sector of the input job queue file.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	JQSTATUS	1*	Status of job queue (high-order byte of sector address) X'FF'=no entries exist on queue
01	JQSTRT	2*	First entry on input job queue
03	JQEND	3*	Last entry on input job queue
06	JQAVAIL	3*	First entry on available queue
09	JQFOR	3	Address of next entry on the queue
0C	JQBACK	3	Address of previous entry on queue
0F	JQFLAG1	1*	Flag byte 1: X'80'=input job queue stopped
10	JQCOUNT	1*	Count of active jobs
11	JQSIZE	1*	Total number of available entries

*Entry exists in the index sector only (first physical sector of JOBQ file).

Figure 2-133 (Part 1 of 2). Format of the Input Job Queue File

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	JQNAME	8	Job name assigned to this entry: X'00'= indicates a null entry
1A	JQJCB	112	Save area for callers job control block
8A	JQLIBR	8	User specified library
92	JQPROC	8	Procedure name
9A	JQUSER	8	User identification
A2	JQPMLN	1	Length minus one of user parameter
A3	JQPARMS	114	Start of user parameter field
115	JQLPI	1	Lines per inch value
116	JQCLASS	1	Job queue priority

Figure 2-133 (Part 2 of 2). Format of the Input Job Queue File

Input/Output Blocks (IOBs)

An input/output block (IOB) is the interface between the user (usually data management) and IOS. The area for an IOB must be assigned by the calling routine.

How to Find

To locate the associated device IOB, refer to the queue header associated with that device. Field ACEXR1 in the queue header's action control element contains the address of the associated ICS when IOS is involved (excluding printer IOS).

Format

IOBs for different units have different formats. The IOB formats are shown as follows:

Unit	Figure
Autocall	2-134
BSC	2-135
Disk	2-136
Diskette	2-137
MICR	2-138
Printer	2-139
SDLC	2-140

Autocall IOB (24 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IOBECM	1	Event control mask
01	IOBHCMP	1	Completion code (hardware): *Hex* *Meaning* 40 IOB complete 04 MLCA controller check 01 Hardware error
02	IOBPARM	1	Protocol byte: *Hex* *Meaning* 07 Autocall 06 Line wrap 05 BSC ASCII 04 BSC EBCDIC 03 SDLC primary 02 SDLC secondary

Figure 2-131 (Part 1 of 3). Format of Autocall IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	IOBQ	1	Command byte (Q-code): *Hex* *Meaning* 8C Dial 80 Control
04	IOBR	1	Command modifier byte (R-code): *Hex* *Meaning* D0 Enable (no load) C0 Enable (load) 80 Disable 00 Normal R-byte
05	IOBADR	1	Reserved
06	IOBSTAR	2	Microcode load buffer (enable) Microcode phone number (dial)
08	IOBRLN	2	Reserved
0A	IOBSNS1	1	Sense byte 1: *Hex* *Meaning* 5x Power indicator error (dial) 4x Distant station connected error (dial) 3x Present next digit error (dial) 2x Abandon call and retry error (dial) 1x Data line occupied error (dial) 04 MLCA permanent controller check 00 MLCA temporary controller check *Note:* x indicates that the value of this digit is not significant.
0B	IOBSNS2	1	Reserved

Figure 2-134 (Part 2 of 3). Format of Autocall IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	IOBCAR	2	Reserved
0E	IOBRES	2	Reserved
10	IOBTCB	2	TCB address
12	IOBQHDR	1	Autocall unit queue header
13	IOBLDEF	1	Line definition: *Hex* *Meaning* 80 Separator character 40 End-of-number character
14	IOBLQHDR	1	Communications line queue header
15	IOBDUM2	3	Reserved

Figure 2-134 (Part 3 of 3). Format of Autocall IOB

BSC IOB (40 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	IOBECM	1	Event control mask
01	IOBHCMP	1	Completion code (hardware): *Hex* *Meaning* 80 IOB active 40 IOB complete 10 Hold interlock bit 04 MLCA processor check 02 Force 2-second timeout 01 Hardware error

Figure 2-135 (Part 1 of 6). Format of BSC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	IOBPROT	1	Protocol byte: *Hex* *Meaning* 08 X.21 07 Autocall 06 Wrap test 05 BSC ASCII 04 BSC EBCDIC 03 SDLC primary 02 SDLC secondary
03	IOBQ	1	Command byte (Q-code): *Hex* *Meaning* 90 X.21 dial request 88 Enable auto monitor 86 Transmit/receive 85 Transmit/receive initial 84 Transmit/receive overlay 83 Receive initial 82 Receive initial delayed 81 Receive only 80 Control Q-code
04	IOBR	1	Command modifier byte (R-code used only with Q-code of X'80'): *Hex* *Meaning* D0 Enable MLCA (no microcode load) C0 Enable BSC 80 Disable BSC 04 Start 2-second timeout 01 Indicate to microcode to look for poll or address with or without a preceding EOT 00 Normal R-byte

Figure 2-135 (Part 2 of 6). Format of BSC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	IOBADR	1	Multipoint tributary address
06	IOBSTAR	2	Start data address
08	IOBRLN	2	Data buffer length (receive)
0A	IOBSNS1	1	Sense byte 1: *Hex* *Meaning* 81 Receive timeout—data mode 80 Receive timeout 40 Data check (CRC, LRC, VRC) 20 Transmit adapter check 10 Receive adapter check 08 ASCII not valid or Call progress signal in sense byte 5 (X.21 only) 04 Lost connection or disconnect timeout MLCA permanent error (if IOBHCMP Is 44) 02 Data set not ready 01 Not used 00 MLCA temporary error (if IOBHCMP is 44)
0B	IOBSNS2	1	Sense byte 2: Reserved
0C	IOBCAR	2	Current buffer address
0E	IOBRES	2	Reserved
10	IOBTCB	2	Task control block address
12	IOBQHDR	1	Queue header

Figure 2-135 (Part 3 of 6). Format of BSC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
13	IOBLDEF	1	Line definition: *Hex* *Meaning* 80 Half rate of modem 40 Internal clocking 20 IBM modem 10 World trade answer tone 08 Standby line (switched network back—SNBU) 04 Multipoint line 02 Switched line 01 Point-to-point nonswitched line *Note:* If a wrap test is running and a Japanese modem is installed, bit 0 must be on.
14	IOBWCNF	1	Wrap configuration byte: *Hex* *Meaning* 80 Half rate 40 NRZI disable 20 Analog wideband or 56K bps 10 Autocall 08 DDSA 04 External IBM modem 02 1200 bps integrated modem 01 4800 bps integrated modem
	or IOBTLN	2	Data buffer length (transmit)
16	IOBDUM2	2	Reserved
18	IOBDAT	2	Data buffer address
1A	IOBNXT	2	Chain to next IOB
1C	IOBDBL	2	Data buffer length

Figure 2-135 (Part 4 of 6). Format of BSC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1E	IOBFLA	1	Flag byte: Batch BSC *Hex* *Meaning* 80 ENQ sent 40 Invalid ACK received 20 WACK received 10 Autocall task called with dial 08 IOB set up for transfer 04 Autocall task called with reset 02 Delay IOB 01 Receive initial delay active SSP-ICF *Hex* *Meaning* 80 Error recovery procedure line control character sent 40 Invalid ACK received 20 Restore this IOB after error recovery procedure 10 Monitor IOB 08 ATR mapping required 04 Ignore this IOB op end for trace 02 Delay IOB 01 Receive initial delay active
1F	IOBWKA	2	Pointer to BSC work area

Figure 2-135 (Part 5 of 6). Format of BSC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
21	IOBCMP	1	IOB completion code (logical): *Hex* *Meaning* 88 IOB online 86 IOB operation ended 84 IOB ready for line 80 IOB being processed by data management 40 IOB finished by IOS *Note:* Also see DTF completion codes for batch BSC.
22	IOBERC	1	Error retry count
23	IOBENC	1	End of block character (batch BSC only)
24	IOBDLY	2	Delay time (SSP-ICF only)
26	IOBBUB	2	Address of associated BSC unit block (SSP-ICF only)

Figure 2-135 (Part 6 of 6). Format of BSC IOB

Disk IOB (28 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$IOBDECM	1	Event control mask: *Hex* *Meaning* 40 Real data address

Figure 2-136 (Part 1 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	$IOBDCMP	1	Completion code: *Hex* *Meaning* 44 Scan equal hit 42 Scan not hit 41 Permanent I/O error 40 Normal completion
02	$IOBDFLG	1	Flag byte: *Hex* *Meaning* 80 Do not assign alternative sector on permanent error and do not log error 40 Do not return on permanent error 20 IOS does not issue message 10 Do not log errors 08 Reserved 04 Reserved 02 Do not verify after write 01 Reserved
03	$IOBDCMD	1	Command code: *Hex* *Meaning* A3 Scan command byte A2 Write command byte A1 Read command byte A0 Control command byte

Figure 2-136 (Part 2 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	$IOBDMDR	1	Command modifier: *Hex* *Meaning* Control operations: 00 Seek command modifier Read and write: 80 Repeat same data *n* times (*n*=number) 00 Data command modifier Read only: 03 Verify command modifier Scan only: 02 Scan high or equal 01 Scan low or equal 00 Scan equal
05	$IOBDUAD	1	Reserved for disk IOS
06	$IOBDDAT	2	Address of physical buffer
08	$IOBDNB	1	Length count (number of sectors minus 1)
09	$IOBDFL2	1	Flag byte 2: Reserved
0A	$IOBDSB0	6	Sense bytes (0–5): Sense byte 0 (62EH): *Hex* *Meaning* 80 Disk not ready checks 40 Alternate sector processing 20 Sector sync checks 10 Off-track checks 08 Cyclic redundancy checks 04 Parallel DBO parity checks 02 Write data echo checks 01 Cycle steal overruns

Figure 2-136 (Part 3 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			Sense byte 0 (62PC): *Hex* *Meaning* 80 Adapter check 40 Channel overrun check 20 Parallel DBO parity check 10 Tag parity check 08 CA data bus parity check 04 Inbound interface error 02 Unused 01 Unused Sense byte 1 (62EH): *Hex* *Meaning* 80 No operation 40 Data unsafe checks 20 Not valid seek address checks 10 Attachment equipment checks 08 No records found 04 Scan equal hit 02 Scan not hit 01 Seek checks Sense byte 1 (62PC): *Hex* *Meaning* 80 End of operation 40 End of track 20 Data operation ready 10 Unused 08 Scan argument transfer complete 04 Any error 02-01 11—drive 4 10—drive 3 01—drive 2 00—drive 1

Figure 2-136 (Part 4 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			Sense byte 2 (62EH):

Hex	*Meaning*
80	Serdes (serialization/ deserialization) checks
40	Write checks
20	Channel transfer data
10	Phase locked oscillator (PLO) out of sync checks
08	Interrupt timeout checks
04	Behind home
02	ID orientation correct
01	Sector checks

Sense byte 2 (62PC):

Hex	*Meaning*
80	Unused
40	Forced end of operation
20	Read/write/scan busy
10	Alternate sector processing
08	Reserved
04-01	File configuration

Figure 2-136 (Part 5 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			Sense byte 3 (62EH):

Hex	*Meaning*
80	Spindle B installed
40	Select unsafe checks
20	Write unsafe checks
10	Brake failure checks
08	Servo unsafe checks
04	Not used
02	Not used
01	Disk size indicator: On—13.2 megabytes Off—8.6 megabytes

Sense byte 3 (62PC):

Hex	*Meaning*
80	Unused but always one
40	Brake applied
20	Track unavailable
10	Command error
08	Data unsafe
04	Seek incomplete
02	Home
01	Disk not ready

Figure 2-136 (Part 6 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			Sense byte 4 (62EH):
			Hex *Meaning*
			80 Not valid I/O buffer address checks (I/O buffer not mapped or buffer is not on an 8-byte boundary—detected by control processor)
			40 Not used
			20 Not used
			10 Not used
			08 Not used
			04 Not used
			03 Head select: 00=head selected 0 01=head selected 1 10=head selected 2
			Sense byte 4 (62PC):
			Hex *Meaning*
			80 Cyclic redundancy check
			40 Common adapter parity check
			20 Channel interface parity check
			10 Write gate return check
			08 No record found
			04 Invalid command parameters
			02 Missing sector pulse error
			01 Timeout error

Figure 2-136 (Part 7 of 8). Format of Disk IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			Sense byte 5 (62EH):
			Unassigned
			Sense byte 5 (62PC):
			Hex *Meaning*
			80 File not attached
			40 Invalid data buffer address
			20 Unused
			10 Unused
			08 Unused
			04 Scan equal hit
			02 Scan not hit
			01 62PC interface error
10	$IOBDTCB	2	Task control block pointer
12	$IOBDERR	1	Error retry count
13	$IOBDRSV	1	Reserved
14	$IOBDRS2	1	Reserved
15	$IOBDRS3	1	Reserved
16	$IOBDSS	3	Relative sector address
19	$IOBDLSP	3	Last sector processed

Figure 2-136 (Part 8 of 8). Format of Disk IOB

Diskette IOB (34 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$IOBRECB	1	Event control mask: *Hex* *Meaning* 40 Real data address
01	$IOBRCMP	1	Completion code: *Hex* *Meaning* 49 Unsupported control record 44 End of track 43 Not ready/empty slot 42 End of volume 41 Permanent I/O error 40 Successful completion
02	$IOBRFLG	1	Flag byte: *Hex* *Meaning* 80 No error recovery 40 No return on permanent error 20 Do not issue any messages 10 Do not log errors 08 Disable seek after 04 No error correction 02 Reserved 01 Disable seek before

Figure 2-137 (Part 1 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	$IOBRCMD	1	Command code: *Hex* *Meaning* DB Abort autoloader DA Orient autoloader D9 Eject diskette D8 Select diskette D7 Write ID D6 Write control address marks D5 Write data D3 Read ID D2 Read data/CAM D and F control records are not squeezed out as in read data (D1) D1 Read data D0 Seek
04	$IOBRMDR	1	Command modifier: *Hex* *Meaning* 80 Modified frequency modulation recording mode 40 Return on not ready/empty slot 20 User-supplied control field 10 Control storage data address

Figure 2-137 (Part 2 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			*Hex* *Meaning* 08 Diskette 2D 04 Return on end of track 03 1024-byte sectors 02 512-byte sectors 01 256-byte sectors 00 128-byte sectors *Note:* Bits 6 and 7 define the sector length for sector addressing.
05	$IOBRSV1	1	Reserved (must be zero)
06	$IOBRDAT	2	Address of physical buffer
08	$IOBRLNG	2	Length (not used)
0A	$IOBRSB0	1	Sense byte 0: If sense byte 1, X'80'=1, then the 4 high-order bits of byte 0: *Bit* *Meaning* 0000 Device address or port address not valid 0001 Command modifier or diskette command not valid 0010 Not ready and not seek operation 0011 Not ready and seek not a recalibrate 0100 Hardware error did not reset 0101 Head 1 specified on one-sided diskette 0110 MFM command on non-MFM drive 0111 Write or erase gate on

Figure 2-137 (Part 3 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			*Bit* *Meaning* 1000 Autoloader command with invalid slot 1001 IOB parameters not valid 1010 Time out in data mode *Note:* The 4 low-order bits are disregarded. If sense byte 1, X'80'=0, then byte 0: *Hex* *Meaning* 80 Missing data address marks 40 ID cyclic redundancy checks (see note 1) 20 Data cyclic redundancy checks 10 Cylinder mismatch 08 Head mismatches (see note 1) 04 Record mismatches (see note 1) 02 Record length mismatches (see note 1) 01 Seek reverse *Note 1:* Used on level 1 attachments only.
0B	$IOBRSB1	1	Sense byte 1: *Hex* *Meaning* 80 No-op conditions 40 Not valid control record checks 20 Write verify mismatches 10 Control address marker record found 08 Error correction has been invoked 04 Write errors 02 End of track 01 File busy

Figure 2-137 (Part 4 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	$IOBRSB2	1	Sense byte 2: *Hex* *Meaning* 80 Fast checks (diskette rotation too fast) 40 Not ready (diskette inverted/missing/diskette rotation too slow) 20 Erase current missing 10 ID not found 08 Read overrun checks (see note 1) or buffer underrun (see note 2) 04 Frequency modulation data mode 02 Write overrun (see note 1) or buffer overrun (see note 2) 01 Write parity check (see note 1) *Note 1:* Used on level 1 attachments only. *Note 2:* Used on level 2 attachments only.
0D	$IOBRSB3	1	Sense byte 3: *Hex* *Meaning* 80 Unexpected erase current present checks 40 Block processor clock off (used on level 1 attachment only) 20 On—diskette 1 drive Off—diskette 2D drive 10 Erase current off 08 Head 0 active 04 Diskette type 02 Not used 01 Diskette working off

Figure 2-137 (Part 5 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	$IOBRSB4	1	Sense byte 4: *Hex* *Meaning* 80 Autoloader op end 40 Autoloader error 20 Autoloader parity check 10 Autoloader attached 08 Autoloader command reject 04 Autoloader motion check 02 Autoloader command not valid 01 Autoloader timeout
0F	$IOBRSB5	1	Sense byte 5: *Hex* *Meaning* F0 Parity check E0 Reserved D0 Unsave (write or erase current active) C0 Not oriented B0 Op is out of sequence A0 Reserved 90 Carriage bed op aborted by cover open 80 Diskette window stuck closed 70 Diskette window stuck open 60 Diskette did not load (missing?) 50 Diskette stuck in drive 40 Picker stuck in drive 30 Picker stuck in magazine 20 Carriage bed stuck off home 10 Carriage bed stuck at home 08 Reserved 04 Reserved 02 Reserved 01 Reserved 00 Reserved

Figure 2-137 (Part 6 of 7). Format of Diskette IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	$IOBRTCB	2	Task control block address
12	$IOBRERR	1	Error retry count
13	$IOBRESC	1	Eject/select retry count
14	$IOBRSLT	1	Autoloader slot
15	$IOBRDTF	2	Address of DTF
17	$IOBRLSP	2	Next sector address to process
19	$IOBRLFT	1	Residual sector count
1A	$IOBRSS	2	Sector address
1C	$IOBRNB	1	Number of sectors minus 1
1D	$IOBRCYL or $IOBRSSL	1	Cylinder Length of IOB with sector addressing
1E	$IOBRHD	1	Head
1F	$IOBRRCD	1	Record
20	$IOBRSIZ	1	Sector size
21	$IOBRNUM or $IOBRCHR	1	Number of sectors minus 1 CHRNX appendage
22	$IOBRCHL	1	Length of IOB with CHRNX addressing

Figure 2-137 (Part 7 of 7). Format of Diskette IOB

MICR IOB (23 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MRIECM	1	Event control mask: *Hex* *Meaning* 80 Do not skip this event 40 Data address in IOB is real 20 Non I/O event 10 Reserved (must be 0) 08 Reserved (must be 0) 04 Reserved (must be 0) 02 Reserved (must be 0) 01 Reserved (must be 0)
01	MRICMP	1	Completion code: *Hex* *Meaning* 41 Error 40 Normal completion
02	MRIFLG	1	Error flag: *Hex* *Meaning* 80 User error recovery request 10 Error logging disallowed
03	MRICMD	1	Command byte: *Hex* *Meaning* 56 Load tables 53 Single document read 51 Read

Figure 2-138 (Part 1 of 3). Format of Magnetic Character Reader IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	MRIMDR	1	Modifier byte: *Hex* *Meaning* 06 Load user's DCL storage (SUBR25 only) 04 Load general and control registers (SUBR25 only) 02 Load work area (SUBR08 only) 00 Load compression groups (SUBR08 only) xx For a read command, the number of documents to be read
05	MRIUAD	1	Unit address: Reserved (must be 0)
06	MRIDB@	2	Data buffer address
08	MRIDBL	2	Data buffer length
0A	MRISNS0	1	Sense byte 0: *Hex* *Meaning* 80 Program check in DCL program (SUBR25 only) 40 Document count limit reached (SUBR08) or user requested reader/sorter device to stop (SUBR25 only) 20 End of file 10 Controller DBI/DBO parity checks 08 External I/O light 04 Controller memory parity checks 02 Controller long time out checks 01 Abnormal stop conditions

Figure 2-138 (Part 2 of 3). Format of Magnetic Character Reader IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	MRISNS1	1	Sense byte 1: *Hex* *Meaning* 80 Document auto rejects 40 Reserved 20 Misreads with rejects 10 Misreads without rejects 08 Reserved 04 Reserved 02 Reserved 01 Reserved
0C	MRIIAR	2	Device controller IAR value when program check occurred in DCL program (SUBR25 only)
0E	MRICREG	1	Device controller condition register value when program check occurred in DCL program (SUBR25 only)
0F	MRIRSV4	1	Reserved
10	MRITCB@	2	Task control block address
12	MRIRSV5	2	Reserved
14	MRICHAIN	2	Chain field (optional)
16	MRISAVE	1	Modifier save (optional)

Figure 2-138 (Part 3 of 3). Format of Magnetic Character Reader IOB

Printer IOB (24 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$IOBPECM	1	Event control block:
			Hex — *Meaning*
			80 — No skip bit
			40 — Real data address
			20 — Non I/O event
			10 — Not used
			08 — Not used
			04 — Not used
			02 — Not used
			01 — Not used
01	$IOBPSTA	1	IOB completion status byte:

Note: Spool intercept uses this field as a temporary save area for $IOBPCTL.

			Hex — *Meaning*
			80 — IOB request active
			40 — IOB request complete
			20 — Not used
			10 — Reserved
			08 — Not used
			04 — Not used
			02 — Data transfer complete
			01 — Error detected
			00 — IOB request inactive
02	$IOBPFLG	1	IOB flag byte:
			Hex — *Meaning*
			80 — Reserved
			40 — Do not allow a 2-option on error messages
			20 — Do not issue a message if the message normally requires the 2 and 3 options
			10 — Do not log the error

Figure 2-139 (Part 1 of 4). Format of Printer IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02 (cont.)			*Hex* — *Meaning*
			08 — Ideographic support installed
			04 — Shift out of normal SCS control code found in the data buffer
			02 — Printer output is to be spooled
			01 — Control storage data address
03	$IOBPCMD	1	IOB command code:
			Hex — *Meaning*
			E0 — 3262 or 5211 Printer
			C0 — 5219, 5224, 5225, or 5256 Printer (local)
			80 — 5219, 5224, 5225, or 5256 Printer (remotely attached)
			02 — Quiesce
			00 — Execute
04	$IOBPMDR	1	IOB command modifier:
			Hex — *Meaning*
			40 — Clear
			27 — Output
05	$IOBPUAD	1	Unit address
06	$IOBPDAT	2	Data address
08	$IOBPLNG	2	Length of data to be transferred
*0A	$IOBPCTL	1	Control byte:
			Hex — *Meaning*
			80 — Alignment requested
			40 — Print operation
			20 — User has specified no RAM processing

Figure 2-139 (Part 2 of 4). Format of Printer IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
*0A (cont.)			*Hex* *Meaning* 10 Begin scan of data in two-byte mode 08 Two-byte mode indicator 04 RAM processing required indicator 02 Two-byte character code indicator 01 Two-byte character code capable device
*0B	$IOBPSKB	1	The line number to skip to before printing
*0C	$IOBPSPB	1	The number of lines to space before printing
*0D	$IOPBSKA	1	The line number to skip to after printing
*0E	$IOBPSPA	1	The number of lines to space after printing
0F	$IOBPWKA	1	Work area. When used by the spool writer, this field is used to return the option selected to any message issued by the extended IGC print transient
Returned Data (see note)			
**0B	$IOBP#BF	1	Number of forms feeds before printing. If a print operation was not requested, this field contains zero
**0C	$IOBP#AF	1	Number of forms feeds after printing. If a print operation was not requested, this field contains the total number of forms feeds

Note: The above two fields are used by the spool writer to maintain the current page number.

Figure 2-139 (Part 3 of 4). Format of Printer IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
**0D	$IOBPPSB	2	Address of printer specification block (only at open time). When used by the spool writer, this field is used to contain the event control mask address (ECM) for any message issued by the extended IGC print transient
10	$IOBPTCB	2	Task control block address. When used by the spool writer, this field saves the address of the Gaiji parameter list when interfacing with the extended IGC print transient. Spool intercept uses the high- and low-order bytes of this field as a temporary save area for the low-order byte of $IOBPLNG and $IOBP#AF
12	$IOBPSQD	1	Printer queue header displacement or logical queue header number
13	$IOBPTUB	2	Terminal unit block address
*15	$IOBPFML	1	Forms length
**16	$IOBPCLN	1	Current line number
17	$IOBPSID	1	Internal ID for spool writer: *Hex* *Meaning* 80 Spool writer is sending first of chain 40 Spool writer is sending middle of chain 20 Spool writer is sending end of chain 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Notes: * = Data used by prepare print buffer routine (SVC 26) to insert control characters into the data buffer and to maintain a record of current line.
** = Data returned from prepare print buffer routine.

Figure 2-139 (Part 4 of 4). Format of Printer IOB

SDLC IOB (32 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SIOBECM	1	Event control mask
01	SIOBHCMP	1	Hardware completion code: *Hex* *Meaning* 80 IOB active 44 MLCA controller check 41 Error detected 40 Operation complete 10 Hold (non-MLCA only) 08 SNA/SDLC interface flag Results of diagnostic wrap test: 04 MLCA failure 02 IBM modem failure 01 IBM attachment failure 00 No failure detected
02	SIOBPARM	1	Parameter list (MLCA only): *Hex* *Meaning* 07 Autocall 06 Wrap test microcode 03 Primary SDLC 02 Secondary SDLC

Figure 2-140 (Part 1 of 6). Format of SDLC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	SIOBQ	1	Command byte (Q-code): *Hex* *Meaning* 8F Stop auto poll/response 89 Start auto poll—RNR 88 Start auto poll—RR 87 Receive delayed 86 Transmit initial 85 Transmit only 84 Transmit final 83 Receive initial 82 Transmit/receive 81 Receive 80 Control command
04	SIOBR	1	Command modifier (R-code): *Hex* *Meaning* D0 Control reenable (MLCA) C0 Control enable 80 Control disable (with control command Q-byte) or call mode for X.21 (with receive initial Q-byte) 40 Retry transmit adapter check (MLCA) 00 R-code zero
05	SIOBSTA@	1	Station address
06	SIOBBUF@	2	Buffer start address
08	SIOBBUFL	2	Data buffer length
0A	SIOBST0	1	Status byte 0: *Hex* *Meaning* FF IOB not operational due to transmit adapter check (secondary only)

Figure 2-140 (Part 2 of 6). Format of SDLC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			*Hex* *Meaning* 80 Time-out error 40 Frame check error 20 Adapter check error 10 Data overrun 08 Frame not valid 04 Abortive disconnect 02 Data set not ready 01 Idle detect time-out (primary)
0B	SIOBST1	1	Status byte 1
0C	SIOBST2	1	Status byte 2
	or		
	SIOBDEA	2	Data end address (status bytes 2 and 3)
0E	SIOBRES1	2	Reserved for MLCA
10	SIOBTCB	2	Address of SDLC TCB if buffer is translated; otherwise, address of command processor TCB
12	SIOBQUE	1	queue header (line queue)
13	SIOBLDEF	1	Line definition: *Hex* *Meaning* 80 Half rate 40 Internal clock 20 IBM modem 10 Answer tone 08 Stand by line 04 Multipoint (primary SDLC only) 02 Switched with DTR modem 01 Nonswitched point-to-point
14	SIOBRES2	1	Reserved for MLCA
15	SIOBOPC	1	Operation code:

Figure 2-140 (Part 3 of 6). Format of SDLC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
15 (cont.)			*Hex* *Meaning* 80 Used to identify an IOB being returned from correction task (not an SNA op code) 13 Enable adapter with autocall 12 Queue poll list segment 11 Enable adapter 10 SNRM error reset 0F Send RQD response 0E Send DISC command 0D Send SNRM command 0C Send XID command 0B Send TEST command 0A Write data (last data element) 09 Write data 08 Read data 07 Abort free request 06 Abort detach request 05 Free request 04 Detach request 03 Purge request 02 Terminate with wrap test 01 Terminate without running wrap test C0 Used in microcode enable IOB to indicate an X.21 line (not an SNA op code)
16	SIOBFLG	1	Status flags: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Reserved 10 Reserved 08 Line number 4 04 Line number 3 02 Line number 2 01 Line number 1

Figure 2-140 (Part 4 of 6). Format of SDLC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
17	SIOBCMP	1	SNA completion code: *Hex* *Meaning* 55 Attempt to enable X.21 on switched line with MC/MA switch type 54 Autocall failure 53 SNRM received in NDM 51 RQD response received 50 Exchange ID response received 4F Disconnected mode response received 4E Timeout occurred 4D Set normal response mode received in normal response mode 4C Disconnect received 4B Message to display from SDLC 4A Abnormal termination of SDLC line 49 SDLC 2K page failure 48 Data overrun occurred 47 Permanent SDLC hardware error 46 Protocol violation 45 SNA request not valid 44 Request ignored 43 Termination complete 42 Test response received without data 41 Test response received with data 40 Operation completed successfully
18	SIOBCHN	2	Chain field
1A	SIOBSNAC	2	SNA common area address
1C	SIOBATTR	1	Attribute indicator: *Hex* *Meaning* 80 Buffer in SQS 40 Free buffer in WSQS on link 20 Printer IOB/buffer do not free buffer 10 Reserved

Figure 2-140 (Part 5 of 6). Format of SDLC IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C (cont.)			*Hex* *Meaning* 08 SDLC (internal) IOB 04 On–primary SDLC Off–secondary SDLC 02 On–transmit IOB Off–receive IOB 01 Reserved
1D	SIOBNSC	1	Transmit send count
1E	SIOBCOMM	2	Address of SDLC common area

Figure 2-140 (Part 6 of 6). Format of SDLC IOB

X.21 IOB (24 Bytes)

The format of the IOB which is passed between the X.21 correction task and the microcode is as follows:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00		1	ECM
01		1	Completion code: *Hex* *Meaning* 44 MLCA controller check 41 IOB completed with error 40 Normal completion
02		1	Protocol byte: *Hex* *Meaning* 08 X.21 IOB

Figure 2-141 (Part 1 of 3). Format of X.21 IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03		2	Command and modifier bytes: *Hex* *Meaning* 80C0 Enable 9000 Dial
05		1	Not used by X.21 support
06		2	Enable—address of the 320-byte microcode load buffer Dial—address of the number to call
08		2	Not used by X.21 support
0A		1	Status byte 0: *Hex* *Meaning* 80 T1 time-out 40 T2 time-out 2B T3B time-out with a CPS in status byte 20 T3A time-out 10 Parity error 08 Call progress signal received in status byte 4 04 DCE has cleared 02 DCE not ready 01 Hardware error
0B		3	Reserved

Figure 2-141 (Part 2 of 3). Format of X.21 IOB

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E		1	Status byte 4 (CPS) CPS 01 Terminal called 02 Redirected call 03 Connect when free 20 No connection 21 Number busy 22 Selection signal procedure error 23 Selection signal transmission error 41 Access barred 42 Changed number 43 Not obtainable 44 Out of order 45 Controller not ready 46 Uncontrolled not ready 47 DCE power off 48 Invalid facility request 49 Network fault in local loop 51 Call information service 52 Incompatible user class of service 61 Network congestion 71 Long term network congestion 72 RPOA out-of-order 81 Dynamic facility request was successful
0F		1	Reserved
10		2	TCB address
12		1	Line queue header (62 if enable)
13		5	Reserved

Figure 2-141 (Part 3 of 3). Format of X.21 IOB

I/O Counter Table Directory

I/O counter tables maintain an accumulative total of the various events performed by a specific device. The I/O counter table directory area contains the directory entries for the I/O counter tables for each drive of the disk, the diskette, the line printer, the magnetic character reader, and each locally attached work station terminal of a system. The directory area also contains the system event counter tables that are maintained on the system.

Each sector of this directory contains the directory entries plus the I/O counter tables for those directory entries. The number of I/O counter table directory entries that a sector may contain is determined by the length of the I/O counter tables plus the product of the number of directory entries multiplied by 4. The maximum size is 255 bytes. If the length of the directory entries plus I/O counter tables exceeds 255 bytes the dummy entry contains hex FC to indicate the directory extends to the next sector. The last sector of the directory contains hex FE in the dummy entry. That entry is followed by 3 bytes of data that identify (in hex) the number of sectors for the I/O counter tables directory, logging tables directory, and the logging tables plus the two preceding directories. The CSIPL function builds this directory based on the devices identified in the unit definition table (UDT) of the system and the configuration record. The directory is used by the I/O counter logging transient to update the I/O counter tables, by the error recovery analysis procedure (ERAP) when it displays, prints and/or resets those counters, and by the system event counter procedure when it displays, prints, or prints and resets the system event counters.

How to Find

The 2-byte address of the I/O counter tables directory is in field SCASIOSS of the system communication area (SCA) and also in field CONSIOSS of the configuration record.

Format

Figure 2-142 and 2-143 show the organization of the I/O counter tables directory and the format of a directory entry, respectively. Figures 2-144 through 2-149 show the I/O tables for each device. See Figure 2-255 for the format of a system event counter table.

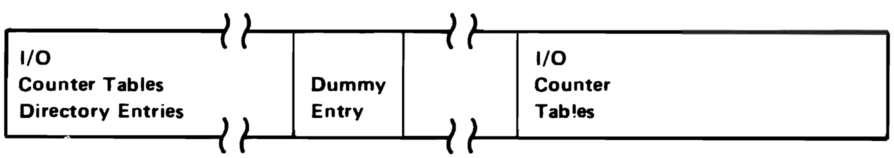


Figure 2-142. I/O Counter Tables Directory Organization

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SIOCDDID	1	Device ID (a device ID of hex 00 identifies a deleted entry)
01	SIOCDDAD	1	Device address
02	SIOCDUAD	1	Unit address
03	SIOCDDSP	1	Displacement into this sector where the I/O counter table for this device begins

Figure 2-143. Format of an I/O Counter Tables Directory Entry

Disk I/O Counter Table (20 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FDSIOVER	4	Number of disk verifies
04	FDSIOWRT	4	Number of disk writes
08	FDSIOROS	4	Number of disk reads or scan reads
0C	FDSIONZS	4	Number of disk nonzero seeks
10	FDSIODAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
13	FDSIORES	1	Reserved

Figure 2-144. Disk I/O Counter Table

Diskette (Basic) I/O Counter Table (16 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDSIORED	4	Number of diskette reads
04	RDSIOWRT	4	Number of diskette writes
08	RDSIOSKS	4	Number of diskette seeks
0C	RDSIODAT	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
0F	RDSIORES	1	Reserved

Figure 2-145. Diskette (Basic) I/O Counter Table

Diskette (Autoloader) I/O Counter Table (20 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RDSIORDS	4	Number of diskette reads
04	RDSIOWTS	4	Number of diskette writes
08	RDSIOSES	4	Number of diskette seeks
0C	RDSIOAOP	4	Number of autoloader operations
10	RDSIODTE	3	Date (YYMMDD) on which the counters in this table were reset through ERAP
13	RDSIORSV	1	Reserved

Figure 2-146. Diskette (Autoloader) I/O Counter Table

Line Printer I/O Counter Table (14 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LPSIOCT1	4	Nonresettable number of lines printed
04	LPSIOCT2	4	Resettable number of lines printed
08	LPSIODT2	3	Date (YYMMDD) on which the resettable counter in this table was reset through ERAP
0B	LPSIODT1	3	Date (YYMMDD) on which this table was created

Note: The I/O counter tables for the 5211 and the 3262 line printers are the same.

Figure 2-147. Line Printer I/O Counter Table

Magnetic Character Reader I/O Counter Table (8 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCSIOCTR	4	Number of MICR documents read
04	MCSIODAT	3	Date (YYMMDD) on which the counter in this table was reset through ERAP
07	MCSIORES	1	Reserved

Figure 2-148. Magnetic Character Reader I/O Counter Table

Work Station Terminal (Local) I/O Counter Table for Display Station and Matrix Printer (8 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WSSIOCTR	4	Number of work station terminal SVCs
04	WSSIODAT	3	Date (YYMMDD) on which the counter in this table was reset through ERAP
07	WSSIORES	1	Reserved

Figure 2-149. Work Station Terminal (Local) I/O Counter Table: Display Station and Matrix Printer

Job Control Block (JCB)

The job control block (JCB) contains various information pertaining to a work station session. The JCB is normally created at sign-on time of a work station session and exists in the work station system queue space area until sign-off.

How to Find

Field TCBJCB@ in the task control block (TCB) points to the 112-byte JCB associated with the work station task.

Format

Figure 2-150 shows the format of a JCB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	JCBDINIT	1	Initiator switch byte 1: *Hex* *Meaning* 80 In intra mode (load statement received) 40 Program running (between run statement and termination) 20 In inter mode (between termination and load statement) 10 Ignore no history procedure attribute 08 This is a multiple request terminal job control block 04 No source required 02 Load statement received this session 01 Load statement received this job
01	JCBDINT2	1	Initiator switch byte 2: *Hex* *Meaning* 80 Region statement received this job 40 Local data area is in storage 30 High priority has been specified 20 Medium priority has been specified 10 Low priority has been specified 08 In a procedure 04 Program (JCBDPROG) was found in user library (JCBDCRLB) 02 Enqueue resources with NEP attribute 01 Nonrequesting terminal program

Figure 2-150 (Part 1 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	JCBDSCH1	1	Scheduler byte 1: *Hex* *Meaning* 80 Program has utility control statements 40 Run OXREF at termination 20 First system input is in task work area 10 Flush utility control statements 08 Program is dedicated 04 DMY date—world trade 02 MDY date—domestic 01 YMD date—international
03	JCBDSCH2	1	Scheduler byte 2: *Hex* *Meaning* 80 Open or close error 40 Priority command executed 20 Program is a never ending program 10 Job queue program 08 Include statement received 04 Allocate do not prepare the diskette 02 Inquiry latch set 01 Noninquirable program
04	JCBDSCH3	1	Scheduler byte 3: *Hex* *Meaning* 80 SYSLOG—suppress option 2 halt 40 SYSLIST OFF selected by halt option 20 SYSLIST PRINTER selected by halt option 10 Reserve statement received for this job 08 SYSLIST CRT selected by halt option 04 End of outer-most procedure 02 Inquiry job control block 01 Termination—display return code

Figure 2-150 (Part 2 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	JCBDINLK	1	Scheduler interlock byte: *Hex* *Meaning* 80 SYSLOG transient called 40 SYSIN transient called 20 Diskette file allocated but not closed 10 Diskette VTOC on disk 08 Diskette VTOC updated 04 Resume—call #CSIM 02 Autoloader diskette selected 01 Reset statement received
06	JCBDUPSI	1	UPSI switch byte: *Hex* *Meaning* 80 UPSI switch 1 40 UPSI switch 2 20 UPSI switch 3 10 UPSI switch 4 08 UPSI switch 5 04 UPSI switch 6 02 UPSI switch 7 01 UPSI switch 8
07	JCBDDATE	3	Session date
0A	JCBDPDAT	3	Program date
0D	JCBDSLST	2	SYSLIST indicator—printer ID X'0000'=off X'EEEE'=CRT X'FFFF'=system printer C'xx'=designated printer ID
0F	JCBDCRLB	2	Current library format 1 address
11	JCBDFSBL	2	Library—file specification block chain pointer

Figure 2-150 (Part 3 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
13	JCBDFSBF	2	File—file specification block chain pointer
15	JCBDWSBP	2	Work station specification block chain pointer
17	JCBDPSBP	2	Printer specification block chain pointer
19	JCBD1PRC	8	Name of first level procedure (multiple request terminal procedure name if JCBMNMRT is on and this JCB is pointed to by the multiple request terminal task control block)
21	JCBDPROG	8	Program name
29	JCBDSTAT	1	Status byte: *Hex* *Meaning* 80 Waiting for printer 40 Waiting for communication line 20 Waiting for diskette 10 Waiting for disk space 08 Initiator waiting for resources 04 Waiting for a multiple request terminal over multiple request terminal maximum (MRTMAX) 02 Halt pending to system operator 01 File extension in process
2A	JCBDRGSZ	1	Region size (step) (2K blocks)
2B	JCBDCTAG	1	Current tag in procedure parameter save area
2C	JCBDSLOB	2	SYSLIST IOB address
2E	JCBDRTCD	2	Return code (MIC)
30	JCBDEXT@	2	Job control block extension address
32	JCBDPRG1	2	Relative sector address of program 1 message member

Figure 2-150 (Part 4 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34	JCBDPRG2	2	Relative sector address of program 2 message member
36	JCBDUSR1	2	Relative sector address of user 1 message member
38	JCBDUSR2	2	Relative sector address of user 2 message member
3A	JCBDPG1L	2	Program1 library format 1 address
3C	JCBDPG2L	2	Program2 library format 1 address
3E	JCBDUR1L	2	User1 library format 1 address
40	JCBDUR2L	2	User2 library format 1 address
42	JCBDMENU	2	Relative sector address of menu message member
44	JCBDMENL	2	Menu library format 1 address
46	JCBDJBID	2	Job name (ID)
48	JCBDLNPG	1	Lines/page
49	JCBDFMNO	4	Forms number
4D	JCBDSLLC	1	SYSLIST CRT line counter
4E	JCBDNFTF	1	Number of formats found
4F	JCBDFIN@	2	Address of format index
51	JCBDCIB@	2	Address of compiler information block
53	JCBDDTF@	2	Address of first DTF on chain
55	JCBDSLLR	1	SYSLIST CRT lines requested
56	JCBDDFRG	1	Default region size (2K blocks)
57	JCBDJBRG	1	Region size (job) (2K blocks)

Figure 2-150 (Part 5 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
58	JCBDMENF	7	Menu format index
	or JCBDJQST	3	Job quene job start time
5B	JCBDSPID	2	Session printer ID
5F	JCBDJOBN	3	Job name (time stamp)
62	JCBDSCH5	1	Scheduler byte 5: *Hex* *Meaning* 80 Search system library only 40 SYSLIST end message required 10 SYSLIST 'NOEXTN' specified 08 On–15 CPI specified on // FORMS OCL statement Off–10 CPI specified on // FORMS OCL statement
	or JCBDLANG	1	Language: *Hex* *Meaning* 20 List RPG II
63	JCBDSCH4	1	Scheduler byte 4: *Hex* *Meaning* 80 Job control block termination interlock 40 Flush inline source 20 Program has inline source 10 Initiator did not initiate this task 08 Secured resource allocated by this multiple requestor terminal 04 Evoked procedure 02 Set spool file EOF at last checkpoint 01 Error information block present

Figure 2-150 (Part 6 of 7). Format of a Job Control Block (JCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
64	JCBDCSBP	2	Communications specification block chaining pointer
66	JCBDUSER	8	User ID
6E	JCBDBFR@	2	SYSIN buffer address

Job Control Block Extension:

If this 16-byte job control block extension is present, field JCBDEXT@ in the JCB contains the address.

00	JCBDSSB@	2	Session specification block pointer
02	JCBDCCB@	2	Checkpoint control block pointer
04	JCBDPLST	2	Phone list chain pointer
06	JCBDLPI#	1	LPI (lines per inch) value: *Hex* *Meaning* 08 8 lines per inch specified on // FORMS OCL statement 06 6 lines per inch specified on // FORMS OCL statement 04 4 lines per inch specified on // FORMS OCL statement
07	JCBDERSV	9	Reserved

Figure 2-150 (Part 7 of 7). Format of a Job Control Block (JCB)

Keysort Call Parameter List

This 12-byte area is required as input to the keysort call routine (no RIB). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	KYSDPLID	1	Keysort parameter list identification
01	KYSDKACB	1	Duplicate key action control byte: *Hex* *Meaning* 80 Duplicate checking 40 Detail return
02	KYSDF1AD	2	Format 1 pointer (high-order)
04	KYSDPRTL	2	Keysort partition length
06	KYSDRCBY	1	Return condition byte (set by keysort): *Hex* *Meaning* 80 Duplicate key—detail 40 Duplicate key—summary 20 System error 10 I/O error (index) 08 I/O error (work file) index scrambled
07	KYSDKEYL	1	Key length (set by keysort at detail return)
08	KYSDKEY@	2	Address of duplicate key
0A	KYSDKRTN	2	Address for returning to keysort

Figure 2-151. Format of a Keysort Call Parameter List

Librarian Find Parameter List

This 24-byte area is required as input to find a member or members in the library for the library find routine (no RIB). The member's directory entry may be updated. When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LFDDTYPE	1	Library type (do not set)
01	LFDDNAME or LFDDHLEN	8	Member name or partial name Length of partial name in hex
09	LFDDFUNC	1	Function byte 1: *Hex* *Meaning* 80 Write buffer after find 08 Load module find 04 Subroutine member find 02 Source member find 01 Procedure member find
0A	LFDDFNC2	1	Function byte 2 (checked only if LFDDLBF1 is 0): *Hex* *Meaning* 80 Search system library 40 Search designated user library 20 Skip enqueue/dequeue

Figure 2-152 (Part 1 of 2). Format of a Librarian Find Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	LFDDREPL	1	Reply byte: *Hex* *Meaning* 80 Found a member 40 A member was found in this buffer 20 No more members 10 Wrote the previous buffer 08 Found in system library (note) 04 Found in designated user library (note) 01 Found a member in current library *Note:* Bits 4 and 5 are set only if LFDDLBF1 was 0 on input and LFDMSYSL and/or LFDMUSEL was on.
0C	LFDDLBF1	2	Fixed disk address of library to search (if 0 check bits 0 and 1 of function byte 2)
0E	LFDDIRPT	2	Pointer to found directory entry
10	LFDDBUF@	2	Address of caller supplied buffer
12	LFDDBUFS	1	Buffer size in sectors
13	LFDDIOBS	3	Save area for sector address
16	LFDDNMLN	1	Save area for length of name
17	LFDDFNSV	1	Save area for original function

Figure 2-152 (Part 2 of 2). Format of a Librarian Find Parameter List

Library Common Area ($MAINT)

The library common area (CNTLBMSG) is a 256-byte area that begins at location hex C800. It is created by the library mainline routine ($MAINT) and used as a communication area for the library maintenance routines. Figure 2-153 shows the format of the library common area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LBFROMNM	8	From parameter name
00	LBFROM	1	During processing, the first byte of this field gets changed to one of the following flags: *Hex* *Meaning* 22 Reader 21 Disk (FILE) 20 F1 (LIBRARY) and the next two bytes (label LBFROMLB) contain the F1 address if first byte is hex 20
08	LBLIB	1	Member type O, R, S, P or one of the following flags: *Hex* *Meaning* 27 All 23 System
09	LBNAME11	11	Member name (If no name is present, the first byte of this field (label LBNAME1) contains one of the following flags: hex 27—all, or hex 24—directory. If a partial name is present, the eighth byte of this field (label LBNAMLNG) contains the length of the partial name.)
14	LBTONM	8	To parameter name

Figure 2-153 (Part 1 of 3). Library Common Area ($MAINT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
14	LBTO	1	During processing, the first byte of this field gets changed to one of the following flags: hex 21—disk (FILE), hex 20—F1 (LIBRARY), hex 25—print and the next two bytes (label LBTOLB) contain the F1 address if first byte is hex 20.
1C	LBNEW	8	New name
24	LBOMIT11	11	Names to omit (If no name is present, the first byte of this field (label LBOMITC1) contains one of the following flags: hex 23—system or hex 28—new. If a partial name is present, the eighth byte of this field (label LBOMTLNG) contains the length of the partial name.)
2F	LBRETAIN	1	Retain flag: *Hex* *Meaning* P Permanent R Replace S SSP (can be deleted)
30	LBRECL	1	Record length hex 20 or hex 28 through hex 78
31	LBFILE	8	File name
39	LBSIZE	2	Number of blocks—total
3B	LBINCR	2	Number of blocks—increase
3D	LBDECR	2	Number of blocks—decrease
3F	LBDIRSIZ	2	Number of sectors for directory size
41	LBPTF	5	Decimal PTF ID number

Figure 2-153 (Part 2 of 3). Library Common Area ($MAINT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
41	LBPTFVAL	1	If the decimal PTF number is not present, the first byte of this field contains one of the following flags: hex 30—yes or hex 31—no. The fourth byte (label LBPTFNUM) contains the binary PTF number.
46	LBADD	1	Add to existing file
47	LBDEV	1	Device code
48	LBCREATE	1	Create new library
49	LBLOC	1	Spindle preference
4A	LBBASIC	1	Basic exchange format for new diskette
4B	LBMRT	1	MRT procedure
4C	LBHIST	1	Log OCL from procedure
4D	LBBLOCK	7	Block number for location by block
54	LBPDATA	1	Data for procedure
55	LBSVATTR	1	Save attributes in record mode file
56	LBAPLPTF	1	Applying SSP PTFs to library
57		57	Reserved
90	LBDMDTF	112	DTF passed to drivers using data management

Figure 2-153 (Part 3 of 3). Library Common Area ($MAINT)

Library Control Block

The library control block (LCB) is a system data area used to communicate with library access modules. The LCB can also be used to directly implement certain library functions without using the library utility ($MAINT).

How to Find

Index register 2 (XR2) must point to the leftmost byte of the LCB at input to a library access module. The pointer is provided by the caller of the library access module.

Format

Figure 2-154 shows the format of library control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LCBADDRS	1	Load switches: *Hex* *Meaning* 80 $MALIL is loaded 40 $MALCO is loaded 10 $MALFN is loaded 08 Separate buffer for library control sector
01	LCBILD@	2	Address of $MALIL
	or LCBILDWK		Address of work area for $MAILD transient
03	LCBCOM@	2	Address of $MALCO
05	LCBFND@	2	Address of $MALFN
	or LCBSTK@		Address of library directory stack for $MAFIR
07	LCBLCS@	2	Address of LCS buffer

Figure 2-154 (Part 1 of 6). Format of Library Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	LCBOPER1	1	Operation code byte 1: *Hex* *Meaning* 80 Open switch 20 Close switch 10 Get/put switch (on-get, off-put) 08 Sector/record mode (on-sector, off-record) 04 Replace duplicate if found 02 Do not call the find routine
0A	LCBOPER2	1	Operation code byte 2: *Hex* *Meaning* 80 Update PTF log switch 40 Get PTF information switch 20 Delete PTF information switch 10 Replace PTF information switch
0B	LCBOPER3	1	Operation code byte 3: *Hex* *Meaning* 80 Request to return to caller on librarian errors 40 Dummy close—do not put member in the library, just free resources 20 Dummy open or close ($MAPGS does not call $MACOM) 10 SEU is replacing edited member SEU sets, $MACOM does not check chain 08 Close, do not call insert ($MATLS and $MALTL set) 04 $MAPGS return on permanent I/O error 02 Open does not need to do an enqueue and read of the library control sector

Figure 2-154 (Part 2 of 6). Format of Library Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	LCBCOMP1	1	Completion code byte 1: *Hex* *Meaning* 80 Operation successful 40 Invalid record length 20 No space in library 10 No space in directory 08 Name already in library 04 Module not found 02 Invalid character in record 01 Module has been closed
0D	LCBCOMP2	1	Completion code byte 2: *Hex* *Meaning* 80 Size for sector put open=0 40 $MAPGS had permanent I/O error 08 SEU is editing this member or reserved name given for member (same processing as for SEU editing)
0E	LCBLIBSW	1	Librarian switches ($MAINT only): *Hex* *Meaning* 80 LCB has been opened 40 Replace existing member 20 Replace in place was successful 10 Room in library ($MACOM use) 08 Do not invoke a close ($MAPGS) 04 Task was noninquirable before open 02 Duplicate member had a PTF 01 Attempting a replace in place as only one task using the library
0F	LCBREC@	2	Record address

Figure 2-154 (Part 3 of 6). Format of Library Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
11	LCBRECL	1	Record size (in bytes)
12	LCBBUFF@	2	Buffer address
14	LCBBUFFS	1	Buffer size (in sectors) minimum of 2 sectors for a put
15	LCBLBF1@	2	AFA address of F1 for desired library (0=system library)
17	LCBDIR	28	Library directory entry
Contents of 28-byte library directory entry:			
17	LCBTYPE	1	Library type
18	LCBNAME	8	Member name
20	LCBADDR	3	Disk address of member
23	LCB#TXT or LCBDRECL	1	Number of text sectors (O only) Record size (S or P only)
24	LCBLINK	2	Link edit address (O only)
26	LCBSCA	2	Start control address (O only)
28	LCBRLD	1	RLD displacement (O only)
29	LCBCORE	1	Storage size required (O only)

Figure 2-154 (Part 4 of 6). Format of Library Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2A	LCBATTR	3	Attributes: Byte 1: *Hex* *Meaning* 80 Mask for SSP bit in attribute byte 1 40 Mask for no logging of OCL to history file in attribute byte 1 10 Mask set for procedure accepts data in attribute byte 1 02 Mask for PTF bit in attribute byte 1
2D	LCBMRT	1	0—MRTMAX count; P—hex FF designates MRT procedure
2E	LCBREL	1	Release level
2F	LCBTOTL	2	Total number of sectors in member
31	LCBSECTY	1	Security level of this member
32	LCBRESV	1	Reserved
33	LCB#AVMB	2	Number of available sectors
35	LCBCOARR	2	ARR save area for $MACOM
37	LCBPTFLG	8	Save PTF information
3F	LCBOPNSV	2	ARR save area for $MACOM
41	LCBWORK or LCBSLG2S	1	Leftmost byte of work area Start of type 2 SYSLOG parameter list
42	LCBCOMSV or LCBSLG2E	1 4	ARR save area for $MACOM End of type 2 SYSLOG parameter list

Figure 2-154 (Part 5 of 6). Format of Library Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
46	LCBFNDPS	6	Start of find parameter save area
	or LCBFNDPM	23	End of find parameter save area
59	LCBNSECG	1	Number of sectors read or written ($MAPGS)
5A	LCBTOGP	2	Number of sectors left to get or put (set and decremented by $MAPGS and checked by $MAPLS, $MAF32, and $MALTL)
5C	LCBDAGP	3	Disk address of next get or put by $MAPGS (disk address saved by $MAPTF)
	or LCBSAVTN	9	End of save area for type and name
5F	LCBSLG1S	1	Start of type 1 SYSLOG parameter save area
	or		
5F	LCBRDSS	3	Disk address save area for $MAPTF
	and		
62	LCBWRSS	3	Disk address save area for $MAPTF
	and		
65	LCBPTFD@	2	Buffer address of PTFLOG directory entry (set and used by $MAPTF)
60	LCBSLG1E	9	End of type 1 SYSLOG parameter save area

Figure 2-154 (Part 6 of 6). Format of Library Control Block

Library Control Sector

This 1 sector area contains the current status of a library

How to Find

The address of the library control sector (LCS) is in field F1ADSTDA of a library format 1. The system library (#LIBRARY) format 1 is the first entry in the system VTOC. User library format 1's are found in the user section of the VTOC.

Format

The format of the LCS is shown in Figure 2-155.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LCSWCHS	1	Library control sector switches: *Hex* *Meaning* 80 #MAXRF must be run (#LIBRARY only) 40 Compactor ($MACMP) must run 08 Reload was last job run (#LIBRARY only)
01	LCSSOLB	3	Sector address of start of library
04	LCSEOLB	3	Sector address of end of library
07	LCSSODR	3	Sector address of start of directory
0A	LCSEODR	3	Sector address of end of directory
0D	LCS#ACDR	2	Number of active directory entries
0F	LCS#AVDR	2	Number of available directory entries
11	LCSRESV	4	Reserved
15	LCSSOMB	3	Sector address of start of library members
18	LCSEOMB	3	Sector address of end of library members
1B	LCS#ACMB	2	Number of active library sectors
1D	LCSNXMB	3	Start sector address of next available sector for library members
20	LCS#AVMB	2	Number of available member sectors
22	LCSSCPSZ	3	Size of SSP in sectors (#LIBRARY only)
25	LCSPADSZ	3	Original size of SSP pad in sectors (#LIBRARY only)

Figure 2-155. Format of the Library Control Sector

Library—Control Storage

The control storage library is a variable size area beginning at sector address hex 000001 of disk drive A. Its contents consist of control storage IPL diagnostics, the unit definition table (see Figure 2-268 for contents), and the control storage library directory. The control storage library directory is located at sector address hex 00003D. Figure 2-156 shows the format of a control storage library directory entry, followed by the IDs of the control storage load modules (Figure 2-157).

The library area also contains the following:

- Control storage resident code
- Control storage load modules (Figures 2-157 and 2-265)
- Dump areas (main/control and I/O)
- Logging tables (Figures 2-71 through 2-99)
- Work areas (alter/display)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CSID	2	ID of entry
02	CSADDR	2	Sector address of entry
04	CSTEXT	1	Size of entry (sectors)
05	CSLINK	1	Link edit address
06	CSRLD	1	Relocation directory (RLD) offset
07	CSTOT	1	Total sectors
Format of last directory entry			
00	CSEND	2	Hex FEFE
02	CSSTART	2	Sector address of user area (D2FDSTRT)
04	CSUDTSS	2	Sector address of the unit definition table
06	CSHCHKSS	2	Sector address of the I/O counter tables directory

Figure 2-156. Format of a Control Storage Library Directory Entry

Control Storage Load Modules

Following is a list of some of the control storage load modules that are located in the control storage library.

Module ID	Module Name	Description
8000	WSCONTRL	Work station I/O controller code (base)
8001	TNX300	5211 300 line per minute printer I/O controller code
8002	TNX160	5211 160 line per minute printer I/O controller code
8003	MRC	1255 I/O controller code
8004	MRC	1255 I/O controller code
8005	MRC	1255 I/O controller code
8006	TNG650	3262 650 line per minute printer I/O controller code
8007	WSCBRANA	Work station I/O controller code (feature B)
8008	WSCONTR2	Work station I/O controller code (segment 2)
8009	WSCONTR3	Work station I/O controller code (segment 3)
800A	$MLC3	MLCA common code segment 3
800B	$MLC1	MLCA common code segment 1
800C	$MLC2	MLCA common code segment 2
800D	$WKC	Work station controller B
800E		Reserved
800F		Reserved
8010		Reserved
8011	$CAA2	BSCA ASCII communications area 2

Figure 2-157 (Part 1 of 6). Control Storage Load Modules

Module ID	Module Name	Description
8012	$CAE2	BSCA EBCDIC communications area 2
8013	$CAA1	BSCA ASCII communications area 1
8014	$CAE1/$CAE2	BSCA EBCDIC communications area 1
8015	$DL2	SDLC IOCH communications area 2
8016	$DLC2	SDLC control communications area 2
8017	$DL1	SDLC IOCH communications area 1
8018	$DLC1	SDLC control communications area 1
8019	$WRAP2	BSCA wrap communications area 2
801A	$WRAP1	BSCA wrap communications area 1
801B	$MRF	1255 magnetic character reader IOCH
801C	$ADFRMTS	Alter/display message formats module
801D	$ADTSK	Alter/display task status
801E	$ADIO	Alter/display I/O module
801F	$IOPD	I/O controller storage dump transient
8020	$NUMSER	Main storage page error
8021	$HC1	Main storage processor error 1
8022	$HC3	Main storage processor error 3
8023	$NUML	Main storage processor logging
8024	$NUFL/$NUFL1	Disk logging
8025	$NUIL/$NUIL1	Diskette logging
8026	$NULL	5211 line printer logging
8027	$NUAL	Local work station controller logging

Figure 2-157 (Part 2 of 6). Control Storage Load Modules

Module ID	Module Name	Description
8028	$NUTL	Local work station terminal logging
8029	$ALT1/$ALT1A	Disk alternative sector 1
802A	$ALT2/$ALT2A	Disk alternative sector 2
802B	$ADEXIT	Alter/display exit
802C	$ADUMP	Alter/display dump to printer
802D	$ADSTOR	Alter/display storage dump to CRT
802E	$ADITRAC	Alter/display instruction trace
802F	$ADPROMP	Alter/display prompt routine
8030	$ADDISK	Alter/display dump to CRT or printer
8031	$ALT4A	Disk alternative sector 4
8032	$NUMSER2	Main storage error recovery 2
8033	$NUNL	3262 line printer logging transient
8034	$CONMNT	Concurrent maintenance module
8035	$ADDCU	Display controller unit storage
8036	$NURL	1255 logging transient
8037	$NUAB2	Abnormal termination transient 2
8038	$IOERP2	Diskette error transient 2
8039	$SC1	Extended control storage supervisor
803A	$NU3	Scientific instruction set interpreter
803B	$ADMSP	Alter/display main storage processor registers
803C	$TNHL	5211 line printer hammer logging transient
803D	$NUSMF2	SMF transient 2

Figure 2-157 (Part 3 of 6). Control Storage Load Modules

Module ID	Module Name	Description
803E	$NUSMF3	SMF resident module
803F	$I0ERP3/$I6ERP3	Diskette error transient 3
8040	$TGHL	3262 line printer hammer logging transient
8042	$ADSTOR2	Alter/display storage transient 2
8043	$HC4	Main storage processor error 4
8044	$BL1	BASIC language emulator
8045	$NU3B	BASIC language emulator control code
8047	$NUWE2	Work station error determination
The following group (8064–8074) is for communications:		
8064	$MLIN	MLCA common code IOCH
8067	$MLCP	MLCA SDLC primary
8068	$MLCPW	MLCA SDLC primary priority
8069	$MLCS	MLCA SDLC secondary
806A	$MLCSW	MLCA SDLC secondary priority
806B	$MLNW	MLCA diagnostic/log NC
806C	$MLTC	MLCA trace disk space–CE
806D	$MLTA	MLCA trace disk space–CHK
806E	$MLIW	MLCA diagnostic/log IOCH
806F	$MLME	MLCA BSCA EBCDIC
8070	$MLMEW	MLCA BSCA EBCDIC priority
8071	$MLMA	MLCA BSCA ASCII
8072	$MLMAW	MLCA BSCA ASCII priority

Figure 2-157 (Part 4 of 6). Control Storage Load Modules

Module ID	Module Name	Description
8073	$MLWR	MLCA BSCA wrap test
8074	$MLAC	MLCA autocall
8080	$CP0	Common I/O routines
8081	$FD2	Disk IOCH
8082	$WS1	Work station/printer IOCH
8083	$I0IOCH/ $I6IOCH	Diskette IOCH/IOS
8084	$IPW	CSIPL section 2
8085	$NU1	Nucleus section 1
8086	$IPL	CSIPL section 1
8087	$NU2/$NU2A	Nucleus section 2
8088	$IPK	IPL diskette
8089	$IPA	IPL–load I/O processors
F010	$LEVEL	Microcode level table
F020	$PATCH	Control patch table
F030	N/A	Free lance patch table
F040	@LOAD	Customer reload microcode program
FBxx	N/A	Work station keyboard translate tables
FCF6		WSC page 9 patch area for ROS1
FCF7	$NULG1	Logging data directory
FCF8	$NULG@	I/O counter tables for line printers
FCF9	SIOTAB	I/O logging directories and tables

Figure 2-157 (Part 5 of 6). Control Storage Load Modules

Module ID	Module Name	Description
FCFA	ADWORK	Alter/display work area module
FDFB	MSDUMP	Main storage dump file
FDFC	CSDUMP	Control storage dump file
FDFD	I/ODUMP	I/O controller storage dump file
The following transient IDs are used only by diagnostics:		
C0xx		Device wrap test (xx=device ID)
C101		Control storage supervisor
C102		Main storage supervisor module
C2nn		MDI maps (nn=01–99)
C3nn		TU load modules (nn=01–99)
C4nn		Exerciser modules (nn=01–99)
C5nn		Diskette description modules (nn=01–99)
C8nn		Diskette

Figure 2-157 (Part 6 of 6). Control Storage Load Modules

Library Directory

The directory is a variable length area that contains one 28-byte entry for each member in the library. Members are grouped in ascending alphabetic order by name within each member type: load (O), procedure (P), subroutine (R), and source members (S). Each sector can contain up to nine entries with one entry used to indicate the end of the directory. The directory contains a maximum of 2294 entries for a library.

How to Find

The address for the library directory is in field F1ADSDIR of the library format 1. The library directory starts the first sector after the library control sector.

Format

The format of a library directory entry is shown in Figure 2-158.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	DIRTYPE	1	Directory type
01	DIRNAME	8	Name of module
09	DIRADDR	3	Relative sector address (start of library members)
0C	DIR#TXT	1	Number of text sectors (O), record length (S or P), or category (R)
0D	DIRLINK or DIR#STMT	2	Link edit address for load module (O) only Number of statements for source (S) or procedure (P)
0F	DIRSCA	2	Start control address entry point
11	DIRRLD	1	Displacement of first relocation directory (RLD)

Figure 2-158 (Part 1 of 3). Format of a Library Directory Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	DIRCORE	1	Storage required, number of sectors
13	DIRATTR	3	Attributes of member: Byte 1: *Hex* *Meaning* 80 SSP attribute bit 40 O module—privileged P module—do not log OCL 20 Noninquirable module 10 O module—SFGR format load module P module—procedure with data 08 Source required 04 Nonbase SSP module 02 Program temporary fix (PTF) applied bit 01 Module has overlays Byte 2: *Hex* *Meaning* 80 Dedicated module 40 Never ending program module 20 Module has cross-reference format index table 10 Load module only from system console 08 Cannot load program from //LOAD OCL statement 04 Program common

Figure 2-158 (Part 2 of 3). Format of a Library Directory Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
13 (cont.)			*Hex* *Meaning* 02 Program with utility control statements 01 Module has cross-reference resolver where-to-go table Byte 3: *Hex* *Meaning* 80 $WORK2 file required 40 Do not swap this task 20 High level of dedication 10 Program needs FORTRAN microcode 08 Configuration record
16	DIRMRT	1	Load module MRTMAX count, procedure hex FF designates a MRT procedure
17	DIRREL	1	Release level
18	DIRTOTL	2	Total number of sectors in module
1A	DIRATTR4	1	Fourth attribute byte of member: *Hex* *Meaning* 80 Program needs BASIC microcode 40 Member is a pad module
1B	DIRRESV	1	Reserved byte

Figure 2-158 (Part 3 of 3). Format of a Library Directory Entry

Library—System/User

The System/34 library facility consists of a system library (#LIBRARY) and multiple user libraries. Each specified library contains:

- Library control sector
- Library directory
- Library members

#LIBRARY contains the SSP pad, which is between end of members and end of library. This pad can be used for applying SSP PTFs.

To find a specific library (system or user), refer to the library format 1 on disk. If you are specifically looking for the system library (#LIBRARY), the main storage library format 1 (main storage location hex 02E0) can also be referenced. Figure 2-159 shows the library format and the format 1 fields that point to the library areas.

Library Format 1

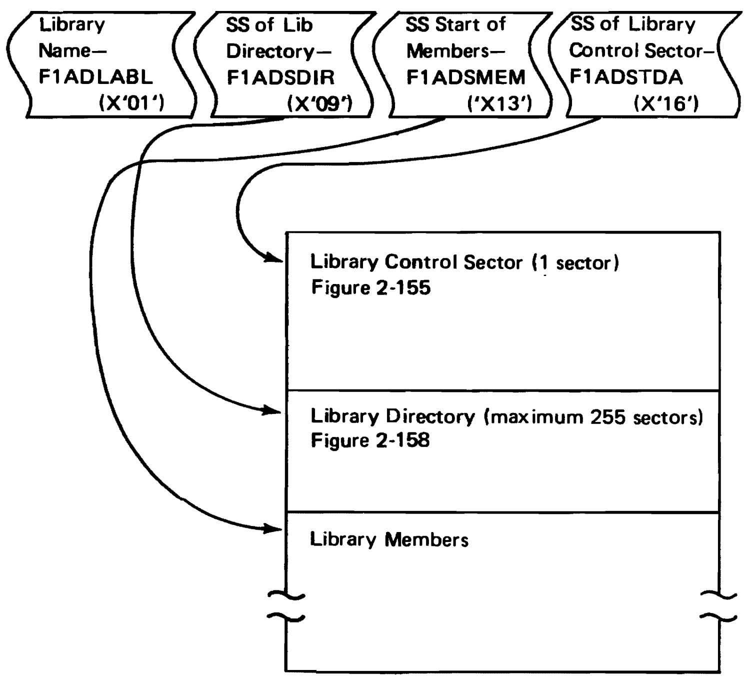


Figure 2-159. Library Format and Format 1 Pointers

Library Members

The library system or user contains System/34 library members, which are of the following forms:

- *Procedures*—Procedures are groups of OCL and utility control statements used to control the system. These library members are identified by a P in the type column of the library directory listing. Tables showing the OCL statements and parameters and IBM-supplied procedures for System/34 are presented in *IBM System/34 System Support Reference Manual,* SC21-5155.
- *Source statements*—Source statements are sets of data (such as RPG II source programs and sort sequence specifications). These sets are identified by an S in the type column of the library directory listing.
- *Load modules*—Load modules are programs that can be loaded for execution (for example, compiled user programs or system utility programs). These programs are identified by an O in the type column of the library directory listing.
- *Subroutines*—Subroutines are nonexecutable object programs that need to be link-edited before being executed. They are identified by an R in the type column of the library directory listing.

How to Find

Field F1ADSMEM on the library format 1 contains the disk address of the start of the library members. The library members start the first sector after the library directory.

How to Find Specific Library Members

To find a specific library member, find the disk sector address (SS) of the start of the members, the disk sector address of the start of the directory, and the entry for the member in the library directory.

Entries are in alphabetical order by type and name. Library directory entry:

Byte	Entry
0	Type
1–8	Name
9–11	Relative disk address
12	Size of member

Add the disk address of the start of the members to the relative disk address of the member for the disk address of the start of the member. (SS of members = SS of members start + relative SS of member.)

Loader Parameter List—Control Storage

This 9-byte area is required as input to the control storage loader routine (SVC=X'50'). When a routine is requested, XR2 contains the address of the associated parameter list. See Figure 2-160 for a list of the control storage load modules.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LDCFUNC	1	Function byte: *Hex* *Meaning* 80 On—sector address supplied Off—module ID supplied The following hex 80 offset applies to a move request only: On—move from control storage to main storage Off—move from main storage to control storage 40 On—I/O module Off—non-I/O module The following hex 40 offset applies to a move request only: On—main storage address is translated Off—main storage address is real 20 On—fetch request Off—load request 10 On—find only request Off—load or fetch request The following hex 10 offset applies to a move request only: On—another parameter list follows Off—last move parameter list 08 On—move request Off—load, fetch, or find request
01	LDCDA	1	Device address or SVC table displacement

Figure 2-160 (Part 1 of 3). Format of a Control Storage Loader Request Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following bytes apply if the module ID is supplied (LDCFUNC bit 0=0) and the request is a find function, or a load or fetch with a find:			
02	LDCID	2	Module ID
04	LDCUNUSD	4	Reserved
08	LDCLOAD@	1	Load address
The following bytes apply if the sequential sector address is supplied (LDCFUNC; bit 0=1) or the output is for the find only function of a module:			
02	LDCSS	3	Sequential sector address of module Hex FF=value placed in the high byte of the sequential sector address for a find only function if the module ID is not found in the directory.
05	LDCN	1	Number of text sectors
06	LDCRLD	1	Relocatable directory displacement
07	LDCTOT	1	Total number of sectors
08	LDCLOAD	1	Load address (high byte only)
The following bytes apply to output for the directory end find function:			
02	LDCVOL@	3	Volume label sector address
05	LDCUDT@	2	Unit definition table sector address
07	LDCMCHK@	2	Machine check logout sector address
The following bytes apply for the move function:			
02	LDCWLEN	2	Number of words to be moved

Figure 2-160 (Part 2 of 3). Format of a Control Storage Loader Request Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	LDCCS@	2	Control storage address
06	LDCMS@	2	Main storage address

Figure 2-160 (Part 3 of 3). Format of a Control Storage Loader Request Parameter List

Location Name Element (LOC)

This 16-byte area contains the location currently in use by an SSP-ICF subsystem.

How to Find

Real addressable main storage contains location elements that are chained together. Field QHDLOC in the system queue header, fixed nucleus location hex 0100, contains the address of the first location name element in the location name element chain. Field LOCDFCHN points to the next location name element in the chain. End of chain is designated by hex 0000.

Field SUBLOC@ in the session unit block has the address of the corresponding location element.

Format

Figure 2-161 shows the format of the location name element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LOCDFCHN	2	Address of next location name element (0—last location name element)
02	LOCDNAME	8	Name of location
0A	LOCDST@	1	Actual station address

Figure 2-161 (Part 1 of 2). Format of the Location Name Element

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	LOCDSCT@	2	Address of subsystem control table for this location
0D	LOCDXST@	2	Address of XSCR station entry
0F	LOCSTAT	1	Location status byte: *Hex* *Meaning* 80 On—location communicating (peer) Off—location not communicating

Figure 2-161 (Part 2 of 2). Format of the Location Name Element

Logical Unit Block

This 55-byte area is used by batch SNA upline as an internal control block to monitor the status of the logical unit. One logical unit block exists for each session with a maximum of eight concurrent sessions.

How to Find

The logical unit block (LUB) is defined internally in the SNA 3/3 task. Refer to the microfiche listings and locate as follows:

1. Find label LUBHDR in the listing for module #SNMF. This is the first byte of a block of storage defined for eight concurrent sessions so that each subsequent logical unit block can be located by skipping over 55 bytes.

2. #SNMF is the first module in the mainline task so that the appropriate logical unit block can be located at the same address in the mainline code as was determined by step 1.

Format

Figure 2-162 shows the format of a logical unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 8 bytes contain LU SSCP session information:			
00	SNLPTR	2	Pointer to next logical unit block (LUB) on physical unit block (PUB) chain
02	SNLWAIT	2	Pointer to next logical unit block on transmit IOB wait queue
04	SNLREC@	2	Recall address associated with transmit IOB wait
06	SNLDAF	1	Destination address received on Actlu
07	SNLFLAG1	1	SSCP/LU session status information: *Hex* *Meaning* 08 Logical unit block has been activated by Actlu 04 Logical unit block has been allocated to a user 02 Abnormal termination of user in process
08	SNLFLAG2	1	Status of logical unit block (LUB) or user session: *Hex* *Meaning* 10 Logical unit is in wait for start data traffic 08 Logical unit is in wait for pacing response 04 Logical unit is in wait on get data operation 02 Logical unit is in wait on check data operation

Figure 2-162 (Part 1 of 6). Format of the Logical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following bytes contain LU-LU information:			
09	SNLTH0	1	TH byte 0 (hex 01—expedited flow indicator)
0A	SNLTH1	1	TH byte 1 (unused)
0B	SNLTHDAF	1	Destination address field as received on BIND command
0C	SNLTHOAF	1	Origin address field as received on BIND command
0D	SNLSNF	2	Sequence number associated with current transmission
0F	SNLRH0	1	Request/response header byte 0
10	SNLRH1	1	Request/response header byte 1
11	SNLRH2	1	Request/response header byte 2
12	SNLRU0	1	Request unit byte 0
13	SNLRU1	1	Request unit byte 1
14	SNLRU2	1	Request unit byte 2
15	SNLRU3	1	Request unit byte 3
16	SNLRU4	1	Request unit byte 4
17	SNLRUL	1	Request unit length
18	SNLCSB@	2	CSB control block address associated with logical unit
1A	SNLCIOB@	2	Current transmission subsystem IOB address being processed
1C	SNLIOBQ	2	Connection point manager receive queue

Figure 2-162 (Part 2 of 6). Format of the Logical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1E	SNLPIOB@	2	Address of IOB currently being processed
20	SNLTIOB@	2	Address of transmit IOB being used during transmit operation by SNA
22	SNLISEQC	2	Inbound sequence count
24	SNLOSEQC	2	Outbound sequence count
26	SNLECMDS	1	Expedited flow command byte sent
27	SNLNCMDS	1	Normal flow command byte sent
28	SNLRCMD	1	Command byte received
29	SNLRPC	1	SLU receive pacing count (the number of buffers allocated for this LU-LU session)
2A	SNLSPC	1	SLU send pacing count
2B	SNLSPCV	1	SLU current send pacing counter value
2C	SNLRUMAX	2	SLU maximum send length computed from BIND
2E	SNLBINDP	1	Bind state save area: *Hex* *Meaning* 30 Bound definite or exception response mode 20 Bound definite response mode 10 Bound exception response mode 08 FM header indicator: Off—no FM headers On—FM headers allowed 01 Secondary send EB indicator: Off—SEC will not send EB On—SEC might send EB

Figure 2-162 (Part 3 of 6). Format of the Logical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2F	SNLINIT	1	Initialization status byte: *Hex* *Meaning* 40 Bind pending—set when waiting for Bind either when log on sent or when init with no log on used 20 Between Bind. Set when Bind received 10 Bound. Set when positive response to Bind sent 08 Data traffic state. Set when SDT received and positive response sent 04 Bind error indicator negative response sent
30	SNLCTSEC	1	Secondary state indicator: *Hex* *Meaning* 80 Normal flow FMD response required by sec 40 Expedited flow DFC command response required by sec 20 Normal flow DFC command response required by sec 10 Secondary allowed to send negative response 08 Secondary must send negative response 04 Receive queue open indicator 02 Peek was last operation

Figure 2-162 (Part 4 of 6). Format of the Logical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
31	SNLCTPRI	1	Primary state indicator: *Hex* *Meaning* 80 Expedited flow command response required from primary 40 Normal flow FMD response required from primary 20 Normal flow DFC command response required from primary 10 Pacing response required from primary
32	SNLFSM1	1	Finite state machines byte 1: *Hex* *Meaning* 80 Off—HSID.CONWIN=RESET On—HSID.CONWIN=PENDING 20 Off—HSID.ERROR=RESET On—HSID.ERROR=PENDING 04 Off—PAC.RSP.RCV=RESET On—PAC.RSP.RCV=ACTIVE 02 Off—CHAIN.SEND=BETWEEN CHAINS On—CHAIN.SEND=IN CHAINS
33	SNLFSM2	1	Finite state machines byte 2: *Hex* *Meaning* 03 SHUTD.RCV=ACTIVE 02 SHUTD.RCV= PEND.ACTIVE.RSP 01 SHUTD.RCV= PEND.ACTIVE.SHUTC 00 SHUTD.RCV=RESET

Figure 2-162 (Part 5 of 6). Format of the Logical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34	SNLFSM3	1	Finite state machines byte 3: *Hex* *Meaning* C4 HDX=CONT.ERP1 C0 HDX=CONTENTION 80 HDX=SEND 48 HDX=PEND.RCV 40 HDX=RECEIVE 20 HDX=PEND.1
35	SNLFSM4	1	Finite state machines byte 4: *Hex* *Meaning* 0C BSM.FSP=PEND.BETB.PURGE.S 0B BSM.FSP=PEND.BETB.PURGE.R 0A BSM.FSP=PEND.BETB.EC.S 09 BSM.FSP=PEND.BETB.RSP.S 08 BSM.FSP=INB 07 BSM.FSP=PEND.BETB.RSP.R 06 BSM.FSP=PEND.BB 05 BSM.FSP=PEND.BETB.EC.R 03 BSM.FSP=PEND.INB 02 BSM.FSP=P.BETB.S 01 BSM.FSP=P.BETB.R 00 BSM.FSP=BETB
36	SNLFSM5	1	Finite state machines byte 5: *Hex* *Meaning* 02 CHAIN.RCV=PURGE 01 CHAIN.RCV=IN CHAINS 00 CHAIN.RCV=BETC

Figure 2-162 (Part 6 of 6). Format of the Logical Unit Block

Main Storage Free Area

The free area contains system queue space or work station queue space. The free area is a variable size area in main storage used to create and maintain system control blocks and various other information associated with a particular task or display station and print buffers. The free area is allocated during MSIPL and is assigned and freed as space is needed.

How to Find

Fields QHDWSQS and QHDSQS in the queue header area (X'0100') point to the address of the first available work station queue space and system queue space respectively in the main storage free area. Figure 2-163 shows how the system queue spaces are located and assigned.

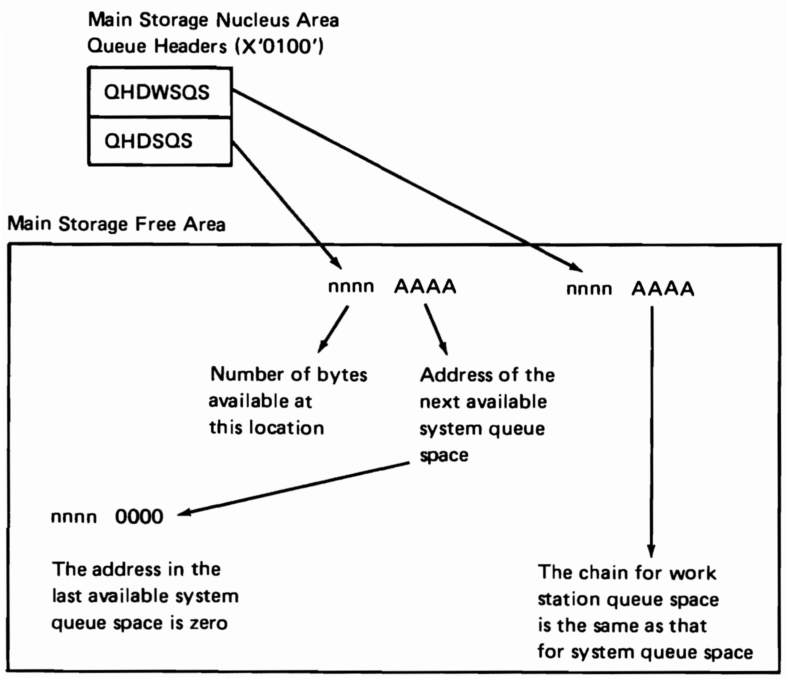


Figure 2-163. How System Queue Space Free Areas Are Located and Assigned

Main Storage Processor Register Save Area

The main storage processor register save area is a 256-byte data area created and dumped to the disk by the control storage abnormal termination transient $NUAB. It contains selected main storage processor register values at the time of the abnormal termination. The save area is stored within the dump file on disk in the first sector of the I/O controller storage dump area.

How to Find

The I/O controller portion of the dump file is pointed to from field SCADSSIO in the system communications area.

Format

Figure 2-164 shows the format of the main storage processor register save area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TSKATRS	32	Start of task ATR values
20	IOATRS	32	Start of I/O ATR values
40	DPOP1L	2	Operand 1
42	DPOP2L	2	Operand 2
44	DPIARL	2	Instruction address register
46	DPOPQL	2	Operation register and queue register
48	DPXR1L	2	Index register 1
4A	DPXR2L	2	Index register 2
4C	DPARRL	2	Address recall register
4E	DPLCRR	1	Length count of recall register
4F	DPS3PSR	1	Not used

Figure 2-164 (Part 1 of 2). Format of the Main Storage Processor Register Save Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
50	DPACRL	1	Address compare register (low byte)
51	DPCCR	1	Configuration compare register
52	DPACRH	1	Address compare register (high byte)
53	DPACR	1	Address compare register (middle)
54	DPST3	1	Status byte 3
55	DPBMR	1	Backup memory register
56	DPPMR	1	Program memory register
57	DPCMR	1	Control memory register
58	DPST0	1	Status byte 0
59	DPPSR	1	Program status register
5A	DPQREAL	1	Real Q-byte register
5B	DPST2	1	Status byte 2

Figure 2-164 (Part 2 of 2). Format of the Main Storage Processor Register Save Area

Main Storage Supervisor Get or Free Page Parameter List

This 10-byte area is required when the supervisor get, free, or map storage routine (#SVGF) is called. The caller of #SVGF must place the address of the leftmost byte of the parameter list in XR1.

The main storage supervisor get or free page parameter list is generated by the PAGEV macro. The parameter list is required by either the #SVGF transient or by inline code in in the PAGEV macro to perform the get/free function.

Figure 2-165 shows the format of the main storage supervisor get or free page parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PGVFLAG	1	Flag byte: *Hex* *Meaning* 80 Get page request 40 Free page request
01	PGVTCB	2	Address of associated task control block
03	PGVTCB2	2	Address of second task control block to map to
05	PGVRCODE	2	Return code: *Hex* *Meaning* F7 Number of pages to free or ATR offset to start free is invalid F6 Not enough swap disk space available to fulfill get page request F5 Not enough swap disk space available to fulfill get page request F4 ATR offset to start assign is invalid F3 Get is for swappable task, but there are not enough swappable pages currently available F2 Get is for a nonswappable task but fulfilling request would stop an already executing swappable task F1 Get or free request not for current task, and task it is for is swappable
07	PGVATR	1	Offset to start assign or free
08	PGV#2K	1	Number of 2K pages to assign or free
09	PGVPLEN	1	Parameter list length

Figure 2-165. Format of the Main Storage Supervisor Get or Free Page Parameter List

Message Retrieve Parameter List

This 15-byte area is required as input to the message retrieve routine (RIB=X'09'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	MCLDMSGM	1	Message member identifier byte: *Hex* *Meaning* 80 Headings message member 40 MSG9 message member 20 System error message member 10 Program product message member 08 User message member 04 Menu message member 02 Reserved
01	MCLDMSGN	1	Message level and control byte: *Hex* *Meaning* 04 Message retrieve decides which message level 02 Second language request 01 Second level message 00 First level message
02	MCLDMIC	2	Message identification code (MIC)
04	MCLDADDR	2	Address of buffer for message
06	MCLDLGTH	1	Length of message accessed (length excludes trailing blanks) Length defaults are (in decimal): 75—default level 1 length 225—default level 2 length 120—default menu length

Figure 2-166 (Part 1 of 2). Format of a Message Retrieve Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
07	MCLDJCB@	2	Address of job control block that contains sector address: *Hex* *Meaning* FFFF Default value, MSG retrieve will use current job control block
09	MCLDRETN	2	Return code: *Hex* *Meaning* FFFF Normal completion 0000 If message length requested is less than actual message record length, message retrieve will return X'0000 in parameter list. (Caller's buffer will contain the message requested truncated to the length specified by the caller.)
0B	MCLDACTL	1	Actual length of message record
0C	MCLDCLAS	1	Reserved
0D	MCLDUSAR	1	User auto response values: *Hex* *Meaning* 04 Auto response value of D 03 Auto response value of 3 02 Auto response value of 2 01 Auto response value of 1 00 Auto response value of 0
0E	MCLDOPTS	1	Reserved

Figure 2-166 (Part 2 of 2). Format of a Message Retrieve Parameter List

MRJE Communication and Control Table

The communication and control table contains addresses of the MRJE modules, information on the status of I/O devices, printer carriage control information and other information of interest to more than one module.

How to Find

Low storage of the MRJE utility immediately following the characters CCT@ contains the address of the CCT. Also, each PFCB contains the address of the CCT at PFCCT@.

Format

Figure 2-167 shows the format of an MRJE CCT.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CTPFC@	2	Address of first PFCB to be dispatched
02	CTBUF1	2	Length of BSC buffers
04	CTBBUF	2	Length of BSC buffers rounded up to nearest multiple of 8
06	CTBUF@	2	Address of free buffer pool
08	CTBUF#	1	Number of free buffers
09	CTFLG1	1	Flag byte 1:

Hex	*Meaning*
80	MRJE has been initialized
40	Processor has work
20	BSC disconnect sequence received
10	Compression requested by user
08	Signoff/logoff command has been read
04	BSC connection has ended
02	BSC error, 2 option taken
01	Automatic mode

Figure 2-167 (Part 1 of 6). Format of the MRJE Communication and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	CTFLG2	1	Flag byte 2:

Hex	*Meaning*
80	BSC task started
40	TDISKPR1 defined
20	PDISKPU1 defined
10	Current IOB is in a translated area
02	System console is a reader
01	Temporary work bit

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	CTFLG3	1	Flag byte 3:

Hex	*Meaning*
80	MRJE BSC trace active
40	BSC task has a processor check
20	Console input request from reader 1 task outstanding
10	Termination of MRJE
08	Console released
04	Logoff sent to host
02	Controlled cancel issued
01	Termination, termination event block is valid

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	CTFHOS	1	Host program type:

Hex	*Meaning*
FA	VM
F9	ASP
F7	HASP II
F3	JES III
F2	JES II
F1	RES

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	CTBSCDTF	2	BSC DTF address for #MRBP
0F	CTCNTUB@	2	Address of console TUB

Figure 2-167 (Part 2 of 6). Format of the MRJE Communication and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
11	CTCNTMID	2	Console terminal ID
13	CTCSB@	2	Address of BSC CSB
15	CTMSG1	2	NPPMSG1 address save area
17	CTMSG2	2	NPPMSG2 address save area
19	CTPGSRT	2	Address of start area to build MRJE
1B	CTPGEND	2	Address of last byte (plus 1) of available area
1D	CTFORMAT	2	Address of configuration information save area
1F	CTBSLN	1	BSCA line number
20	CTSTDPR1	2	Printer disk block size (standard)
22	CTSPCPR1	2	Printer disk block size (special)
24	CTSPCPU1	2	Punch disk block size
26	CTTCBTWA	2	Disk address of task work area
28	CTCARG	1	Number of lines per page
29	CTCHN1	1	Channel 1 equivalence
2A	CTCHN2	1	Channel 2 equivalence
2B	CTCHN3	1	Channel 3 equivalence
2C	CTCHN4	1	Channel 4 equivalence
2D	CTCHN5	1	Channel 5 equivalence
2E	CTCHN6	1	Channel 6 equivalence
2F	CTCHN7	1	Channel 7 equivalence

Figure 2-167 (Part 3 of 6). Format of the MRJE Communication and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	CTCHN8	1	Channel 8 equivalence
31	CTCHN9	1	Channel 9 equivalence
32	CTCH10	1	Channel 10 equivalence
33	CTCH11	1	Channel 11 equivalence
34	CTCH12	1	Channel 12 equivalence
35	CTJOB#	4	File sequence number
39	CTDKID	1	First character of disk file form number
3A	CTRES2	1	Reserved
3B	CTRES3	1	Reserved
The following 28 entries contain the addresses of the routines listed:			
3C	CTDSGTUB	2	DSGTUB—get exclusive use of TUB
3E	CTDSNEXT	2	DSNEXT—return and skip turn
40	CTCONBUF	2	CONBUFO—address of console buffer
42	CTBMGET	2	BMGET—get record from BSC buffer
44	CTBMPUT	2	BMPUT—put record into BSC buffer
46	CTBMPURG	2	BMPURG—purge buffers
48	CTBMGFT	2	BMGFT—put GFT sequence in buffer
4A	CTBMRFT	2	BMRFT—put RFT sequence in buffer
4C	CTBMEOF	2	BMEOF—put logical EOF in buffer
4E	CTBMQBUF	2	BMQBUF—add current BSC buffer to queue

Figure 2-167 (Part 4 of 6). Format of the MRJE Communication and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
50	CTBMFCON	2	BMFCON—turn on FCS bit in BSC PFCB
52	CTBMFCOF	2	BMFCOF—turn off FCS bit in BSC PFCB
54	CTDSIOWT	2	DSIOWT—wait for I/O completion
56	CTDSRFT	2	DSRFT—wait for RFT
58	CTDSGFT	2	DSGFT—wait for GFT
5A	CTDSSTRT	2	DSSTRT—wait for MODIFY statement
5C	CTDSWTO	2	DSWTO—wait for WTO
5E	CTDSWTOR	2	DSWTOR—wait for WTOR
60	CTBMFBUF	2	BMFBUF—free a BSC buffer
62	CTMRFC	2	#MRFC—full compression module
64	CTBMSTRT	2	BMSTRT—send start command to host system
66	CTDSWBUF	2	DSWBUF—wait for buffers
68	CTDSWORK	2	DSWORK—wait for work
6A	CTBMCAN	2	BMCAN—send cancel command to host system
6C	CTBMDCOM	2	BMDCOM—decompress a record
6E	CTDSSKIP	2	DSSKIP—skip a dispatching turn
70	CTDSGCRT	2	DSGCRT—acquire display screen
72	CTDSFCRT	2	DSFCRT—free display screen
74	CTOVRLY1	2	Address of overlay area 1
76	CTOVRLY2	2	Address of overlay area 2

Figure 2-167 (Part 5 of 6). Format of the MRJE Communication and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
78	CTOVRLY3	2	Address of overlay area 3
7A	CTPNTBUF	2	Address of print buffer
7C	CTRD1BUF	2	Address of reader 1 buffer
7E	CTBUFMAN	2	Address of buffer manager
80	CTTCB@	2	Address of MRJE TCB
82	CTJCB@	2	Address of MRJE JCB
84	CTWSINXA	2	Address of format index area
86	CTRDTABL	2	Address of active reader table
88	CTSIGN@	2	Address of rightmost byte of sign-on area
8A	CTTIMER	6	Delay value from END statement
90	CTDLAYCT	1	Count of active data streams
91	CTRDCNT	2	Counter for FSB names for data files
93	CTLIB@	2	Library F1@ from init screen
95	CTFCTSS@	3	Start address for forms control table
98	CTFCTSS#	1	Number of sectors used for forms control table
99	CTPUSH@	2	Push address of SYSLOG call
9B	CTPRTUB@	2	Associated printer TUB address
9D	CTMECM@	2	ECM address from SYSLOG call
9F	CTPLST	8	Phone list name
A7	CTFORMS	8	Forms type from mount message or initialization screen

Figure 2-167 (Part 6 of 6). Format of the MRJE Communication and Control Table

MRJE Program Function Control Blocks

The MRJE utility uses the PFCBs (program function control blocks) to control the dispatching of the logical processors and to pass information between the various processors and $MRJE. There is a PFCB for each of the following:

- BSC
- Console input
- Console output
- Reader (up to 3)
- Printer
- Punch (optional)

How to Find

Label CTPFC@ in the CCT contains the address of the first PFCB. Label PFNEXT in each PFCB contains the address of the next PFCB. The last PFCB in the chain has an address of hex 0000 at PFNEXT.

Format

Figure 2-168 shows the format of an MRJE program function control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to all PFCBs:			
00	PFNEXT	2	Address of next PFCB in chain
02	PFDTF@	2	Address of current processor DTF
04	PFIOB@	2	Address of current processor IOB
06	PFLAG1	1	PFCB flag byte 1: *Hex* *Meaning* 80 Processor waiting for I/O 40 Processor waiting for buffers 20 Processor waiting for GFT/RFT 10 BSC SVC request pending

Figure 2-168 (Part 1 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06 (cont.)			*Hex* *Meaning* 08 General wait, between tasks 04 Processor waiting for console message 02 Processor waiting for MODIFY statement 01 Processor waiting for work 00 Processor is dispatchable
07	PFLAG2	1	PFCB flag byte 2: *Hex* *Meaning* 80 Option 1 halt error recovery (console I/O and reader) User requested task termination (print/punch) Post switch (BSC) 40 Receive switch (BSC) End of file 20 Two-second timer switch (BSC) I/O error 10 End of extent (print/punch) Timer expired (console I/O and reader) Wait-a-bit (BSC) 08 Local message switch (BSC) RFT/GFT received 04 FCS on (BSC) Forms mount or READFILE pending 02 FCS off (BSC) Terminate the task (print/punch) Two-line message required (console I/O) 01 Signoff/logoff indicator (BSC) Controlled cancel pending

Figure 2-168 (Part 2 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	PFLAG3	1	PFCB flag byte 3: *Hex* *Meaning* 80 RFT needed (console I/O and reader) Data set ready (BSC) Currently writing to disk file (print/punch) 40 Signoff/logoff command indicator (console I/O) Data written to disk file (print/punch) Issue TI/R op (BSC) 20 Start command required (console I/O) or END command entered from console reader Decompression required for retry (print/punch) 10 Console interrupt honored (console I/O) PDISKPR1 file being used (print/punch) 08 First-time switch (reader) Save partial file written to disk (print/punch) 04 Log device message required (console and reader) #MRCL is processing an error (print/punch) 02 MODIFY statement pending 01 #MRCL will switch output device (print/punch) Disk data file read pending or library member remaining bytes pending (reader)
09	PFLAG4	1	SRCB for print task
0A	PFBUF@	2	Address of BSC buffer chain

Figure 2-168 (Part 3 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	PFMBCT	1	Maximum BSC buffer count
0D	PFCBCT	1	Current BSC buffer count
0E	PFPRI@	2	Primary dispatching address
10	PFRES@	2	Processor resident code address
12	PFMSG#	2	MIC for output
14	PFCCT@	2	CCT address
16	PFRCB1	1	Processor record control byte: *Hex* *Meaning* B3 Reader 3 PFCB A3 Reader 2 PFCB 95 Punch PFCB 94 Printer PFCB 93 Reader 1 PFCB 92 Console input PFCB 91 Console output PFCB 00 BSC PFCB
17	PFPRIQ	1	Primary device Q-byte: *Hex* *Meaning* E0 Printer A0 Disk 10 Keyboard, display screen
18	PFTMID	2	Work station terminal ID
1A	PFTUB@	2	Work station TUB address
1C	PFMSGR	1	Operator reply to message

Figure 2-168 (Part 4 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1D	PFLFLG	1	Transient load list flags: *Hex* *Meaning* 80 Leave module in transient area 10 Transient area shared 02 Return to dispatcher via PFSAR@ 01 Dispatch resident code
1E	PFNXNM	6	Name of next module to execute
24	PFTRAR	2	Address of transient control
26	PFLAG5	1	PFCB flag byte 5: *Hex* *Meaning* 80 Printer already allocated (printer) Current EOF flag (reader) Autocall reset pending (BSC) 40 TDISKPR1 already allocated (printer) EOF save flag (reader) Processing user request (BSC) 20 IOB address not real 10 #MRBO terminating abnormally (BSC) Reader display station has been released (reader) HALT-YES specified for forms control (printer) 08 Display station is invited 04 Display station has a permanent I/O error 02 Readfile member not found (reader) DEFER—YES specified (printer) #MRBO MSG with just 2-option (BSC) 01 Adapter enabled (BSC) SPOOL—YES specified (printer)

Figure 2-168 (Part 5 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
27	PFMSGV	10	Variable data for message output
31	PFSAR@	2	Save area for dispatcher service
33	PFPBF@	2	Address of processor buffers
35	PFSXR1	2	Save area for XR1
37	PFSARR	2	Save area for ARR
39	PFHXR1	2	Hold area for XR1
3B	PFHARR	2	Hold area for ARR
3D	PFRCNT	3	Input/output record count
40	—	1	Reserved
The following bytes apply to BSC PFCBs:			
41	PFBBSN	2	BSC sense information
43	PFBBLN	2	Length of transmit/receive operation
45	PFBRW1	2	Start of receive address for wait-a-bit
47	PFBRW2	2	End of receive address for wait-a-bit
49	PFBXW1	2	Start of transmit address for wait-a-bit
4B	PFBWX2	2	End of transmit address for wait-a-bit
4D	PFBR1	2	Start of receive address
4F	PFBR2	2	End of receive address
51	PFBX1	2	Start of transmit address
53	PFBX2	2	End of transmit address

Figure 2-168 (Part 6 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
55	PFBX1S	2	Save start of transmit address
57	PFBX2S	2	Save end of transmit address
59	PFBRBC	1	Expected BCB from host system
5A	PFBSBC	1	Next transmitted BCB to host system
5B	PFBNFS	2	Next transmitted FCS to host system
5D	PFBRFS	2	Last received FCS from host system
5F	PFBXFS	2	Last transmitted FCS to host system
61	PFBWRK	1	BSC work byte
62	PFBSSN	1	Temporary BSC sense save
63	PFBCTR	1	Bad receipt counter
64	PFBMER	1	Maximum BSC error count
65	PFBSEQ	5	DLE-STX-BCB-FCS-FCS
6A	PFBERR	9	DLE-STX-LBCBKSP-FCS-FCS-ERR-ERR-ERR-ETB
73	PFBXWB	9	Wait-a-bit sequence
7C	PFBRWB	9	Receive area for wait-a-bit reply
85	PFBSTX	2	DLE-STX
87	PFBETB	2	Logical EOB-physical ETB
89	PFBACK	2	DLE-ACK0
8B	PFBTBS	2	Number of text blocks sent

Figure 2-168 (Part 7 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8D	PFBTBR	2	Number of text blocks received
8F	PFBNKR	2	Number of NAKs received
91	PFBLDE	2	Number of lost data errors
93	PFBINR	2	Number of invalid responses
95	PFBRTO	2	Number of receive time outs
97	PFBDCK	2	Number of data checks
99	PFBACT	2	Number of transmit adapter checks
9B	PFBACR	2	Number of receive adapter checks
9D	PFBASC	2	Not used
9F	PFBABR	2	Number of aborts received
A1	PFBDTO	2	Number of disconnect time outs
A3	PFBBOF	2	Number of buffer overflows
A5	PFBBMG	4	BSC PFCB message area
A9	PFBCNF	2	Address of WS configuration record
AB	PFBCFL	2	Address of WS configuration line record
AD	PFBIA@	2	Interrupt routine entry point
AF	PFBIS@	2	Interrupt routine switch address
B1	PFBGB@	2	Get buffer subroutine entry point
B3	PFBP1@	2	Interrupt routine post address
B5	PFBP2@	2	Interrupt routine post address

Figure 2-168 (Part 8 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
B7	PFBQR	2	Q- and R-bytes of last SVC
B9	PFBCAR	2	Current address register at last SVC
The following bytes apply to console input PFCBs:			
41	PFREC@	2	Input record address
43	PFRLEN	2	Input record length
45	—	18	Reserved
57	WACIB	16	Console input IOB
67	WACSIZ	133	Console input buffer
The following bytes apply to console output PFCBs:			
41	PFREC@	2	Output record address
43	PFRLEN	2	Output record length
45	PFMSGQ	2	Message queue address
47	PFMQCT	1	Message queue available counter (8—empty, 0—full)
48	PFQNXT	2	Next message to be processed by console output
4A	PFOPT@	2	Address of first X in OPTIONS(XXX)
4C	PFMDID@	2	Address of M in MSG TEXT(MRXX)
4E	WAMSGQ	152	Local message queue
The following bytes apply to reader PFCBs:			
41	PFREC@	2	Input record address
43	PFRLEN	2	Input record length

Figure 2-168 (Part 9 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
45	PFLIB@	2	Library statement F1 @
47	PFLIBS	2	Library statement save F1 @
49	PFREAD	8	Current READFILE name
51	PFRFTY	1	Current READFILE type
52	PFRLB@	2	Current READFILE library F1 @
54	PFRDPM	1	Delete-capable file parameters: *Hex* *Meaning* 80 DEL-Y on readfile statement 20 File delete-capable 10 Current record is deleted 04 Must delete deleted records again 02 Buffer needs to be reprimed 01 Processing last sector of a delete—capable file
55	PFRRTN	1	Return indicator for #MRFR *Hex* *Meaning* 80 Go process end of file 20 Go read next sector 10 Continue processing this buffer 08 Go transmit this buffer
56	PFRBRC	2	Displacement to next record
58	PFRAML	2	Number of bytes of record left to process
5A	PFRBFL	2	Buffer length
5C	PFRCMD	1	Current READFILE command indicator
5E	PFRCRA	3	Next available sector address in READFILE
61	PFREND	3	Ending sector address in READFILE

Figure 2-168 (Part 10 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
64	PFRDSV	8	File name from READFILE save area
6C	PFRTYS	1	File member type save area
6D	PFRLBS	2	Library F1 @ from READFILE save
6F	PFRCMS	1	File indicator save area
70	PFRDAT	6	File creation date
76	PFRBRS	2	Displacement to next record save
78	PFRALS	2	Number of bytes of record left to process
7A	PFRBLS	2	Buffer length save
7C	PFRDPS	1	Delete parameters save (see PFRDPM for meanings)
7D	PFQSAV	1	Device Q-byte
7E	PFRLNS	2	Record length in READFILE
80	PFRSSV	3	Disk file current address or library member/I/O buffer offset and displacement save area
83	PFRDSS	3	Disk file current address or library member/I/O buffer offset and displacement save area
86	PFNAME	2	Count value for FSB file names
88	PFNAMS	2	Save count value for FSB file names
8A	PFBRSV	2	Displacement to first record in current buffer
8C	PFALSV	2	Number of bytes left to process of record before current buffer
8E	PFDPSV	1	Delete parameters of current buffer

Figure 2-168 (Part 11 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8F	WARRCL	2	Logical record length
91	WARLSR	4	Next available record address
95	WAREND	3	File end sector address
98	WARF1	64	Format 1 work area
	or		
	WARBUF	93	Input buffer
F6	WRCUOF	2	Current disposition in processor buffer
F8	WRCURC	2	Byte count in processor buffer
FA	WCUOFS	2	Processor buffer disposition
FC	WCURCS	2	Processor buffer count
FE	WARIOB	28	Disk IOB for reader

The following fields apply to printer/punch PFCBs:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
41	PFREC@	2	Output record address
43	PFRLEN	2	Output record length
45	PFDEOD	3	Sector address of end of data
48	PFCURC	2	Byte count in processor buffer
4A	PFNXFM	4	Next forms mount number
4E	PFRS#	5	RES response number (first 2 bytes only)
	or		
	PFRM#	5	HASP/JES2 remote number (first 4 bytes only)
	or		
	PFRMID	5	ASP/JES3 remote ID

Figure 2-168 (Part 12 of 13). Format of the MRJE Program Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
53	PFQMDS	1	MODIFY statement Q-byte
54	—	4	Reserved
58	PFTCNT	3	TDISKPR1 record count
5B	PFTCNS	3	TDISKPR1 record count save
5E	PFHOLD1	2	Work area
60	PFHOLD2	2	Work area
62	PFHCNT1	3	Work area
65	PFHDNT2	3	Work area
68	PFRRCN	3	File record count
6B	PFSCUR	1	Save PFCURC for TDISK
6C	PFAFAA	2	Address of current format 1 in assign/free area
6E	PFCNLT	13	Temporary carriage table
7B	PFFCT	1	Information from forms control table: *Hex* *Meaning* 80 8 lines per inch specified 40 4 lines per inch specified If hex 80 and 40 are off, 6 lines per inch was specified. 20 On—15 characters per inch specified Off—10 characters per inch specified
7C	WADSWA	64	Disk I/O area
BC	WADBMW	20	Buffer manager work area
D4	WAIOB@	28	Disk IOB for printer/punch

Figure 2-168 (Part 13 of 13). Format of the MRJE Program Function Control Block

OCL Queue Element

This 13-byte area is used by system programs to issue control commands.

How to Find

OCL queue elements are chained off a queue header in the nucleus (QHDCPOCL).

Format

Figure 2-169 shows the format of the OCL queue element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	OCQUECM@	2	Address of event control mask for post back to caller
	or OCQPLST@	2	Address of CMOCL parameter list for nowait option only
02	OCQTCB@	2	TCB address of caller
04	OCQTSKID	1	Task ID of requesting task
05	OCQECM	1	Left byte of event control mask for post to command processor
06	OCQECMTU	2	Left byte of event control mask for post back to caller (the left byte of the OCQECMTU field is 0 for the nowait option)
08	OCQCHN	2	Chain field for queuing
0A	OCQINPD	3	Address of input data (procedure name and parameters)

Figure 2-169. Format of the OCL Queue Element

Path Control Parameter List

This 15-byte area is the SNA 4/4 internal interface to the path control transmit component.

How to Find

The path control parameter list is located in the #IUNPC module at label PCPARM.

Format

Figure 2-170 shows the format of the path control parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PCPFLG	1	Path control send interface flag: *Hex* *Meaning* 80 On—PCPINP@ contains XSCR address Off—PCPINP@ contains SNUB address 40 On—return to caller requested Off—return to caller not requested 20 Send user originated data (SNUB interface): On—use intermediate buffer Off—use RU data from SNUB RU0 through RU4 10 On—user op code Off—not user op code 08 On—negative response indicator Off—positive response indicator 04 On—IPR being sent Off—not IPR 02 On—do not POSTI user on put data Off—POSTI user on put data

Figure 2-170 (Part 1 of 2). Path Control Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)			*Hex* *Meaning* 01 On—TH—RH has been placed in SNAWA Off—TH—RH has not been placed in SNAWA
01	PCPINP@	2	Input address (SNUB address or XSCR address)
03	PCDLGTH	2	Length of RU to transmit
05	PCPRU0	1	RU0 byte
06	PCPRU1	1	RU1 byte
	or		
	PCPDATA@	1	Address of SNA-generated data
07	PCPRU2	1	RU2 byte
08	PCPRU3	1	RU3 byte
09	PCPRU4	1	RU4 byte
0A	PCPRU5	1	RU5 byte
0B	PCPRU6	1	RU6 byte
0C	PCPRU7	1	RU7 byte
0D	PCPRU8	1	RU8 byte
0E	PCPRU9	1	RU9 byte

Figure 2-170 (Part 2 of 2). Path Control Parameter List

Phone List Retrieval Transient Parameter List

This control block is used by the phone list retrieval transient to locate the phone list (on disk or in system queue space). The phone list is then queued to the specified control block.

How to Find

The phone list retrieval transient parameter list is pointed to by field JCBDPLST in the JCB extension.

Format

Figure 2-171 shows the format of the phone list retrieval transient parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PLRDNAME	8	Phone list name
08	PLRDJCB@	2	JCB address (zero if phone list should not be queued to the JCB extension)
0A	PLRDCB1@	2	Address of first control block to queue phone list to
0C	PLRDDSP1	1	Displacement within first control block of field to queue phone list to (left byte)
0D	PLRDIND1	1	Indicator byte 1: *Hex* *Meaning* 80 Restore specified phone list 40 First control block is in translated storage 20 Search configuration library first
0E	PLRDRTCD	1	Return code indicator byte: *Hex* *Meaning* 80 Specified member not a phone list 40 Specified phone list not found 20 Assign failure 10 Permanent disk I/O error
0F	PLRDCNLB	2	Address of configuration library format 1

Figure 2-171. Format of the Phone List Retrieval Transient Parameter List

Physical Unit Block

This 19-byte area is used by SNA 3/3 batch upline as an internal control block to monitor the status of the physical unit. One physical unit block (PUB) exists for each line operating under the SNA 3/3 batch upline task.

How to Find

The physical unit block (PUB) is defined internally in the SNA 3/3 task. Refer to the microfiche listings and locate as follows:

1. Find label PUB1 in the listing for module #SNMF. This is the physical unit block for line 1.
2. Find label PUB2 in the listing for module #SNMF. This is the physical unit block for line 2.
3. #SNMF is the first module in the mainline task so that the appropriate physical unit block can be located at the same address in the mainline code as is given in the listing for #SNMF.

Format

Figure 2-172 shows the format of the physical unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SNPLINO	1	Communication line number
01	SNPIOB@	2	IOB field for physical unit SSCP session activity
03	SNPCOM@	2	SNA common area address
05	SNPMIOB@	2	Message IOB address
07	SNPCSB@	2	CSB address of user responding to SDLC message

Figure 2-172 (Part 1 of 2). Format of the Physical Unit Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	SNPFLAG1	1	Byte 1 status of physical unit SSCP session: *Hex* *Meaning* 80 Off—session in reset state On—session in active state 40 Initialization message pending
0A	SNPFLAG2	1	Byte 2 activity on physical unit SSCP session: *Hex* *Meaning* 80 Request disconnect to be sent to primary 40 Request disconnect sent to primary 20 Initialization message to be given to operator 10 Permanent SDLC error message received 08 Termination message to be given to operator 04 On—logical unit blocks have been allocated for this line Off—first assign for this line
0B	SNPSSCP	6	System services control point identification name as found on ACTPU command and to be checked (if specified) with SSCP ID as given by SNA user. Six bytes of binary data.
11	SNPPTR	2	Address of first logical unit block in the chain of logical unit blocks for this physical unit block

Figure 2-172 (Part 2 of 2). Format of the Physical Unit Block

Presentation Services Control Blocks

Presentation services get control block (PSGN) and presentation services put control block (PSPN) are the interfaces to #SNGPS and #SNPPS, respectively. These modules provide blocking/deblocking, compression/decompression, and processing of SCS characters in the request units. Figure 2-173 shows the format of the presentation services get control block. Figure 2-174 shows the format of the presentation services put control block.

Presentation Services Get Control Block (PSGN)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$SGFLAG	1	Flag byte: *Hex* *Meaning* 80 Compression indicator: 0—no compression 1—compression 20 Reset indicator: 0—do not reset 1—reset RU and LR addresses
01	$SGRTNC	1	Return code: *Hex* *Meaning* C6 Vertical tab table processed; table length less than parameter string C4 Horizontal tab table processed; table length less than parameter string 66 Bad value in vertical tab table parameter string 64 Bad value in horizontal tab table parameter string 47 Value for RU buffer displacement is greater than RU buffer length 46 Vertical tab table processed 45 Parameter error 44 Horizontal tab table processed

Figure 2-173 (Part 1 of 3). Format of the Presentation Services Get Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01 (cont.)			*Hex* *Meaning* 43 Unsupported SCS character 42 End of request unit 41 Unsupported SCB character 40 Good completion
02	$SGRUBB@	2	Request unit buffer begin address
04	$SGLRBB@	2	Logical record buffer begin address
06	$SGRUDLG	2	Request unit data length from SNA DTF
08	$SGLRBL	2	Logical record buffer length (maximum size of record expected)
0A	$SGUDL	2	Actual length of user data returned
0C	$SGRUBD	2	Request unit buffer displacement
0E	$SGCCTL1	1	Before print carriage control byte 1 (If hex 80 is 0, space operation; if hex 80 is 1, skip operation.)
0F	$SGCCTL2	1	Before print carriage control byte 2 (If hex 80 is 0, space operation; if hex 80 is 1, skip operation.)
10	$SGCCTL3	1	After print carriage control byte 1 (If hex 80 is 0, space operation; if hex 80 is 1, skip operation.)
11	$SGCCTL4	1	After print carriage control byte 2 (If hex 80 is 0, space operation; if hex 80 is 1, skip operation.)
12	$SGVTT@	2	Actual vertical tab table address
14	$SGRVTT@	2	Replace vertical tab table address

Figure 2-173 (Part 2 of 3). Format of the Presentation Services Get Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16	$SGVTTL	1	Vertical tab table length
17	$SGHTT@	2	Actual horizontal tab table address
19	$SGRHTT@	2	Replace horizontal tab table address
1B	$SGHTTL	1	Horizontal tab table length
Work area for get presentation service (18 bytes):			
1C	$SGBUFC@	2	Request unit/logical record buffer continuation address
1E	$SGLRBD	2	Relative logical record buffer displacement
Work area for formatting tab table (5 bytes):			
20	$SGACTT	2	Actual horizontal/vertical tab table address
22	$SGREPT	2	Replace horizontal/vertical tab table address
24	$SGREPL	!	Replace horizontal/vertical tab table length
25	$SGPARMC	1	SCS parameter count
26	$SGINDEX	1	Tab table index
27	$SGTTRTN	1	Tab table return code save area
28	$SGSCBC	1	SCB count
29	$SGSCBT	1	SCB type
2A	$SGCHAR	1	Request unit character
2B	$SGSTATE	1	Processing state
2C	$SGIND1	1	Processing status byte 1
2D	$SGIND2	1	Processing status byte 2

Figure 2-173 (Part 3 of 3). Format of the Presentation Services Get Control Block

Presentation Services Put Control Block (PSPN)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$SPFLAG	1	Flag byte: *Hex* *Meaning* 80 Compression indicator: 0—no compression 1—compression 40 Transparency indicator: 0—no transparency 1—transparency 20 Reset indicator: 0—do not reset 1—reset RU and LR addresses
01	$SPRTNC	1	Return code: *Hex* *Meaning* 42 RU buffer full; logical record not processed 41 Logical record too large for request unit 40 Good completion
02	$SPRUBB@	2	Request unit buffer begin address
04	$SPLRBB@	2	Logical record buffer begin address
06	$SPRUDLG	2	Request unit data length for SNA DTF
08	$SPRUBL	2	Request unit buffer length (RU size)
0A	$SPUDL	2	Actual length of user data to be processed

Figure 2-174 (Part 1 of 2). Format of the Presentation Services Put Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	$SPRUBD	2	Request unit buffer displacement
0E	$SPRUBC@	2	Request unit buffer continuation address

Figure 2-174 (Part 2 of 2). Format of the Presentation Services Put Control Block

Primary SDLC Line Handler Transient Parameter List

The primary SDLC line handler transient parameter list is built when an SNA task opens or closes a communication line for primary SDLC. This 16-byte area is used to request the line open transient (#PDLH) or the line close transient (#PDLT).

How to Find

XR1 contains the address of this parameter list when #PDLH is requested.

Format

Figure 2-175 shows the format of the primary SDLC line handler transient parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PDLHOPC	1	Operation code: *Hex* *Meaning* 08 Open a line 04 Terminate 02 Terminate/detach 01 Abort

Figure 2-175 (Part 1 of 4). Format of the Primary SDLC Line Handler Transient Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	PDLHCC	1	Completion code:
			Hex *Meaning*
			80 Line termination failure
			45 Assign of MLCA load buffer failed
			44 Assign of poll list failed
			43 Assign of internal IOBs failed
			42 Assign of receive IOBs failed
			41 Assign of transmit IOBs failed
			40 Assign of SDLC common area failed
			22 Line definition byte mismatch
			21 No user area for buffer(s)
			20 SDLC attachment failure
			11 Line is in termination
			10 Line allocate failure
			00 Successful completion
02	PDLHLINE	1	Line number:
			Hex *Meaning*
			04 Line 4
			03 Line 3
			02 Line 2
			01 Line 1

Figure 2-175 (Part 2 of 4). Format of the Primary SDLC Line Handler Transient Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	PDLHPL@	2	SDLC polling list address (output from transient)
	or		
	PDLHLDF1	1	Line definition, byte 1 (input to transient):
			Hex *Meaning*
			80 Japanese modem
			40 Manual call
			20 Manual answer
			10 Auto answer
			08 Reserved
			04 Reserved
			02 Reserved
			01 Reserved
04	PDLHLDF2	1	Line definition, byte 2:
			Hex *Meaning*
			80 Half rate
			40 CPU clocking
			20 IBM modem
			10 World trade answer tone
			08 Standby line
			05 Leased multipoint line
			02 Switched point to point line
			01 Leased point to point line
05	PDLHSDC@	2	SDLC common area address (output from transient)
	or		
	PDLHPLS	1	Poll list size—must be non-zero (input to transient)

Figure 2-175 (Part 3 of 4). Format of the Primary SDLC Line Handler Transient Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	PDLHPINT	2	Nonproductive polling interval (must be non-zero)
08	PDLHNOTR	1	Number of 2K pages for transmit buffers (must be 0, 1, or 2)
09	PDLHNORE	1	Number of 2K pages for receive buffers (must be 1 or 2)
0A	PDLHXMIT	2	Chain of transmit IOBs and buffers (this is an output field only)
0C	PDLHTCB@	2	TCB address of the calling task
0E	PDLHTASK	1	Calling task indicator: *Hex* *Meaning* 80 Request is from remote work station support 40 Request is from peer support 20 Request is from finance support 10 Request is from SDLC station test 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Figure 2-175 (Part 4 of 4). Format of the Primary SDLC Line Handler Transient Parameter List

Printer Specification Block (PSB)

A printer specification block (PSB) contains information about a printer file. A 24-byte PSB is built and maintained by the scheduler and is chained to a specific job control block (JCB).

How to Find

Field JCBDPSBP in the JCB points to the first entry in the PSB chain. Field PSBDFCHN in the PSB points to the next PSB in the chain.

Format

Figure 2-176 shows the format of a PSB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PSBDNAME	8	File name
08	PSBDPRID	2	Printer (work station) ID
0A	PSBDLINE	1	Lines/page
0B	PSBDCOPS	1	Copies
0C	PSBDPRIR	1	Priority
0D	PSBDFLG1	1	Flag byte 1: *Hex* *Meaning* 80 Defer-yes specified 40 Defer-no specified (if bits 0 and 1 are off, no defer parameter was specified) 20 Reserved 10 No printer statement specified (PSB created by allocate) 08 Spool-yes specified

Figure 2-176 (Part 1 of 3). Format of a Printer Specification Block (PSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D (cont.)			*Hex* *Meaning* 04 Spool-no specified (if both bits 4 and 5 are off, no spool parameter was specified) 02 Printer allocated with spool 01 PSB allocated
0E	PSBDFLG2	1	Flag byte 2: *Hex* *Meaning* 80 Align-yes specified 40 Align-no specified (if both bits 0 and 1 are off, no align parameter was specified) 20 PSB to be processed by #CSIM 10 Print spool separator pages 08 Reload lines/page 04 Output separator page prompt 02 Halt on unprintable characters 01 Hold-yes specified
0F	PSBDFORM	4	Forms number
13	PSBDFCHN	2	Forward chain pointer
15	PSBDALNE	1	Lines/page amended by open
16	PSBDFLG3	1	Flag byte 3: *Hex* *Meaning* 80 Type IGC specified 40 EXTN off specified 20 On—15 CPI specified Off—15 CPI not specified 10 Logical record length greater than 132 08 File allocated by MRJE/SRJE 04 Separator pages configured

Figure 2-176 (Part 2 of 3). Format of a Printer Specification Block (PSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
17	PSBDLPI#	1	LPI (lines per inch) value: *Hex* *Meaning* 80 SYS-1403 pending 40 SYS-1404 pending 20 SYS-1405 pending 10 On—option 1 taken Off—option 0 taken 08 8 lines per inch specified on // PRINTER OCL statement 06 6 lines per inch specified on // PRINTER OCL statement 04 4 lines per inch specified on // PRINTER OCL statement

Figure 2-176 (Part 3 of 3). Format of a Printer Specification Block (PSB)

Procedure Parameter Save Area

The procedure parameter save area is used to save information about each procedure level. It is an 8-sector area in the work station work area of the TWA. Each sector contains information about 2 records.

How to Find

The procedure parameter save area can be found by referring to the task control block field TCBWSWA. This is the 2-byte sector address of the work station work area of which the procedure parameter save area is 1 sector beyond the start of the work station work area.

Format

Figure 2-177 shows the format of an entry in the procedure parameter save area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PPSTAGID	1	Sector tag for task work area get/task work area put
01	PPSFLAG1	1	Flag byte: *Hex* *Meaning* 80 Procedure is SSP 40 EOF received from source get 20 Do not log to history file
02	PPSSGBEG	2	Source—get beginning address
04	PPSPRG1M	2	Program 1 message member address save area
06	PPSPRG2M	2	Program 2 message member address save area
08	PPSUSR1M	2	User 1 message member address save area
0A	PPSUSR2M	2	User 2 message member address save area
0C	PPSPRG1L	2	Program 1 library F1 address save area
0E	PPSPRG2L	2	Program 2 library F1 address save area
10	PPSUSR1L	2	User 1 library F1 address save area
12	PPSUSR2L	2	User 2 library F1 address save area
14	PPSLIBRA	2	Current library F1 address save area
16	PPSSGED@	3	Source-get end address
19	PPSSGCRT	3	Source-get current address
1C	PPSSGBUF	2	Source-get current buffer address
1E	PPSSGLNR	1	Source-get length of record
1F	PPSUPSI	1	UPSI switches

Figure 2-177 (Part 1 of 2). Format of the Procedure Parameter Save Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
20	PPSPNAME	8	Procedure name
28	PPSVAR01	8	Variable 1
30	PPSVAR02	8	Variable 2
38	PPSVAR03	8	Variable 3
40	PPSVAR04	8	Variable 4
48	PPSVAR05	8	Variable 5
50	PPSVAR06	8	Variable 6
58	PPSVAR07	8	Variable 7
60	PPSVAR08	8	Variable 8
68	PPSVAR09	8	Variable 9
70	PPSVAR10	8	Variable 10
78	PPSVAR11	8	Variable 11

Figure 2-177 (Part 2 of 2). Format of the Procedure Parameter Save Area

Push/Pull Queue Element

The 8-byte push/pull queue element is created in the system queue space of main storage. Its purpose is to push all or part of the user specified sectors to disk.

How to Find

The push/pull queue element can be found by referring to TCB field TCBPUSH.

Format

Figure 2-178 shows the format of the push/pull queue element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PUSHOCH	2	Pointer to next push element
02	PUSHOSS	2	Sector address of TWA allocated on disk
04	PUSHIND	1	Push indicator: Hex 80—task pushed partially to disk
05	PUSHTSSN	1	Sector value for SWAP
06	PUSHBEGL	1	Task beginning ATR offset or users beginning address for a partial push
07	PUSHCORE	1	Storage size in 2K blocks (hex 80—task pushed is not swappable)

Figure 2-178. Format of a Push/Pull Element

Queue File Descriptor

The queue file descriptor (QFD) is a parameter list used to interface with the spool queue management routine.

Figure 2-179 shows the format of a queue file descriptor.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	QFDFUNCT	1	Function/flag byte. The zone portion of the byte contains flags:
			Hex *Meaning*
	QFDNFIND		80 Print file not found
	QFDERROR		40 Spool file disk read error
	QFDINVLD		20 Invalid spool file format
			00 Indicates the requested function completed normally
			The numeric portion of the byte identifies the function to perform:
			Hex *Meaning*
	QFDQSRCH		00 Search queue
	QFDALSEG		01 Allocate a spool file segment
	QFDRMOVE		02 Remove from queue
	QFDHOLDM		03 Hold multiple print files
	QFDRMOVM		04 Remove multiple print files
	QFDRELSM		05 Release multiple print files
	QFDCHGPF		06 Move print file to another location on the queue
	QFDCHGIM		07 Change multiple printer IDs
01	QFDMSKOF	1	Mask of bits that must be off in SPFSTATS when searching queue
02	QFDMSKON	1	Mask of bits that must be on in SPFSTATS when searching queue
03	QFDPRIOR	1	Priority for queuing
04	QFDPRTID	2	Printer ID for changing multiple IDs
06	QFDBUFR@	2	Address of 256-byte buffer

Figure 2-179 (Part 1 of 2). Format of a Queue File Descriptor

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	QFDPRGPX	4	XSSS address of primary segment for print file SPyyyy of G P,SPxxxx,SPyyyy command
0C	QFDPRSGS	3	SSS real address of primary segment of print file found in queue search
0F	QFDPRSGX	4	XSSS address of primary segment of print file
13	QFDLISTS		Start of queue search list descriptors

Figure 2-179 (Part 2 of 2). Format of a Queue File Descriptor

Queue Search List Descriptor

Queue search list descriptors are used to qualify the print files to which the requested function applies. Each list descriptor references a field in the primary segment of the print file and points to a list of values for that field. In order for a print file to qualify, one of the arguments in each list specified must match the appropriate field in the primary segment of the print file. As many list descriptors may be specified as desired. The end of the list descriptors is indicated by a hex FF where the next list descriptor would have started. If a queue search is done with no list descriptors, a hex FF must follow the QFD where the first list descriptor would have been located. Figure 2-180 gives the format of the list descriptors.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	QFDLSTLA	1	Length-1 of arguments in the list
01	QFDLSTOF	1	Offset to right end of field in primary segment in print file
02	QFDLST@@	2	Pointer to start of list
04	QFDLSTLD		Length of list descriptor

Figure 2-180. Format of a Queue Search List Descriptor

Queue Header Area

The system queue headers are located at hex 0100 of the main storage fixed nucleus. Each queue header contains a 2-byte address of the first associated element of a chain. The queue header area is 192 bytes long.

Note: Users of the queue headers must be aware that control storage may also access the header asynchronously.

Format

Figure 2-181 shows the format of the queue header area and the element stored (see the list of acronyms in the front of this manual for the acronym ID).

Displ of Leftmost Byte in Hex	Label	Element Stored	Lng in Bytes in Dec	Description
00	QHDFD	ACE	2	Disk input/output supervisor
02	QHDIO	ACE	2	Diskette input/output control supervisor
04	QHDPT	ACE	2	Printer input/output control handler
06	QHDWSC	ACE	2	Work station input/output control handler
08	QHDCOMM	ACE	2	Data communications input/output control handler
0A	QHDIOXNT	ACE	2	I/O transient area
0C			12	Reserved
18	QHDCXNT	ACE	2	Control storage transient scheduler
1A	QHDTWA	ACE	2	Task work area access
1C	QHDLOAD	ACE	2	Main storage relocating loader
1E	QHDKBTR	ACE	2	Keyboard trace

Figure 2-181 (Part 1 of 5). Format of the Queue Header Area

Displ of Leftmost Byte in Hex	Label	Element Stored	Lng in Bytes in Dec	Description
20	QHDPT1	ACE	2	Printer queue header 1 (printer 1 and 9)
22	QHDPT2	ACE	2	Printer queue header 2 (printer 2 and 10)
24	QHDPT3	ACE	2	Printer queue header 3 (printer 3 and 11)
26	QHDPT4	ACE	2	Printer queue header 4 (printer 4 and 12)
28	QHDPT5	ACE	2	Printer queue header 5 (printer 5 and 13)
2A	QHDPT6	ACE	2	Printer queue header 6 (printer 6 and 14)
2C	QHDPT7	ACE	2	Printer queue header 7 (printer 7 and 15)
2E	QHDPT8	ACE	2	Printer queue header 8 (printer 8 and 16)
30	QHDFDS	ACE	2	Spindle A queue header
32	QHDFDB	ACE	2	Spindle B queue header
34	QHDFDC	ACE	2	Spindle C queue header
36	QHDFDD	ACE	2	Spindle D queue header
38	QHDIOA	ACE	2	Diskette active queue
3A			2	Reserved
3C	QHDTIMER	TQE	2	Interval timer TQE queue
3E	QHDTIMEA	ACE	2	Interval timer ACE queue

Figure 2-181 (Part 2 of 5). Format of the Queue Header Area

Displ of Leftmost Byte in Hex	Label	Element Stored	Lng in Bytes in Dec	Description
40	QHDSPTCB	TCB	2	Current task executing (last TCB dispatched)
42	QHDXIENT	TCB	2	Main storage transient scheduler
44	QHDPRIQ	TCB	2	TCB priority queue
46	QHDTCBQ	TCB	2	TCB ready queue
48	QHDTTC	ACE	2	Task-task communication
4A	QHDSQE	PL	2	Status queue header
4C	QHDCNLG	PL	2	Console SYSLOG
4E	QHDCILK	AQE	2	Console SYSLOG interlock
50	QHDTRM	PL	2	Termination/release
52	QHDRFILK	AQE	2	Reject file interlock
54	QHDCPOCL	PL	2	OCL command requests
56	QHDSQB	SQB	2	Sector queue blocks
58	QHDCSCQ	ACE	2	Control storage complete queue
5A	QHDTUB	TUB	2	Terminal unit block queue (start of TUB chain)
5C	QHDCOM1	ACE	2	Communications line 1
5E	QHDCOM2	ACE	2	Communications line 2
60	QHDCOM3	ACE	2	Communications line 3
62	QHDCOM4	ACE	2	Communications line 4
64	QHDDILK	AQE	2	Dedication interlock
66	QHDSILK	AQE	2	Scheduier interlock

Figure 2-181 (Part 3 of 5). Format of the Queue Header Area

Displ of Leftmost Byte in Hex	Label	Element Stored	Lng in Bytes in Dec	Description
68	QHDVILK	AQE	2	VTOC interlock
6A	QHD5ILK	AQE	2	Format 5 interlock
6C	QHDPILK	AQE	2	Procedure name interlock
6E	QHDHIST	AQE	2	History file interlock
70	QHDSQSPT	APE	2	Assigned pages queue header
72	QHDCSB	CSB	2	Communications specification block queue
74	QHDERB	ERB	2	Error recording block queue header
76	QHDGW	ACE	2	General wait system queue
78	QHDSEC	PL	2	Security queue header
7A	QHDLOC	PL	2	Location of node directory
7C			2	Reserved
7E	QHDSNA		2	SNA task queue header
80	QHDWSQS	FQE	2	Work station queue space header (first available 8 bytes—format is nnnn@@@@ where nnnn=number of bytes in hex, and @@@@=address of next available space
82	QHDSQS	FQE	2	System queue space header (first available 8 bytes—format is nnnn@@@@ where nnnn=number of bytes in hex, and @@@@=address of next available space
84			12	Reserved
90	QHDINQEX	ACE	2	Inquiry exit queue
92	QHDQUAIL	PL	2	Queued acquire interface list

Figure 2-181 (Part 4 of 5). Format of the Queue Header Area

Displ of Leftmost Byte in Hex	Label	Element Stored	Lng in Bytes in Dec	Description
94	QHDRPT	ACE	2	Remote printer queue
96	QHDSCT	PL	2	Subsystem control table
98	QHDTWAF1	F1	2	TWA extension F1 chain
9A	QHDEXTRA	PL	2	Extended trace
9C	QHDSUBCN	PL	2	Subconsole SYSLOG
9E	QHDSUBRA	PL	2	Subconsole reassign
A0	QHDEIB	EIB	2	Error information block
A2	QHDNSACE	ACE	2	Nonswappable get page ACE
A4			2	Reserved
A6	QHDEXAM	NAS	2	Exam queue
A8	QHDMTI		2	MRT termination interlock
AA	QHDRWLH	AQE	2	Multiple SNA line interlock
AC	QHDSPLK	AQE	2	Spool file interlock
AE			18	Reserved

Figure 2-181 (Part 5 of 5). Format of the Queue Header Area

Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

The realtime interface table (RIT) control block provides control and state information necessary for the 3270 device emulation program product, the 3270 BSC subsystem, and the 3270 BSC interrupt handler to interface with one another.

How to Find

The address of the RIT is located at displacement XSCD7RIT in the extended subsystem configuration record (XSCR). The RIT can also be located by finding the RICB. The RIT address is stored in the field corresponding to the associated communications line number. The RIT is in SSP-ICF common queue space.

Format

Figure 2-182 shows the format of the realtime interface table (RIT) control block for BSC 3270 device emulation.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Global fields:			
00	RITGXLIB	8	Library name containing RITGXTPR and RITGXTWS
08	RITGXTPR	8	Member name of printer translate tables
10	RITGXTWS	8	Member name of display translate tables
18	RITGDEVP	1	Device post (intersubsystem)
19	RITGDEV@	2	Subsystem address for device post
1B	RITGLLP	1	Link level post (SS↔IH) (disable) *Hex* *Meaning* 06 MLCA controller check 05 Error condition 04 Data link transmission error 03 Normal completion 02 Initialization error
1C	RITGLL@	2	Subsystem address for link level post
1E	RITGLLRC	2	Link level return code
20	RITGLINE	1	Data communications line number for special post
21	RITGXSCR	2	Address of associated XSCR

Figure 2-182 (Part 1 of 5). Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
23	RITGSTAT	1	Global flags: *Hex* *Meaning* 80 3274/3271 control unit (on/off) 40 Disable in progress 20 Subsystem post required after last device 10 Link level task in termination 08 Reserved 04 Reserved 02 Reserved 01 Reserved
24	RITGLTID	1	Task ID of link level task
25	RITGAID#	1	Number of pending AIDs
26	RITGDEV#	1	Number of active 3277, 3288 sessions
27	RITGPOL@	1	3270 hardware control unit poll address
28	RITGIHP	1	BSC SS→IH asynchronous post (0C=unlock the data communications buffer)
29	RITGRESV	8	Reserved

Note: The remainder of this table consists of 32 24-byte device entries. Following are the fields that make up one device entry:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RITEITC2	1	Intertask communication bits: *Hex* *Meaning* 80 IH→SS post pending 40 IH←SS post pending 20 IH→SS post suppress 10 IH←SS post suppress

Figure 2-182 (Part 2 of 5). Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)	RITEPOST		*Hex* *Meaning* Type of post: 0F Disable post (IH←SS) 0E Busy and positive post (IH←SS) 0D Select post (IH→SS) or initiate post (IH←SS) 0B Poll post (IH→SS) or busy post (IH←SS) 09 10-4 post 07 Text post 05 Negative post 03 Positive post 01 Terminate post
01	RITEITC1	1	Intertask communication bits: *Hex* *Meaning* 80 Session active 40 AID pending 20 Reserved 10 Reserved 08 IH→SS text post suppressed 04 IH→SS select post suppressed 02 First IH←SS text post 01 IH←SS test request format
02	RITETYPE	1	Session type bits: *Hex* *Meaning* 80 Protected session 40 System/34 ID configured 20 Reserved 10 Numeric lock feature 08 3277 emulation 04 Lower case feature

Figure 2-182 (Part 3 of 5). Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02 (cont.)			*Hex* *Meaning* 02 3288 emulation 01 Program session
03	RITETID	1	Task ID of SS
04	RITESS1	1	Sense/status bits: *Hex* *Meaning* 80 Must be zero 40 Must be zero 20 Must be zero 10 Must be zero 08 Device busy 04 Unit specify 02 Device end 01 Transmission check
05	RITESS2	1	Sense/status bits: *Hex* *Meaning* 80 Must be zero 40 Must be zero 20 Command reject 10 Intervention required 08 Equipment check 04 Device check 02 Control check 01 Operation check
06	RITECODE	2	Return code
08	RITE34ID	2	System/34 device ID (optional)
0A	RITESUB@	2	Session control block address (program interface)
	or		
	RITETUB@	2	TUB address (device emulation)

Figure 2-182 (Part 4 of 5). Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	RITEBUF@	2	Data communication buffer address
0E	RITEBUF#	2	Number of bytes in data communication buffer
10	RITEIOB@	2	IOB address
12	RITEWKA	2	Address of BSC IH work area
14	RITEITCT	1	ITC2 for accepting locked data communication buffer
15	RITESTAT	1	Status bits: *Hex* *Meaning* 80 Data communication buffer lock 40 Accept data communication buffer when locked 20 Locked data communication buffer was accepted 10 Device end delayed 08 IH→SS post (10-4/busy, post) 04 SS→IH post expected 02 SS→IH post late 01 Special device busy
16	RITEDEV@	1	3270 hardware device address
17	RITERESV	1	Reserved

Figure 2-182 (Part 5 of 5). Realtime Interface Table (RIT) Control Block for BSC 3270 Device Emulation

Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

The realtime interface table (RIT) control block provides control and state information necessary for the 3270 Device Emulation Program Product and the 3270 SNA support subsystem to interface with one another.

How to Find

The address of the RIT is located at displacement XSCDORIT in the extended subsystem configuration record (XSCR). The RIT is in SSP-ICF common queue space.

Format

Figure 2-183 shows the format of the realtime interface table (RIT) control block for SNA 3270 device emulation.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Global fields:			
00	RITGXLIB	8	Library name containing RITGXTPR and RITGXTWS
08	RITGXTPR	8	Member name of printer translate tables
10	RITGXTWS	8	Member name of display translate tables
18	RITGRSV1	8	Reserved
20	RITGLINE	1	Data communications line number
21	RITGXSCR	2	Address of associated XSCR
23	RITGSTAT	1	Global flags: *Hex* *Meaning* 80 RIT interlock 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Figure 2-183 (Part 1 of 5). Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	RITGLKOW	2	RIT interlock owner's TCB address
26	RITG#ROW	1	Maximum number of RIT entries
27	RITRSV2	1	Reserved
28	RITGRSV3	2	Reserved
2A	RITGRSV4	6	Reserved
30	RITGSUBR	1	RIT entry of subsystem
31	RITEROW1		First device emulator RIT entry

Note: The remainder of this table consists of 40-byte device entries, the number of which is determined by the number of configured devices. Following are the fields that make up one device entry:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RITEITC3	1	Intertask communication bits: *Hex* *Meaning* 0D Initiate post (device emulation →subsystem) 05 Negative post, MIC in RIT (device emulation←subsystem) 03 Positive post (device emulation ←subsystem) 01 Terminate post (device emulation→subsystem)
01	RITEITC2	1	Intratask communication bits: *Hex* *Meaning* 0F Sys Req key pressed (device emulation→SNA interface) 0D SNUB request (device emulation/subsystem→SNA interface)

Figure 2-183 (Part 2 of 5). Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01 (cont.)			*Hex* *Meaning* 0B Attn key pressed (device emulation→SNA interface) 09 10-4 (last/only text) (device emulation↔SNA interface) 07 Text (device emulation↔SNA interface) 05 Negative acknowledgment, MIC in RIT (device emulation/subsystem↔SNA interface) 03 Positive acknowledgment (device emulation/subsystem↔SNA interface) 01 No-op (device emulation/subsystem←SNA interface)
02	RITEITC1	1	Intratask communication bits: *Hex* *Meaning* 80 Device emulation active 40 Printer error recovery procedure in process 20 Unlock keyboard and reset AID 10 Load a printer module 08 Exit system request mode 04 Enter system request mode 02 Reserved 01 Reserved

Figure 2-183 (Part 3 of 5). Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	RITEITC0	1	Intra task communication bits: *Hex* *Meaning* 80 Variable data included for MIC 40 Terminate when '-' is returned 20 Message must be displayed 10 Insert location name in message 08 Reserved 04 Reserved 02 Reserved 01 Reserved
04	RITETYPE	1	Session type bits: *Hex* *Meaning* 80 Protected session 40 System/34 ID configured 20 SCS printer 10 Numeric lock feature 08 3277 (display) emulation 04 Lower case feature 02 3288 (printer) emulation 01 Reserved
05	RITETID	1	Device emulation task ID
06	RITESNAS	4	Sense bytes
0A	RITECODE	2	Return code (MIC) (device emulation←SNA interface)
0C	RITE34ID	2	System/34 device ID
0E	RITETUB@	2	TUB address

Figure 2-183 (Part 4 of 5). Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	RITEBUF@	2	Buffer address for SNUB requests
12	RITEBUF#	2	Number of bytes in buffer
14	RITECHN#	2	Total bytes in current chain
16	RITESBF@	2	Device emulation send buffer address
18	RITERBF@	2	Device emulation receive buffer address
1A	RITESNUB or	2	SNUB address
	RITELU#	2	LU number saved here until SNUB allocated
1C	RITEARR	2	ARR save area
1E	RITESTAT	1	Status bits: *Hex* *Meaning* 80 System request function active 40 Input to host allowed 20 Presentation space altered 10 Printer module loaded 08 Read type command in progress 04 Write type command in progress 02 Start print in progress 01 Reserved
1F	RITEBMAX	2	Maximum send buffer size
21	RITERC@	2	RIT recall address
23	RITESXSC	2	Station XSCR address
25	RITESNPL	6	SNA parameter list
2B	RITERSVD	5	Reserved

Figure 2-183 (Part 5 of 5). Realtime Interface Table (RIT) Control Block for SNA 3270 Device Emulation

RIT Information Control Block for BSC 3270 Device Emulation

The RIT information control block (RICB) provides the BSC 3270 device emulation program product with the information required to find the proper RIT and to locate the 3270 graphic translate table.

How to Find

The address of the RICB is stored at displacement ICAD3270 in the SSP-ICF communications area bits 15 through 3 (use zeros for bits 2, 1 and 0 to complete the address of the RICB).

Format

Figure 2-184 shows the format of the RIT information control block for BSC 3270 device emulation.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RITIL1R@	2	Address of RIT for line 1
02	RITIL2R@	2	Address of RIT for line 2
04	RITIL3R@	2	Address of RIT for line 3
06	RITIL4R@	2	Address of RIT for line 4
08	RITIXTAB	2	Address of 3270 graphic translate table
0A	RITIRESV	2	Reserved

Figure 2-184. Format of the RIT Information Control Block for BSC 3270 Device Emulation

Registers—Control Storage

The following describes the control storage registers located within the System/34 SSP.

Backup Mode Register

The backup mode register (BMR) provides for handling of defective main storage addresses. If a defect is detected in the first 16K bytes during the memory storage test portion of the initial program load cycle, bit 6 in the BMR is set to flag the defect, and the system automatically retries the initial program load cycle. During the retry, bit 6 causes the memory storage card originally used for physical main storage address 0 through 16K to be switched with the memory card originally used for physical main storage address 16K through 32K.

Control Mode Register

The 8-bit control mode register (CMR) controls main storage addressing by the control storage processor when operating on the main program level, interrupt level 0, and interrupt level 5. The CMR is not effective when the control storage processor is operating on interrupt level 1, 3, and 4. Control storage instructions are used to load and sense the CMR. Figure 2-185 shows the bit format of the CMR.

Bit	Description
0	Not used
1	Not used
2	Not used
3	Not used
4	Not used
5	Not used
6	Address translation register (ATR) select: On—I/O task ATR select Off—task ATR select
7	Translate: On—translate Off—real

Figure 2-185. Format of the Control Mode Register

Process Condition Register

The control process or condition register (PCR) contains the control storage processor conditions that are tested by the branch on condition instruction. The PCR can be changed by system reset, by a load I/O immediate instruction, or by instructions that modify bits.

Bit 0 (flag bit) can be turned on by the load PCR instruction. Bits 5, 6, and 7 (high, low, and equal) cannot be loaded simultaneously by the load PCR instruction. If bit 7 is loaded, bits 5 and 6 are forced off. Bit 5 can be loaded by loading bit 4 (carry) with bit 7 off. Bit 6 can be loaded by turning bits 4 and 7 off. The PCR can only be loaded from the local storage register high byte.

Figure 2-186 shows the associated micro instructions that can modify the PCR.

Processor Condition Register

		Flag (bit 0)	Positive (bit 1)	Negative (bit 2)	Zero (bit 3)	Carry (bit 4)	High (bit 5)	Low (bit 6)	Equal (bit 7)
L/A1 or L/A2 Logical	Set		R1 or R2 all ones and results ≠ zero	Results ≠ zeros and R1 or R2 ≠ all ones	Result all zeros				
	Reset		Result all zeros or R1 or R2 ≠ all ones	Result all zeros or R1 or R2 all ones	Result ≠ all zeros				
L/A1 or L/A2 Arithmetic	Set		Result has a carry and result ≠ zero	Result has no carry and result ≠ zero	Result zero	Result has a carry (add) no borrow (sub)	Result has a carry and result ≠ zero	Result has no carry and result ≠ zero	
	Reset		Result has no carry or result zero	Result has a carry or result zero	Result ≠ zero	Result has no carry (add) or a borrow (sub)	Result has no carry or result - zero	Result has a carry or result zero	Result ≠ zero
Test Mask	Set		Tested bits all ones	Tested bits ≠ all ones and tested bits ≠ all zeros	All tested bits zero (or no bits tested)				
	Reset		Tested bits ≠ all ones	Tested bits all ones or tested all zeros	Tested bits ≠ zero				
Compare or Subtract Immediate	Set		Register data immediate data	Register data immediate data	Register data immediate data				
	Reset		Register data is not immediate data	Register data is not immediate data	Register data is not immediate data				

Figure 2-186 (Part 1 of 2). Control Storage Processor Register Settings

Processor Condition Register

		Flag (bit 0)	Positive (bit 1)	Negative (bit 2)	Zero (bit 3)	Carry (bit 4)	High (bit 5)	Low (bit 6)	Equal (bit 7)
I/O Immediate Reset Carry—Set Equal	Set								Equal set on
	Reset					Carry set off	Decoded from carry and equal and set off	Decoded from carry and equal and set off	
I/O Immediate Load PCR	Set	Loaded bit 0 is on	Loaded bit 1 is on	Loaded bit 2 is on	Loaded bit 3 is on	Loaded bit 4 is on	Loaded bit 4 is on and bit 7 is off	Loaded bit 4 is off and bit 7 is off	Loaded bit 7 is on
	Reset	Loaded bit 0 if off	Loaded bit 1 if off	Loaded bit 2 is off	Loaded bit 3 if off	Loaded bit 4 is off	Loaded bit 4 is off or loaded bit 7 is on	Loaded bit 4 is on or loaded bit 7 is on	Loaded bit 7 is off
Reset *Note:* Power on Reset or CE Reset	Set								Equal set on
	Reset	Set off	Set off	Set off	Set off	Carry set off	Decoded from 4 and 7 and set off	Decoded from 4 and 7 and set off	
I/O Immediate Flag Length	Set	Set on							
	Reset	Set off							

Figure 2-186 (Part 2 of 2). Control Storage Processor Register Settings

Registers—Main Storage

Program Mode Register

The program mode register (PMR) controls main storage address translation and protection. Main and control storage instructions are used to load and sense the PMR. Following is the bit assignment for the PMR:

Bit	Description
0	Task switch disable
1	Not used
2	Not used
3	Not used
4	On—main storage processor instruction address register is translated
5	On—main storage processor operand 2 addresses are translated
6	On—main storage processor operand 1 addresses are translated
7	On—nonprivileged mode

Program Status Register

The program status register (PSR) contains the conditions that are tested by the branch on condition and jump on condition instructions. The PSR can be changed by system reset, a load register instruction, or by instructions that modify bits. Following are the bit settings for the PSR:

Bit	Description
0	Not used
1	Not used
2	Binary overflow

Bit	Description
3	Test false
4	Decimal overflow
5	High
6	Low
7	Equal

Note: Bits 5, 6, and 7 cannot be loaded simultaneously by the load register instruction. If bit 7 is to be loaded, bits 5 and 6 are forced off by hardware. Bit 5 can be loaded by loading the PSR with bits 6 and 7 off. Bit 6 can be loaded by loading the PSR bit 6 on and bit 7 off.

Figure 2-187 shows the possible conditions for the program status register.

Machine Instruction	Condition	Binary Overflow (bit 2)	Test False (bit 3)	Decimal Overflow (bit 4)	High (bit 5)	Low (bit 6)	Equal (bit 7)
Zero-add zoned decimal	Set				Operand 2 positive	Operand 2 negative	Operand 2 zero
	Reset				Operand 2 negative	Operand 2 positive	Operand 2 not zero
Add and subtract zoned decimal	Set			Result overflow	Result positive	Result negative	Result zero
	Reset				Result negative or zero	Result positive or zero	Result not zero
Edit (See *Note*)	Set				Operand 2 positive	Operand 2 negative	Operand 2 zero
	Reset				Operand 2 not positive	Operand 2 not negative	Operand 2 not zero
Compare logical characters	Set				Operand 1 greater than operand 2	Operand 1 less than operand 2	Operand 1 equal to operand 2
	Reset				Operand 1 not greater than operand 2	Operand 1 not less than operand 2	Operands not equal
Compare logical immediate	Set				Operand 1 greater than immediate data	Operand 1 less than immediate data	Operand 1 equal to immediate data
	Reset				Operand 1 not greater than immediate data	Operand 1 not less than immediate data	Operand 1 not equal to immediate data

Figure 2-187 (Part 1 of 2). Program Status Register Settings

Machine Instruction	Condition	Binary Overflow (bit 2)	Test False (bit 3)	Decimal Overflow (bit 4)	High (bit 5)	Low (bit 6)	Equal (bit 7)
Add logical characters	Set	Carry out			Carry out and result not zero	No carry and result not zero	Result zero
	Reset	Reset at start of instruction			No carry or result zero	Carry out or result zero	Result not zero
Subtract logical characters	Set				Operand 1 greater than operand 2	Operand 1 less than operand 2	Result zero
	Reset				Operand 1 not greater than operand 2	Operand 1 not less than operand 2	Result not zero
Add to register	Set	Carry out			Carry out and result not zero	No carry and result not zero	Result zero
	Reset	At start of instruction			No carry or result zero	Carry out or result zero	Result not zero
Test bits on			Tested bits not all ones				
Test bits off			Tested bits not all zeros				
Branch or jump on condition	Set						
	Reset		Reset if tested	Reset if tested			
Load register (PSR)	Set	Set if loaded bit 10 on	Set if loaded bit 11 on	Set if loaded bit 12 on	Set if loaded bit 15 off and bit 14 off	Set if loaded bit 15 off and bit 14 on	Set if loaded bit 15 on
	Reset	Reset if loaded bit 10 off	Reset if loaded bit 11 off	Reset if loaded bit 12 off	Reset if bit 15 on, or bit 15 off and bit 14 on	Reset if bit 15 on, or bit 15 off and bit 14 off	Reset if loaded bit 15 off
System reset	Set						Equal set on
	Reset	Binary overflow reset	Test reset	Decimal overflow reset	High reset	Low reset	

Note: The program status byte setting for EDIT will be shown only if one of the following conditions is true:

- The program status byte, bit 7, was set before the EDIT was executed.
- The rightmost byte of operand 1 was a hex 20.
- Operand 2 is not zero.

Figure 2-187 (Part 2 of 2). Program Status Register Settings

Relocating Loader Parameter List

This 12-byte area is required for the relocating loader find routine (SVC=X'52'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$LDDSS	3	Sector address of module
03	$LDDTEXT	1	Number of text sectors
04	$LDDLINK	2	Link-edit address
06	$LDDSTRT	2	Start control address (entry point)
08	$LDDRLD	1	RLD displacement in the first sector containing RLDs
09	$LDDTOT	1	Total number of sectors
0A	$LDDLOAD	2	Module load address

Note: Bytes 0 through 9 are filled in by the system find function from the library directory entry for the module.

Following are the RIB bit equates for the various loader functions:

Function	RIB
Load by relative sector	X'01'
Load to address	X'02'
Fetch	X'04'
Fetch to address	X'06'
System load	X'0A'
System fetch	X'0E'

Figure 2-188. Format of a Relocating Loader Parameter List

Remote Work Station Terminal Unit Block Extension

The remote work station TUB extensions (RWSTB) are built and maintained for each remote display and/or printer that is varied on line. The remote TUB extension contains information associated with its device.

How to Find

Field TUBDEXT@ in the terminal unit block (TUB) points to the remote TUB extension (RWSTB) associated with a display terminal. Field TUBPEXT@ in the terminal unit block (TUB) points to the remote TUB extension (RWSTB) associated with a printer.

Format

Figure 2-189 shows the format of a remote TUB extension.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RWSLSID	1	Logical session ID
	or		
	RWSADDR	3	3 bytes of address information
01	RWSCU@	1	Control unit address
02	RWSLINE@	1	SDLC line number:

Hex	*Meaning*
F0	Line number reserved bits
80	Reserved (must be zero)
40	Reserved (must be zero)
20	Reserved (must be zero)
10	Reserved (must be zero)
08	Line 4
04	Line 3
02	Line 2
01	Line 1

Figure 2-189 (Part 1 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	RWSSESSI	1	Session state indicators: *Hex* *Meaning* 21 All supervisory services to logical unit sessions and all logical unit to logical unit sessions active C0 Logical unit to logical unit session pending 0E Supervisory services to logical unit session pending E0 Logical unit to logical unit session reset 0F Supervisory services to logical unit session reset 80 Bind pending 40 Unbind pending 20 Logical unit to logical unit session active 10 Reserved (must be zero) 08 Actlu pending—type 1 (cold) 04 Previous state (used only with Actlu pending) 0—reset 1—active 02 Dactlu pending 01 Supervisory services to logical unit session active
04	RWSMXPC	1	Maximum outbound pacing count
05	RWSPCTR	1	Outbound pacing count
06	RWSQPAC	2	Queue pacing header
08	RWSQCPM	2	Queue command receive queue header

Figure 2-189 (Part 2 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	RWSFSM0	1	Finite state machines, byte 0: *Hex* *Meaning* 80 Pacing request receive pending 40 Control expedite pending 20 Control normal pending 10 Chain receive pending 08 Chain receive purging 04 Chain send pending 02 Half session ID error pending 01 Response control pending
	or RWSHSTRE	2	Half session subtree (FSM0, FSM1)
	or RWSSLTRE	3	SS-LU subtree (FSM0, FSM1, FSM2)
0B	RWSFSM1	1	Finite state machines, byte 1: *Hex* *Meaning* 80 Half duplex flip-flop pending (not send, receive) 40 Change direction pending 20 Send pacing response 10 Inbound pacing 08 Pacing request send 04 Reserved (must be zero) 02 Reserved (must be zero) 01 Delayed request mode allowed

Figure 2-189 (Part 3 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	RWSFSM2	1	Finite state machines, byte 2: *Hex* *Meaning* 80 Half session ID control pending (for supervisory services to logical unit session) 40 Reserved (must be zero) 20 Reserved (must be zero) 10 Reserved (must be zero) 08 Reserved (must be zero) 04 Reserved (must be zero) 02 Reserved (must be zero) 01 Reserved (must be zero)
0D	RWSRESV1	1	Reserved
Error recovery:			
0E	RWSHLAD1	1	High level aid and save sector indicators: *Hex* *Meaning* E0 Help, attention, system request keys 80 Help key 40 Attention key 20 System request key 10 Test request key 08 Reserved 05 Offset 5 sectors 04 Offset 4 sectors 03 Offset 3 sectors 02 Offset 2 sectors 01 Offset 1 sector 0F Do not offset any
0F	RWSLLAD1	1	Low level aid save

Figure 2-189 (Part 4 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	RWSRERFG	1	Remote error flags: *Hex* *Meaning* 80 Bypass printer first time switch processing 40 Wait for record formatted maintenance statistics 20 Send request maintenance statistics 10 Dactlu needed 08 Send signal 04 Device in error mode 02 $NUPD called second error 01 Send cancel
11	RWSSWLNI	1	Switched line information: *Hex* *Meaning* F0 Vary off lines 0F Vary on lines 80 Vary this device off line 4 40 Vary this device off line 3 20 Vary this device off line 2 10 Vary this device off line 1 08 Line 4 vary on allowed 04 Line 3 vary on allowed 02 Line 2 vary on allowed 01 Line 1 vary on allowed

Figure 2-189 (Part 5 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	RWSIND2	1	Work indicator 2: *Hex* *Meaning* 80 Bind/Actlu needed 40 Unbind needed 20 Printer first time switch needed 10 Slow poll this control unit at vary on 08 End of chain has been posted to SDLC 04 Call sign-off drop 02 Dequeue from queue connection point manager received 01 Dequeue from queue pacing
	or RWSCONST	1	RWSLSID to here copied to old EXT
13	RWSRESV3	2	Reserved
15	RWSOPENL	1	Line to be opened: *Hex* *Meaning* F0 Line number reserved bits 80 Reserved 40 Reserved 20 Reserved 08 Line 4 04 Line 3 02 Line 2 01 Line 1
Mainline services:			
16	RWSRESV	2	Reserved
18	RWSDTRCV	2	Data amount received on this get
1A	RWSDTADR	2	Next byte in WSQS to receive data

Figure 2-189 (Part 6 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C	RWSSVTLN	2	Data amount received by save operation
1E	RWSDK@SR	3	Disk start address for save/restore
21	RWSIND3	1	Work indicator 3 *Hex* *Meaning* 80 Slow poll message has been issued 40 Reserved 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
22	RWSRESV2	1	Reserved
23	RWSDKSCT	1	Disk sector count for save/restore
24	RWSDK@PG	2	Disk start address for get/put
26	RWSIND0	1	Work indicator 0—internal to RWAS: *Hex* *Meaning* 80 Part data in WSQS 40 WSQS formatted for put 20 Read screen indicated for RWSV 10 Send C/D on put help message 08 Put needs C/D first 04 Data on disk 02 Throw data away when CTSAV=0 01 TUB in PROC
27	RWSIND1	1	Work indicator 1: *Hex* *Meaning* 80 Switched line sign off hold received 40 Switched line sign off drop received

Figure 2-189 (Part 7 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
27 (cont.)			*Hex* *Meaning* 20 Message pending 10 Perform the sign off drop 08 Post command processor 04 Vary failed 02 Vary off requested 01 Vary on requested
28	RWSUCNT	1	User count
29	RWSATTR6	1	Save byte, restore bit TUBKBULK
2A	RWSLCUID	2	Control unit ID
2C	RWSERIOB	2	Address of IOB in error recovery procedure
2E	RWSTBCNT	2	TUB count length for command reject
30	RWSTBLEN	1	RWS TUB length—must be last

Figure 2-189 (Part 8 of 8). Format of the Remote Work Station Terminal Unit Block Extension

Remote Work Station TUB Processor Parameter List

The RWS (remote work station) TUB processor parameter list (RWPL) is built at the first vary-on request. This 8-byte area is used to request the vary-on transient (#RWVY) and the vary-off transient (#RWVZ) to perform one of their functions.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RWPLREQ	1	Request byte: *Hex* *Meaning* 80 Build offline printer TUB 40 Check validity of this WSID

Figure 2-190 (Part 1 of 2). Format of the Remote Work Station TUB Processor Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)			*Hex* *Meaning* 20 Get attributes 04 Auto vary on 02 Vary off 01 Vary on
01	RWPLRCD	1	Return code from #RWVY: *Hex* *Meaning* 0C Device not varied on 0B Cannot vary on at this time 0A One or all devices signed on 09 Invalid line for WSID/CUID 08 Supported but not display 07 Supported but not printer 06 Successful and display 05 Successful and printer 04 Condition exists 03 No resources 02 Attach failed 01 Device not supported 00 Successful printer/WS/both
02	RWPLWSID	2	Work station ID
04	RWPLCUID or	3	Control unit ID (for request codes 01 and 02)
04	RWPLATTR	1	Attributes (for request code 20)
05	RWPLTUB@	2	TUB address (for request code 80)
07	RWPLLINE	1	Line number: *Hex* *Meaning* 08 Line 4 04 Line 3 02 Line 2 01 Line 1

Figure 2-190 (Part 2 of 2). Format of the Remote Work Station TUB Processor Parameter List

Remote Work Station Work Area

The RWS (remote work station) work area (RWWA) is a 152-byte area located in resident main storage in the RWS task. It is a work area for calculations and a temporary save area for addresses related to the TUB being processed. A trace table and the polling list are loaded here.

How to Find

Module #RWAS contains the RWS work area at fixed location CD00.

Format

Figure 2-191 shows the format of the remote work station work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RWLDR	4	#RWAS routine loader
04	RWRESV	2	Reserved
06	RWASSPST	2	Post SDLC routine address
08	RWASSRSP	2	Send response routine address
0A	RWASBBND	2	Build bind routine address
0C	RWASBIOB	2	Build IOB routine address
0E	RWASENTR	2	General entry address
10	RWASFSQS	2	Free SQS routine address
12	RWTSDISC	2	Discard IOB and request/response unit routine address
14	RWTSERR	2	Change request to negative response routine address
16	RWTSAVE	2	Save registers routine address

Figure 2-191 (Part 1 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18	RWTSC202	2	Supervisory services connect point manager send routine address
1A	RWTSC251	2	Half session ID connect point manager send routine address
1C	RWTSC270	2	Half session ID connection point manager response routine address
1E	RWTSP202	2	Path control send address
20	RWDFC200	2	Function interpreter data flow control request send routine address
22	RWDFC210	2	Data flow control request send routine address
24	RWDFC220	2	Function interpreter data flow control response send routine address
26	RWDFC230	2	Data flow control response send routine address
28	RWASLTUB	2	Next TUB scan routine address
2A	RWASTRAC	2	SNA trace address
2C	RWASOLAY	2	Overlay loader address
2E	RWRCVBUF	2	Receive data buffer address
30	RWWL1INF	10	Line 1 information

Note: Following is the format of the 10-byte area for each line:

00	RWWLDF1	1	Line definition first byte: *Hex* *Meaning* 80 Japanese modem 40 Manual call 20 Manual answer 10 Auto answer

Figure 2-191 (Part 2 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)			*Hex* *Meaning* 08 Reserved 04 Reserved 02 Slow poll configured 01 Reserved
01	RWWLDF2	1	Line definition second byte: *Hex* *Meaning* 80 Half rate 40 Internal clocking 20 IBM modem 10 World Trade answer tone 08 Standby line 04 Multipoint line 02 Switched line 01 Nonswitched point-to-point line
02	RWWPLSZ	1	Number of poll list entries
03	RWWPIL	2	Nonproductive polling interval
05	RWWSTA	1	Line status: *Hex* *Meaning* 80 Line is open 40 Line close in process 20 Line detach pending 10 Line has been reenabled 08 Line has been terminated
06	RWWPL@	2	Poll list address
08	RWWSCOM	2	SDLC common area address
3A	RWWL2INF	10	Line 2 information
44	RWWL3INF	10	Line 3 information
4E	RWWL4INF	10	Line 4 information

Figure 2-191 (Part 3 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
58	RWWTRNQ	2	SDLC transmit queue
5A	RWWRCVQ	2	RWS receive queue
5C	RWWDTCNT	2	Temporary hold on data count
5E	RWWASIGN	2	WSQS amount
60	RWWECM@	2	General wait event control mask address
62	RWWLCTUB	2	Logical TUB address
64	RWWWKBF1	2	Work buffer 1
66	RWWWKBF2	2	Work buffer 2
68	RWWIND0	1	Work indicator byte: *Hex* *Meaning* 80 Message dispatch 40 Message address (on—TUB; off—IOB) 20 Reserved 10 Reserved 08 Detach needed 04 No line check for trace 02 WSQS space needed 01 Reserved
69	RWWTRC	1	Log trace SVC
IOB trace op end entries:			
6A	RWIID	1	IOB ID
6B	RWIIOB	2	IOB address
6D	RWIOP	1	Op code
6E	RWICC	1	Completion code

Figure 2-191 (Part 4 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6F	RWIRU4	9	Second byte of TH/RH/5 bytes of request/response unit
Put trace equates:			
6A	RWPID	1	Put ID
6B	RWPTUB	2	TUB address
6D	RWPCNT	2	TUB count
6F	RWPIOB	2	IOB address
71	RWPRH	1	First byte of request header
72	RWPDST	3	First 3 bytes of request unit
75	RWPDEN	3	Last 3 bytes of request unit
Get trace equates:			
6A	RWGID	1	Get ID
6B	RWGTUB	2	TUB address
6D	RWGCC	2	Command and command modifier code bytes
6F	RWGDAM	2	Data amount in this request unit
71	RWGIOB	2	IOB address
73	RWGAID	5	On save or invite, first block contains a 2-byte cursor address, an aid, and a 2-byte request unit; all others contain 5 bytes of data.
Overlay equates:			
6A	RWOID	1	Overlay ID
6B	RWONAM	4	Overlay name
6F	RWOXR1	2	XR1

Figure 2-191 (Part 5 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
71	RWOXR2	2	XR2
73	RWOARR	2	ARR
75		3	Unused
Printer equates:			
6A	RWLID	1	Printer ID
6B	RWLPIOB	2	Printer IOB address
6D	RWLPSTA	1	Printer status
6E	RWLPMDR	1	Printer cmd/mod
6F	RWLLNG	2	Data length
71	RWLSPL	1	Spool indicator
72	RWLRH	2	RH0 and RH1
74	RWLDAT	4	First 4 bytes of data
78	RWWXTNUM	1	Next TUB number
79	RWWLIOB	2	Last IOB address
7B	RWWSLPA	2	SYSLOG push area address
7D	RWWPARMS	1	Parameter byte for overlays
7E	RWWDSK@	3	Disk address for #RWSV
81	RWWSVTOT	2	Accumulator total for #RWSV
83	RWWONAME	2	#RWOP index for first load
85	RWPR!OB@	2	Printer IOB address

Figure 2-191 (Part 6 of 7). Format of the Remote Work Station Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
87	RWTBWRK1	2	TUB work field 1
89	RWPRWRK1	2	Printer work field 1
8B	RWPRWRK2	2	Printer work field 2
8D	RWWMGECM	2	Message event control mask address
8F	RWWMGIT	2	Message address of IOB or TUB
91	RWWIND1	1	Work byte (reserved)
92	RWTUBID	2	TUB ID for RWER TUB scan
94	RWWMGIQ	2	SDLC IOB queue in RWMG

Figure 2-191 (Part 7 of 7). Format of the Remote Work Station Work Area

Request Block (RB)

Request blocks (RB) are located in system queue space. They are a register save area for a task that does a transfer control. The 48-byte RB is created when the transfer is initiated.

How to Find

The RB can be located in the request block queue. The task control block field TCBCRB points to the first request block on the RB chain. Request block field RB$CHAIN points to the next RB in the chain.

Format

Figure 2-192 shows the format of an RB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	RB$CHAIN	2	Address of next request block
02	RB$XR1	2	Save area for XR1
04	RB$XR2	2	Save area for XR2
06	RB$ARR	2	Save area for ARR
08	RB$IAR	2	Save area for IAR
0A	RB$PMR	1	Save area for PMR
0B	RB$PSR	1	Save area for PSR
0C	RB$RQ	2	Save area for R/Q byte
The following 4 bytes are for transient routines:			
0E	RB$INL1	3	Sequential sector address of transient
11	RB$INL4	1	Transient length
The following 4 bytes are for resident routines:			
0E	RB$INL1	2	Address of resident routine
10	RB$INL3	1	Not used
11	RB$INL4	1	Hex 10 indicates a resident routine
12	RB$WORKS	30	Start of 30-byte work area

Figure 2-192. Format of a Request Block (RB)

SDLC Common Area

The SDLC primary common area is 124 bytes long and the SDLC secondary common area is 116 bytes long. It is pointed to by field SIOBCOMM in the SDLC IOB and by fields CSBDSDCM and CSBDSC@ in the communication specification block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SDCSDID	1	SDLC common area ID (hex CA=ID of common area)
01	SDCFLG1	1	Primary SDLC link information: *Hex* *Meaning* 80 0—transmit 1—receive 40 Poll mode 20 Timer wait 10 Enable operation in progress 08 Link status (1—operational) 04 SDLC permanent hardware error or modem dropped 02 MLCA reenable 01 New work to do Secondary SDLC mode information: *Hex* *Meaning* 80 0—receive 1—transmit 40 Control via 0—SNA 1—IOB 20 0—NDM 1—NRM 10 ERP in process 08 Termination complete 04 SDLC permanent hardware error 02 Stop auto response sent 01 Asynchronous error exit

Figure 2-193 (Part 1 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	SDCFLG2	1	Primary SDLC station information: *Hex* *Meaning* 80 0—NDM 1—normal response mode 40 0—receive ready 1—receive not ready (busy) 20 Nonsequenced mode 10 I-frame sent (this round) 08 Last I-frame sent (this round) 04 I-frame received (this round) 02 Purge state 01 Time-out ERP in process Secondary SDLC command/response flow byte 1: *Hex* *Meaning* F0 Clear RR/RNR indicators 80 Receive ready sent 40 Receive not ready sent 20 Receive ready received 10 Receive not ready received 08 Purge state 04 Send RQD response 02 MLCA controller check 01 Poll/final flag sent

Figure 2-193 (Part 2 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	SDCFLG3	1	Error completion code for primary SDLC Command/response flow byte 2 for secondary SDLC: *Hex* *Meaning* 80 MLCA enable without buffer 40 SNRM received in NRM 20 Disconnect received 10 Poll bit posted complete 08 Final bit sent 04 Send supervisory frame 02 I-frame sent 01 I-frame received
04	SDCFLG4	1	Miscellaneous error information for primary SDLC: *Hex* *Meaning* 80 Autocall in progress 40 Adapter check 20 Request ignored 10 Protocol violation 08 MLCA controller check 04 Poll list has been altered 02 Transmission error message issued 01 Asynchronous time-out occurred

Figure 2-193 (Part 3 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			Nonsequenced information for secondary SDLC: *Hex* *Meaning* FF Nonsequence response pending F0 Clear nonsequenced response pending except for CMDR 80 Send disconnected mode response (DM) 40 Send nonsequence acknowledgment (UA) 20 Send exchange ID response (XID) 10 Send test response 0F Command reject response pending Frame reject response pending 08 NR count out of range 04 Data buffer overflow 02 Command not valid with I-field 01 Not valid/nonsupported command
05	SDCFLG5	1	State indicators for primary SDLC: *Hex* *Meaning* 80 Stop command pending 40 IOB held 20 Receive IOBs have been posted 10 Auto poll pending 08 Line has been initialized 04 Termination sequence in process 02 Adapter enabled 01 Auto poll active

Figure 2-193 (Part 4 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05 (cont.)			Secondary SDLC flag byte 5: *Hex* *Meaning* 80 Diagnostic wrap test run 40 IOB held 20 Message wait 10 Enable in progress 08 Autocall in progress 04 Adapter disabled 02 Adapter enabled 01 New work to do
06	SDCMXCT	1	Maximum frames outstanding count
07	SDCSCNF1	1	SDLC configuration byte: *Hex* *Meaning* 80 Autocall 40 Manual call 20 Manual answer 10 Autoanswer 08 Reserved 04 Reserved 02 Reserved 01 Reserved
08	SDCLCNF1	1	Line configuration byte 1: *Hex* *Meaning* 80 Japanese modem 40 Internal clocking 20 IBM modem 10 World Trade answer tone 08 Standby line 04 Multipoint line 02 Switched line 01 Nonswitched point-to-point line

Figure 2-193 (Part 5 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	SDCCID1	1	Fixed exchange ID field byte 1
0A	SDCCID2	1	Fixed exchange ID field byte 2
0B	SDCXID	4	Unique ID information
0F	SDCCTL	1	Control/command byte save area
10	SDCCMDCN	1	Control/command byte save command reject (secondary SDLC)
	SDCFLG10	1	Line type information (primary SDLC): *Hex* *Meaning* 80 X.21 line
11	SDCNSC	1	Send count (NS) save area
12	SDCNRC	1	Receive count (NR) save area
13	SDCSTCB@	2	SDLC TCB address
15	SDCRIOBQ	1	Number of receive IOBs on SCQ
16	SDCTIOBQ	1	Number of transmit IOBs on SCQ
17	SDCPIOBQ	1	Number of internal SDLC IOBs on SCQ
The following bytes are for primary SDLC:			
18	SDCPOLLS	2	Poll list start address
1A	SDCPOLLG	2	Current SNA group in process
1C	SDCPOLLC	2	Current station in process
1E	SDCNTCBI	1	SNA task identifier
1F	SDCSTA@	1	Address of current station in poll list
20	SDCCRGRP	2	Group entry for most recent station
22	SDCCRSTA	2	Most recent station entry polled

Figure 2-193 (Part 6 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	SDCCRSNI	1	SNA task ID for most recent station
25	SDCCRST@	1	Station address of most recent station
The following bytes are for secondary SDLC:			
18	SDCNTCBI	1	SNA task identifier
19	SDCITIOQ	2	Intermediate transmit queue
1B	SDCTCIOQ	2	Transmit complete queue
1D	SDCTESTQ	2	Test command/response queue
1F	SDCNTCB@	2	SNA TCB address
21	SDCRET@1	2	Return address save area
23	SDCRET@2	2	Return address save area
25	SDCX	1	Reserved
The following bytes are for primary and secondary SDLC:			
26	SDCTCNT	2	I-frames transmitted count
28	SDCIRCNT	2	I-frames retransmitted
2A	SDCRCNT	2	I-frames received count
2C	SDCTTCNT	2	Total frames transmitted
2E	SDCTRCNT	2	Total frames received
30	SDCFCCT	2	Cyclic redundancy check error count
32	SDCIFRCT	2	Not valid frame count
34	SDCADSCT	2	Abortive disconnect count
36	SDCTMOCT	2	Nonproductive receive time-out count
38	SDCADCT	2	Adapter check count (transmit/receive)

Figure 2-193 (Part 7 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3A	SDCIDCT	2	Idle detect time-out (primary)
3C	SDCIPCNT	2	I-frames purged
3E	SDCTMSCT	1	Transmit count
3F	SDCIOBQH	2	SDLC internal IOB queue header
41	SDCTEMP	2	Temporary save area
43	SDCATR1	1	Start offset into SDLC TCB ATR stack for buffer assigned (primary only)
	or SDCATRS	1	Offset into ATR stack of pages assigned as receive buffers
44	SDCATR2	1	Offset of second page of receive buffers (primary only)
	or SDCPAGE#	1	Number of pages assigned as receive buffers
45	SDCCON0	2	Constant of X'0000'
47	SDCCON1	2	Constant of X'0001'
49	SDCCON2	2	Constant of X'0002'
4B	SDCSAVE1	2	XR1 save area 1
4D	SDCWK1	2	Work area 1
4F	SDCWK2	2	Work area 2

Figure 2-193 (Part 8 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
51	SDCPARM	1	Parameter byte for primary SDLC: *Hex* *Meaning* 80 1—process all IOBs 0—process transmit IOBs only 40 1—find station and group entry 0—find a group entry only 20 1—return IOBs to SNA 0—keep IOBs 10 Station entry found 08 Group entry found 04 Process transmit IOBs only 02 Save receive IOBs 01 Reserved Parameter byte for secondary SDLC: *Hex* *Meaning* 01 Pend receive IOBs
The following 15 bytes contain the SDLC trace entry save area:			
52	SDCTRID	1	SDLC trace ID
53	SDCTRQNR	2	Q and R bytes of the IOB
55	SDCTRSEN	2	Sense bytes SIOBST0 and SIOBST1
57	SDCTRTCB	1	Transmit control byte
58	SDCTRRCB	1	Receive control byte
59	SDCTRIO@	2	IOB address
5B	SDCTRLN#	1	Line number

Figure 2-193 (Part 9 of 10). Format of the SDLC Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5C	SDCTRST@	1	Station address
5D	SDCTRBF@	2	IOB buffer address
5F	SDCTRSNI	1	SNA task ID
60	SDCTRSDI	1	SDLC task ID
61	SDCQHDR	1	Queue header
62	SDCRNTCT	2	Count of RNR transmitted
64	SDCRNRCT	2	Count of RNR received
66	SDCMSGR	2	Return address for MSG wait
68	SDCCIOBR	2	Return address for CTL IOB wait
6A	SDCSAVE2	2	XR1 save area 2
6C	SDCSAVE3	2	XR1 save area 3
6E	SDCRBCNT	3	Information bytes received count (SMF)
71	SDCSBCNT	3	Information bytes sent count (SMF)
74	SDCWK3	2	Work area 3 (primary SDLC only)
76	SDCWK4	2	Work area 4 (primary SDLC only)
78	SDPDHE@	2	#PDHE return address (primary SDLC only)
7A	SDPDLC@	2	#PDLC return address (primary SDLC only)

Figure 2-193 (Part 10 of 10). Format of the SDLC Common Area

SDLC Error History Data Parameter List

This 6-byte area is required as input for SDLC error logging modules. When a routine is requested, the address of the communications parameter list for logging (see SSP-ICF BSC interrupt handler work area) is an inline parameter for the request. That parameter list contains the address of the following data.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SDHTQ	1	SDLC IOB command byte (Q byte)
01	SDHTSNS	2	Sense bytes 0 and 1
03	SDHTCONT	1	SDLC control field
04	SDHTADDR	1	Station address
05	SDHTQHDR	1	Line queue header displacement

Figure 2-194. Format of SDLC Error History Data Parameter List

SDLC Polling List (Primary Only)

The SDLC polling list begins with the control entry, of which there is one for every SNA subsystem communicating through SDLC. Following the control entry is the station entry associated with that SNA subsystem, with one entry for each station address.

How to Find

The address of the first poll list group (control entry plus station entries) is found in the SDCPOLLS area in the SDLC common area. Any additional poll list groups will be chained off the SPOLCHN area.

Format

Figure 2-195 shows the format of a control entry SDLC polling list. Figure 2-196 shows the format of a station entry SDLC polling list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPOLCTL1	1	Control byte 1: *Hex* *Meaning* 80 Last group in poll list 40 Reserved 20 Stop polling 10 Control entry flag 08 MLCA controller check ERP 04 Reserved 02 Reserved 01 Reserved
01	SPOLRES1	1	Reserved
02	SPOLCHN	2	Group chain field
04	SPOLGLEN	2	Group list length
06	SPOLTCB@	2	SNA TCB address for this group
08	SPOLERCV	1	Error retry count (default value)
09	SPOLTWV	2	Timer wait value (non-MLCA only)
0B	SPOLATR@	1	Offset into ATR stack of pages (assigned as transmit buffers)
0C	SPOLATR#	1	Number of 2K pages assigned (as IOB buffers)
0D	SPOLRES2	3	Reserved

Figure 2-195. Format of the SDLC Polling List (Control Entry)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPOLCTL1	1	Control byte 1:
			Hex *Meaning*
			80 Reserved
			40 Last entry in list
			20 Reserved
			10 Reserved
			08 Station operational
			04 Current entry in process
			02 Disconnect pending (for SNA)
			01 Entry is active (for SNA)
01	SPOLCTL2	1	Control byte 2:
			Hex *Meaning*
			80 On—NRM Off—NDM
			40 On—busy (RNR) Off—ready
			20 Nonsequenced mode
			10 I-frame sent (this round)
			08 Supervisory frame mode
			04 I-frame received
			02 Purge state
			01 Time-out ERP is in process
02	SPOLADDR	1	Station address
03	SPOLNRNS	1	NR and NS counts for this station
04	SPOLSITQ	2	Intermediate transmit queue
06	SPOLSPIV	1	Slow poll interval value
07	SPOLSPCT	1	Slow poll counter
08	SPOLERCT	1	Time-out error retry count

Figure 2-196 (Part 1 of 2). Format of the SDLC Polling List (Station Entry)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	SPOLSTCQ	2	Transmit complete queue
0B	SPOLERCC	1	Error completion code
0C	SPOLMXCT	1	Maximum frames outstanding count
0D	SPOLSPCV	1	Slow poll configuration value
0E	SPOLWORK	2	Work area

Figure 2-196 (Part 2 of 2). Format of the SDLC Polling List (Station Entry)

Sector Queue Block

The 16-byte sector queue block (SQB) is built in system queue space by an SVC request for disk. It is used for limiting access to a particular sector on disk when that sector is to be updated.

How to Find

The sector queue blocks are chained together by field SQBCHAIN in the SQBs. They are pointed to from QHDSQB in the system queue headers located in the main storage fixed nucleus at location hex 0100.

Format

Figure 2-197 shows the format of an SQB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SQBCHAIN	2	Pointer to next sector queue block
02	SQBTCB@	2	Task control block address of sector queue block owner

Figure 2-197 (Part 1 of 2). Format of a Sector Queue Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	SQBIOB@	2	IOB address of sector queue block owner
06	SQBQCCC	2	Q-code, command code
08	SQBNBSH	2	N-byte, S (high)
0A	SQBSMSL	2	S (middle), S (low)
0C	SQBRSVD	4	Reserved

Figure 2-197 (Part 2 of 2). Format of a Sector Queue Block

Send the Image Parameter List

This 7-byte area is required when calling the printer interface routine (#CSSM) or the build membership table routine (#CSBT). When either of these routines is called, XR2 contains the address of the parameter list.

Format

Figure 2-198 shows the format of the send the image parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CSIDFUNC	1	Function byte: *Hex* *Meaning* 80 Send the image 40 Build membership table 20 Called by IPL 10 Called by the command processor

Figure 2-198 (Part 1 of 2). Send the Image Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	CSIDRTRN	1	Return code: *Hex* *Meaning* 45 Invalid image 44 Permanent I/O error 43 Printer not allocated 42 Printer not found 41 Printer not image capable 40 Normal completion
02	CSIDPRNT or	2	Printer ID
	CSIDWSTB	2	Work station TUB address
04	CSIDCONT	1	Count byte
05	CSIDBUFF	2	Buffer address

Figure 2-198 (Part 2 of 2). Send the Image Parameter List

Session Specification Block (SSB)

This 64-byte area contains information from the // SESSION OCL statement.

How to Find

Label JCBDSSB@ in the job control block extension contains the address of the first session specification block for a task. Each session specification block contains a chain pointer to the next session specification block.

Format

Figure 2-199 shows the format of the session specification block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SSBDFCHN	2	Forward chain pointer
02	SSBDLOCN	8	Location name
0A	SSBDSMID	2	Symbolic session ID
0C	SSBDSUB@	2	Session unit block address
0E	SSBDSCR@	2	Session configuration record address
10	SSBDSTT1	1	Session specification block status byte 1: *Hex* *Meaning* 80 SWTYP specified 40 On—SWTYP manual Off—SWTYP auto 20 On—SWTYP call Off—SWTYP answer 10 TRANSP specified 08 TRANSP-Yes specified 04 Blank—C specified 02 Blank—T specified 01 Blank—N specified
11	SSBDSTT2	1	Session specification block status byte 2: *Hex* *Meaning* 80 Host name—CICS specified 40 Host name—IMS specified 20 Host name—Other specified 10 FMHI—Yes specified 08 MSGPROT—No specified 04 Host name—IMSRTR specified 02 ITB specified 01 ITB—Yes specified

Figure 2-199 (Part 1 of 3). Format of the Session Specification Block (SSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	SSBDSTT3	1	Session specification block status byte 3: *Hex* *Meaning* 80 Batch—Yes specified 40 Partner specified 20 Partner—ATTR 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
13	SSBDSTT4	1	Session specification block status byte 4 *Hex* *Meaning* 80 Refresh—No specified 40 RECSEP specified 20 BLKL specified 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
14	SSBDRSV1	1	Reserved
15	SSBDRECL	2	Record length (hex 0000—not specified)
17	SSBDAPID	8	VTAM application name (hex 00—not specified)
1F	SSBDSSN@	1	Session address (hex 00—not specified)
20	SSBDMSGL	2	Maximum message length (hex 0000—not specified)
22	SSBDPTRM	2	PTERM parameter (hex 0000—not specified)

Figure 2-199 (Part 2 of 3). Format of the Session Specification Block (SSB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
24	SSBDMUP@	1	SDLC station address
25	SSBDDTID	2	Data ID parameter (hex 0000—not specified)
27	SSBDFLDL	2	FLDLTH parameter (hex 0000—not specified)
29	SSBDVADR	1	3270 device address (hex 00—not specified)
2A	SSBDPLST	2	Phone list address (hex 0000—not specified)
2C	SSBDLWID	1	LWSID parameter (hex 00—not specified)
2D	SSBDRCSP	1	RECSEP parameter
2E	SSBDBLKL	2	BLKL parameter
30	SSBDRSV2	16	Reserved

Figure 2-199 (Part 3 of 3). Format of the Session Specification Block (SSB)

Session Unit Block (SUB)

This 72-byte area is the interface between SSP-ICF user programs and SSP-ICF subsystems.

How to Find

A session unit block exists for each SSP-ICF user session. Label QHDTUB in the ACE queue headers points to the first terminal unit block (TUB). Each terminal unit block contains a chain pointer to the next terminal unit block. The last terminal unit block in the chain points to the first session unit block. Each session unit block is chained in a first-in-first-out manner.

Format

Figure 2-200 shows the format of the session unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SUBECM	1	Event control mask: *Hex* *Meaning* 80 No skip bit 40 Not used 20 Not used 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
01	SUBCOMP1	1	Session unit block completion byte 1: *Hex* *Meaning* 80 Session unit block request active 40 Session unit block request complete 20 Not used 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used *Note:* When complete, the 8-bit value minus the complete bit (bit 1) reflects the minor return code given back in the user's $WSRTC-1.
02	SUBCOMP2	1	Session unit block completion byte 2: *Hex* *Meaning* 40 IMS spanned records

Figure 2-200 (Part 1 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
			Note: The remaining values are possible major return codes given back to the user in field $WSRTC.
03	SUBCMOD	1	Session unit block command modifier: *Hex* *Meaning* 30 Session EOX modifier 28 Session pass thru modifier 24 Session FMH modifier 22 Session EOC modifier or session EOF modifier 21 Session FAIL modifier 20 Session execution I/O operation code
04	SUBCMND	1	Session unit block command code: *Hex* *Meaning* FF Assign failure in SSP-ICF system queue space F0 Abnormal end of session E0 Normal end of session 80 Negative response 40 Cancel operation 30 Special acquire operation 20 Acquire operation 10 Release operation 08 Request change of direction 04 Evoke operation 02 Put operation 01 Get operation
05	SUBDATA@	2	Data buffer address
07	SUBOUTL	2	Output length
	or		
	SUBEFFL	2	Effective input length
09	SUBASGNL	2	Assigned or preallocated buffer length

Figure 2-200 (Part 2 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	SUBSSB@	2	Address of session OCL statement control block
0D	SUBXSCR@	2	Address of extended subsystem configuration record
0F	SUBBUB@	2	Address of associated BSC unit block
	or		
	SUBSNUB@	2	Address of associated SNA unit block
	or		
	SUBTSUB@	2	Address of target session unit block
	or		
	SUBFLUB@	2	Address of associated finance logical unit block
11	SUBBFFLG	1	Flag byte for buffer usage: *Hex* *Meaning* 80 Buffer is preallocated 40 Subsystem supports data on disk 20 Data is on disk 10 On—negative response operation is valid Off—negative response operation is invalid 08 This is an SNA upline facility pass through user 04 Common queue space is allocated (SUBXPRL and SUBXPRM@ give length and address) 02 Subsystem queue space (or common queue space if no subsystem queue space) is allocated. SUBASGNL and SUBASGN@ give the length and address 01 Definite response mode. This prevents ICFDM from performing read-ahead-get operation on hex 01 minor return code from an input operation.

Figure 2-200 (Part 3 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	SUBCHAIN	2	Session unit block chain field
14	SUBSTSKI	1	Subsystem task ID
15	SUBXFACT	2	Pad to add to buffer length (SUBXFACT minus 1 is the pad for input operations. SUBXFACT is the pad for output operations)
17	SUBXPRM@	2	Address of operation parameter list
19	SUBSRES1	1	Reserved for subsystem use
1A	SUBSRES2	1	Reserved for subsystem use
1B	SUBXCHN@	2	Chain pointer to next translated session unit block
	or		
1B	SUBSRES3	1	Reserved for subsystem use
	and		
1C	SUBSRES4	1	Reserved for subsystem use
1D	SUBASGN@	2	Address of assigned subsystem queue space area
1F	SUBWSID	2	Physical ID of the session
21	SUBWSWA	2	Sector address of session work area
	or		
	SUBPCFG@	2	Sector address of printer configuration record
23	SUBTCB	2	Session unit block owner task control block address
25	SUBUTSKI	1	Session unit block owner task ID
26	SUBLOC@	2	Location address
28	SUBUSER	8	Session user ID
30	SUBOPSTS	1	Session status

Figure 2-200 (Part 4 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
31	SUBJCB@	2	Address of job control block
33	SUBQSHDR	2	Address of subsystem queue space header
35	SUBATTR1	1	Attribute byte 1: *Hex* *Meaning* 80 Not used 40 Disable is pending for subsystem this session communicates with 20 Session unit block is an evoked session 10 Session successfully signed on 08 FMH has been given to the user. User's next input will be data associated with FMH 04 Job initiation not allowed 02 Immediate disable of subsystem has occurred 01 Hex 80 or 81 return code received
36	SUBATTR2	1	Attribute byte 2: *Hex* *Meaning* 80 Session is an acquired session 40 Not used 20 Not used 10 Session has an associated JCB 08 Not used 04 Not used 02 Not used 01 Not used

Figure 2-200 (Part 5 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
37	SUBATTR3	1	Invite indicators: *Hex* *Meaning* 80 Invite scheduled to session unit block explicitly by program 40 Implicit invite to session unit block 20 Invite done by previous step 10 Auto program request under format invite 08 Not used 04 Not used 02 Not used 01 Not used
38	SUBLIN#	1	Communications line number to which session communicates: *Hex* *Meaning* 80 Log trace active for communications line 40 Extended trace active for communications line
39	SUBATTR5	1	Attribute byte 5: *Hex* *Meaning* 80 Not used 40 Not used 20 End of transaction code received 10 Not used 08 Not used 04 Session released 02 Single requestor terminal released requestor 01 Call termination prior to release

Figure 2-200 (Part 6 of 7). Format of the Session Unit Block (SUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3A	SUBATTR6	1	Attribute byte 6: *Hex* *Meaning* 80 Read-ahead-get operation issued by ICFDM 40 1104 or 1204 return code given to previous operation 20 Request change direction operation issued in read ahead mode 10 Not used 08 Multiple requestor terminal procedure with data entered 04 Noncommunicating session 02 Not used 01 Not used
3B		2	Not used
3D	SUBAPRNT	2	ID of associated printer
3F	SUBDSK@	3	SSS value of preallocated disk area
42	SUBRECL	2	Maximum transmission record length
44	SUBXPRL	2	Length of associated parameter list in CQS
46	SUBBFLG2	1	Flag byte 2: *Hex* *Meaning* 80 FAIL operation is valid 40 Operation is with invite
47		1	Reserved

Figure 2-200 (Part 7 of 7). Format of the Session Unit Block (SUB)

SNA Activate/Allocate Parameter List

This 7-byte area is used by module #IUNA to allocate or activate an SNA 4/4 unit block (SNUB).

How to Find

The SNA activate/allocate parameter list is pointed to by XR2 when the call is made to #IUNA.

Format

Figure 2-201 shows the format of the SNA activate/allocate parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	NAPLOPC	1	Operation code: *Hex* *Meaning* 04 Allocate specific 03 Allocate any 01 Activate specific
01	NAPLRTNC	1	Return code: *Hex* *Meaning* 04 Logical unit not configured for subsystem 03 SNUB already allocated 02 Maximum sessions for this XSCR 01 Assign failed 00 Operation successful
02	NAPLXSCR	2	XSCR address (on allocate) or SNA common area (on activate)
04	NAPLDAF	1	DAF to allocate (If byte 0 is hex 04 this is the DAF to allocate; if byte 0 is hex 03, this byte is 0.)
05	NAPLSNUB	2	SNUB address

Figure 2-201. Format of the SNA Activate/Allocate Parameter List

SNA Common Area

The SNA common area is 64 bytes long. The SNA common area for SNA 3/3 is pointed to by the field SIOBSNAC in the SDLC IOB and by field CSBDSNAC in the communication specification block. The SNA common area for the SNA 4/4 is pointed to by field SIOBSNAC in the SDLC IOB and by field XSCDSSNC in the XSCR.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SCTXIOBQ	2	Pointer to next available IOB for transmit
02	SCUSERS	1	Users of this line (physical unit)
03	SCBUFFS	1	Buffers available for other logical units
04	SCIOBSV	2	Save area for IOB address
06	SCXMITDQ	2	Transmit IOBs not available queue header
08	SCWAITQ	2	SNA unit blocks waiting for transmit IOB queue header
0A	SCXSCR	2	Active XSCR chain header
The following 52 bytes pertain to SNA 3/3 only:			
0C	SCZERO	2	Constant of zero
0E	SCONE	2	Constant of one
10	SCPAD	48	Reserved
The following 25 bytes pertain to SNA 4/4 only:			
0C	SCTPXSCR	2	Terminate pending XSCR chain header
0E	SCLUTAB@	2	Logical unit configuration table address offsets in logical unit configuration table
10	SCRIOBQ	2	Restart receive IOB chain header
12	SCTSNUB	2	Temporary SNUB chain header
14	SCTRMIOB	2	Termination IOB address

Figure 2-202 (Part 1 of 3). Format of the SNA Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16	SCMESIOB	2	Message IOB queue header
18	SCERRIOB	2	Error IOB queue header
1A	SCFLAG1	1	Flag byte 1: *Hex* *Meaning* 80 SSCP/PU session active 40 SDLC is active 20 Permanent SDLC error has been received 10 Disconnect initiated by subsystem 08 Line termination in progress 04 Notify command is supported by SSCP
1B	SCFLAG2	1	Flag byte 2: *Hex* *Meaning* 80 Terminate complete IOB has been received 40 Override the line type to manual call 20 Reinitialize line reply received 10 Reinitialization performed 08 SNRM has been received 04 Terminate complete is pending 02 SNA 4/4 will free the phone list
1C	SCFLAG3	1	Flag byte 3: *Hex* *Meaning* 80 Subsystem requires SSCPID

Figure 2-202 (Part 2 of 3). Format of the SNA Common Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1D	SCLINE#	1	SDLC line number: *Hex* *Meaning* 48 Line 4 34 Line 3 22 Line 2 11 Line 1
1E	SCIDHDRC	2	Address of first group header on chain
20	SCIDACTH	2	Address of active group header
22	SCSTATN	2	Address of calling station XSCR
24	SC#ALLOC	1	Allocated station XSCR count
25	SCPLIST@	2	Address of phone list being called

Figure 2-202 (Part 3 of 3). Format of the SNA Common Area

SNA De-activate/Deallocate Parameter List

This 5-byte area is used by the modules #IUND and #IUNC to de-activate or deallocate an SNA unit block.

How to Find

The SNA de-activate/deallocate parameter list is pointed to by XR2 when the call is made to #IUND or #IUNC.

Format

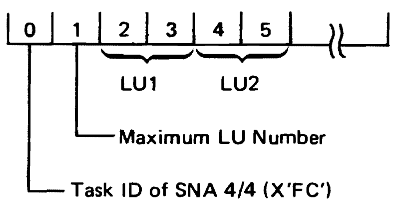
Figure 2-203 shows the format of the SNA de-activate/deallocate parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	NDPLOPC	1	Operation code:
			Hex *Meaning*
			04 Deallocate specific
			03 Deallocate all
			01 De-activate specific
01	NDPLSNUB	2	SNUB address
03	NDPLXSCR	2	XSCR address (deallocate)
	or		
	NDPLSNCM	2	SNA common area address (de-activate)

Figure 2-203. Format of the SNA De-activate/Deallocate Parameter List

SNA LU Configuration Table

The SNA LU configuration table is defined by the user. It indicates how each of the 255 logical units will be configured: either SNA upline facility or SNA 3270 device emulation.



Two bytes are allowed for each LU (1 to 255). If the LU is configured, the second of the 2 bytes will be either the task ID of SNA upline (X'E9') or SNA 3270 device emulation (X'E7').

When SNA 4/4 reads the table, it zeros out byte 0. After each subsystem is enabled, the table contains the XSCR address of the enabled subsystem instead of the task ID of that subsystem.

SNA Peer Unit Block (SPUB)

The SNA peer unit block (SPUB) is used to control a session, to provide session status, and as an interface between the peer subsystem and SNA 7/7.

How to Find

XSCR field XSCDPSTQ points to the first XSCR station entry. Field XSCDPSEC in the XSCR station entry will point to additional stations. Field XSCDPSPB in each XSCR station entry points to the first SNA peer unit block (SPUB) on the chain.

Format

Figure 2-204 shows the format of the SNA peer unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPGCHN	2	SPUB chain pointer (for STN entry queue)
02	SPGRT@BM	2	Return address field for IOB manager
04	SPGXSCR@	2	XSCR station entry address
06	SPGSBCHQ	2	SPUB chain pointer IOB manager
08	SPGSTAT1	1	General SPUB status 1:
			Hex *Meaning*
			80 PU services SPUB
			40 SPUB not available (PU services usage only)
			20 Not used
			10 Reserved
			08 Waiting for internal buffer
			04 Owner of internal buffer
			02 Waiting for transmit IOB
			01 Not used
09	SPGSTAT2	1	General SPUB status 2 (reserved)

Figure 2-204 (Part 1 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	SPGF5NO	2	COMWA subarea format 5 number
0C	SPXRCMIN	1	SSP-ICF completion code 1 (minor)
0D	SPXRCMAJ	1	SSP-ICF completion code 2 (major)
0E	SPXCMOD	1	SSP-ICF op code modifier: *Hex* *Meaning* 20 EXEC I/O op code 10 EOX modifier 08 Pass thru modifier 04 FM header modifier 02 End group modifier 01 Fail data modifier
0F	SPXCMND	1	SSP-ICF op code: *Hex* *Meaning* FF Assign failure F0 Abnormal EOS E0 Normal EOS 80 Negative RSP 40 Cancel 20 Acquire 10 Release 08 Request CD 04 Evoke 02 Put 01 Get
10	SPXDATA@	2	User data buffer address
12	SPXOUTL or	2	Output length
	SPXEFFL	2	Effective input length
14	SPXASGNL	2	Assigned buffer length

Figure 2-204 (Part 2 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16	SPXSSB@	2	Address session status block
18	SPXBXSCR	2	Base XSCR address
1A	SPXSPUB@	2	Associated SPUB address
1C	SPXBFFLG	1	SSP-ICF buffer status flag: *Hex* *Meaning* 80 Buffer preallocated 40 Data can be on disk 20 Data on disk 10 Negative RSP allowed 08 Pass through user 04 Parameter list assigned 02 User buffer assigned 01 Don't perform read flag (DM)
1D	SPXPADR	1	Pad length for data to ICFDM
1E	SPXPADS	1	Pad length for data from ICFDM
1F	SPXXPRM@	2	Parameter list address
21	SPXSTAT1	1	Session status 1: *Hex* *Meaning* 80 User op in progress 40 FM is ready to receive an RU 20 Reserved 10 Session being terminated 08 Session terminated 04 EOSA pending 02 Station disabling 01 Enable acquire

Figure 2-204 (Part 3 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
22	SPXSTAT2	1	Session status 2: *Hex* *Meaning* 80 Preestablished session 40 First speaker 20 User attached to half-session 10 Transaction active 08 Evoked partner 04 Reserved 02 Get allowed for message 01 Message already on disk
23	SPXDRET@	2	De-activate return address code
25	SPXASGN@	2	SSP-ICF assigned buffer address
27	SPXSUB@	2	Associated SUB address
29	SPXDSK@	3	Snap disk area start address
2C	SPXRECL	2	Maximum user record length
2E	SPXXPRL	2	Length of associated parm list
30	SPXBFLG2	1	Buffer flag byte 2 (hex 80 = fail operation supported)
LU services control information:			
31	SPRBQLK	2	Buffer wait queue link field
33	SPRBRET@	2	Buffer return address
35	SPRCRET@	2	Control routine return address
37	SPRFSM1	1	Snap finite state machines 1
38	SPRFSM2	1	Snap finite state machines 2

Figure 2-204 (Part 4 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
39	SPRFSM3	1	Snap finite state machines 3
Presentation services area:			
3A	SPRFRET@	2	FMD return address
3C	SPRNRET@	2	DFC normal return address
3E	SPRERET@	2	DFC expedited return address
40	SPRPPARM	1	FI.FMD parameter list
41	SPRPFLG1	1	Presentation services flag byte
42	SPRPFLG2	1	Presentation services flag byte 2
43	SPRMSGL	2	Remaining message length
45	SPRDVL	2	Remaining DV length
47	SPRRESV1	7	Reserved
Peer operation codes (internal):			
4E	SPROPC	1	Operation code: *Hex* *Meaning* 17 Send UNBIND 16 Send BIND 07 Send CANCEL 06 Send SIGNAL 05 Send RSHUTD 04 Send LUSTAT 03 Send FM data 02 Receive outstanding 01 Send an IPR (SNA internal use only)

Figure 2-204 (Part 5 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4F	SPROPMD1	1	Op code modifier byte 1:
			Hex *Meaning*
			80 Set begin bracket indicator
			40 Set end bracket indicator
			20 Set change direction indicator
			10 1=request definite response
			0=request exception response
			08 Set format indicator
			04 Reserved for SNA
			02 Set begin chain indicator
			01 Set end chain indicator
50	SPROPMD2	1	Op code modifier byte 2:
			Hex *Meaning*
			90 Indicate negative RSP
			80 Indicate positive RSP
			or
			0=request; 1=response
			40 Reserved for SNA
			20 Reserved for SNA
			10 0=positive response; 1=negative
			08 Reserved for SNA
			04 1=DR2 must be set
			02 Set queued RSP indicator
			01 Pacing response
			00 Indicate request

Figure 2-204 (Part 6 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Peer completion codes (internal):			
51	SPRCMP	1	Completion code:
			Hex *Meaning*
			4B Communication failure
			4A Permanent disk error
			49 Data overrun (received RQS)
			48 Pacing overrun (received RQS)
			47 SNA protocol violation (received)
			46 Invalid snap RQ (state ERR-SEND)
			45 Invalid snap RH settings (send)
			44 No available LSID
			43 Bind contention
			42 HDX contention detected
			41 BB race condition detected
			40 Purging chain state exitted
			35 FM level protocol violation
			34 Invalid +RSP Bid
			32 Invalid FMH type
			31 Operation failed
			30 Normal completion
			2F Ignore/discard received data for now
			17 Received UNBIND
			16 Received BIND
			07 Received CANCEL
			06 Received SIGNAL
			05 Received RSHUTD
			04 Received LUSTAT
			03 Received FM data
			02 Reserved for SNA
			01 Received an IPR (reserved for SNA)

Figure 2-204 (Part 7 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
52	SPRCCMD1	1	Completion code modifier byte 1: *Hex* *Meaning* 80 Received begin bracket indicator 40 Received end bracket indicator 20 Received change direction indicator 10 0=request exceptional response 1=request definite response 08 Received format indicator 04 Reserved for SNA 02 Received begin chain indicator 01 Received end chain indicator
53	SPRCCMD2	1	Completion code modifier byte 1: *Hex* *Meaning* 90 Indicate negative response 80 Indicate positive response or 0=request; 1=response 40 Reserved for SNA 20 Reserved for SNA 10 0=positive response; 1=negative 08 0=normal flow; 1-expedited flow 04 DR2 bit received 02 Received queued response indicator 01 Pacing response 00 Indicate request
54	SPRRULEN	2	RU effective length
56	SPRRU@	2	RU storage address (leftmost)
58	SPRDQS@	3	SSS start address for SPS/SSP-ICF area
5B	SPRDQWO	1	Current sector offset—write

Figure 2-204 (Part 8 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5C	SPRDQRO	1	Current sector offset—read
5D	SPRDQNS	1	Number of sectors to read/write in SPS/SSP-ICF area
5E	SPRDQLN	1	SPS/SSP-ICF area length (number of sectors)
5F	SPNLSID	2	LSID for this session (1—63)
61	SPNOAF	2	OAF of this session (partner's address)
63	SPNFID	1	FID being used by this session (hex 03 = FID3)
64	SPNSESS	1	Type of session in use (used to build TH@) *Hex* *Meaning* C0 LU to LU (default)
65	SPNOTYPE	1	Type of operation in process: *Hex* *Meaning* 04 0=+RSP; 1=-RSP 02 0=send; 1=receive 01 0=request; 1=response
66	SPNFSM1	1	Finite state machines byte 1 (SESS): *Hex* *Meaning* 80 Reset 40 Active 20 PEND.ACTIVE (bind sent/received) 10 PEND.RESET (unbind sent/received) 08 SS.RESET 04 SS.ACTIVE

Figure 2-204 (Part 9 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
67	SPNFSM2	1	Finite state machines byte 2 (DATA TRAF)
68	SPNFSM3	1	Finite state machines byte 3 (HDX.FF):
			Hex *Meaning*
			C0 HDX=CONTENTION (BETB ONLY)
			88 Any HDX send condition (norm or ERPS)
			80 HDX=SEND
			44 Any HDX RCV condition (norm or ERPR)
			40 HDX=RECEIVE
			0C Mask for any ERP condition pending
			08 HDX=ERPS
			04 HDX=ERPR
69	SPNFSM4	1	Finite state machines byte 4 (BSM):
			Hex *Meaning*
			0A BSM=ERROR CONDITION
			08 BSM=PEND.TERM
			06 BSM=PEND.INB
			04 BSM=PEND.BB
			02 BSM=INB
			00 BSM=BETB
6A	SPNFSMH	1	Status holding FSM for temporary condition:
			Hex *Meaning*
			80 BID/RTR was +RSP to while not BETB
			40 Pending RTR state (-RSP 0814)
			20 We are in a BB reject cleanup
			10 HDX contention cleanup
			08 Reserved for HDX.ERP PEND bits
			04 Reserved for HDX.ERP PEND bits
			02 Reserved for HDX.ERP PEND bits
			01 Reserved for HDX.ERP PEND bits

Figure 2-204 (Part 10 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6B	SPNBPRMS	1	Contains bind parameters for this direction (send):
			Hex *Meaning*
			80 Multi-element chains allowed this direction
			40 Reserved
			30 Definite or exception response
			02 Reserved
			01 EB is allowed in this direction
6C	SPNFSM5S	1	Finite state machines byte 5 (SEND):
			Hex *Meaning*
			80 CNTL.EXP (0=reset, 1=blocked)
			40 PAC.SEND (0=reset, 1=pend)
			20 CNTL.NORM (0=reset, 1=pend)
			10 -RSP allowed (0=not ok, 1=ok)
			0F Chain reset mask (resets to BETC)
			02 CHAIN=PURGE
			01 CHAIN=IN CHAINS
			00 CHAIN=BETC
6D	SPNFSM6S	1	Finite state machines byte 6 (SEND)
6E	SPNNCMDS	1	Normal flow command byte sent
6F	SPNNCSID	2	Normal flow command ID sent
71	SPNSYNCS	2	Reserved
73	SPNECMDS	1	Expedited flow command byte sent
74	SPNECSID	2	Expedited flow command ID sent

Figure 2-204 (Part 11 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
76	SPNBPRMR	1	Contains bind parameter for this direction (receive): *Hex* *Meaning* 80 Multi-element chains allowed this direction 40 Reserved 30 Definite or exception response 02 Reserved 01 EB is allowed in this direction
77	SPNFSM5R	1	Finite state machines byte 5 (RECEIVE): *Hex* *Meaning* 80 CNTL.EXP (0=reset, 1=blocked) 40 PAC.RCV (0=reset, 1=pend) 20 CNTL.NORM (0=reset, 1=pend) 10 -RSP ALLOWED (0=not ok, 1=ok) 0F Chain reset mask (resets to BETC) 02 CHAIN=PURGE 01 CHAIN=IN CHAINS 00 CHAIN=BETC
78	SPNFSM6R	1	Finite state machines byte 6 (RECEIVE)
79	SPNNCMDR	1	Normal flow command byte received
7A	SPNNCRID	2	Normal flow command ID received
7C	SPNSYNCR	2	Reserved
7E	SPNECMDR	1	Expedited flow command byte received
7F	SPNECRID	2	Expedited flow command ID received

Figure 2-204 (Part 12 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
81	SPNBBR	1	Bind bracket rule used: *Hex* *Meaning* 40 FMHS are allowed 20 Bind bracket state setting (BETB/INB) 10 Bracket rule 1 is used 02 Brackets are allowed
82	SPNBHSR	1	Bind HDX (reset) state: *Hex* *Meaning* C0 Inverse mask for full duplex in use or any half duplex protocol is used 80 Half duplex flip flop is used 40 Half duplex contention is used 20 Recovery is symmetric 10 Bind sender is FSP HDX contention winner 01 Bind sender begin HDX state=send
83	SPNFMTSP	1	FMP TSP (reserved)
84	SPNRUMAX	2	Max RU size— computed from bind
86	SPNEINDX	1	Error table index (-RSP sense codes)
87	SPNERRSN or SPNERRUS	4 2	-RSP error sense code User sense
88	SPNERRSS	2	System sense
8B	SPNDQMRS	1	CPMGR receive (disk) queue status (hex 80 = receive data is on disk)

Figure 2-204 (Part 13 of 14). Format of the SNA Peer Unit Block (SPUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8C	SPNDQS@	3	CPMGR pacing disk queue SSS start address
8F	SPNDQWO	1	Pacing queue write offset (0-255)
90	SPNDQRO	1	Pacing queue read offset (0-255)
91	SPNDQNS	1	Number of sectors to read/write
92	SPNDQLN	1	Pacing queue length (equals max offset limit)
93	SPNPACBA	1	Available receive pacing buffers
94	SPNPACSK	1	Current send pacing counter value (K)
95	SPNPACRK	1	Current receive pacing counter value (K)
96	SPNPACSN	1	Send pacing count max — bind parm (N)
97	SPNPACRN	1	Receive pacing count max — bind parm (N)
98	SPNPACSQ	12	Path control send queue — waiting for IOB
A3	SPNCRHTH	2	Encoded RH TH bits (equivalent to op code modifier)
A4	SPNSSSID	4	Reserved

Figure 2-204 (Part 14 of 14). Format of the SNA Peer Unit Block (SPUB)

SNA Station XSCR Group Header

This 10-byte area is used by module #IUNB to select and maintain remote hosts.

How to Find

Field SCIDHDRC in the SNA common area contains the address of the first group header on the chain.

Format

Figure 2-205 shows the format of the SNA station XSCR group header.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	GRPNHDR	2	Address of next group header
02	GRPSTA@	2	Address of first station XSCR
04	GRPFLG1	1	Flag byte 1:
			Hex *Meaning*
			80 Group is active
05	GRPSSCP	2	SSCPID
07	GRPRSVD	3	Reserved

Figure 2-205. Format of an SNA Station XSCR Group Header

SNA Switched Line Parameter List

This 6-byte area is used by module #IUNB to select and maintain remote hosts.

How to Find

The SNA switched line parameter list is pointed to by XR2 when the call is made to #IUNB.

Format

Figure 2-206 shows the format of the SNA switched line parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LIPLOPC	1	Op code: *Hex* *Meaning* 05 De-activate group 04 Dechain station XSCR 03 Chain station XSCR 02 Allocate station XSCR 01 Activate group
01	LIPLRTNC	1	Return code: *Hex* *Meaning* 05 Accept Actpu—send request disconnect 04 Common queue space assign failed 03 Reject Actpu 02 Reject acquire—SSCP is not available 01 Reject acquire—Actpu or disconnect pending 00 Operation successful
02	LIPLCB@	2	Control block address
04	LIPLSSCP	2	SSCPID

Figure 2-206. Format of an SNA Switched Line Parameter List

SNA Unit Block (SNUB)

This area is used to control the session and provide an interface between the SNA upline facility and SSP-ICF SNA upline tasks. The SNUBs for the 3270 SNA support subsystem tasks are 200 bytes. The SNUBs for SNA upline facility tasks are 185 bytes. Any SNUB that is not allocated to a session is 8 bytes.

How to Find

Label XSCDFPTR in the extended subsystem configuration record (XSCR) contains the address of the first SNA unit block on the chain. Label SCTSNUB in the SNA common area contains the address of the first SNUB on the chain of SNUBs for a not-enabled subsystem.

Format

Figure 2-207 shows the format of the SNA unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Bytes 00-07 indicate a short SNA Unit Block (SNUB)			
00	SNGSSTID	1	Subsystem task identification
01	SNGSNAID	1	SSP-ICF upline SNA task identification
02	SNGCHN	2	SNA unit block chain pointer
SNA 4/4 control information:			
04	SNLDAF	1	Destination address field as given on ACTLU command

Figure 2-207 (Part 1 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	SNLFLAG1	1	Status of LU-SSCP session:

Hex	*Meaning*
80	SSCP has been informed that the logical unit can act as a secondary (receive bind)
40	Init outstanding—set when init received and reset when logon sent or bind received
20	LU-SSCP response is pending
10	Response to notify command is pending
08	SNA unit block active—ACTLU received
04	SNA unit block allocated to a session

SSCP/LU session information:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	SNLFLAG2	1	Status of SNA unit block or session:

Hex	*Meaning*
20	SNA upline facility request in process
10	SNA unit block is in wait for start data traffic
08	SNA unit block is in wait for pacing response
04	SNA unit block is in wait for transmit IOB
02	SNA unit block has been posted complete
01	SNA will deallocate the SNA unit block

Figure 2-207 (Part 2 of 23). Format of the SNA Unit Block (SNUB)

LU/LU session information:

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
07	SNLINIT	1	Initialization status byte:

Hex	*Meaning*
40	BIND pending—set when waiting for BIND either when logon sent or when initialization with no logon used
20	Between BIND—set when BIND received
10	Bound—set when positive response to BIND sent
08	Data traffic state—set when SDT received and positive response sent
04	BIND error indicator, negative response sent
02	Logoff sent

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
08	SNLCQS@	3	Connection point manager disk queue start address
0B	SNLCQE@	3	Connection point manager disk queue end address
0E	SNLCQSW	3	Connection point manager sector write address
11	SNLCQSR	3	Connection point manager sector read address
14	SNLCMSC	1	Maximum sector count
15	SNLCSUC	1	Current sector use count

Figure 2-207 (Part 3 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16	SLNTHO	1	TH byte 0: *Hex* *Meaning* 01 Expedited flow indicator
17	SNLTH1	1	TH byte 1 (unused)
18	SNLTHDAF	1	Destination address field as received on BIND command
19	SNLTHOAF	1	Origin address field as received on BIND command
1A	SNLSNF	2	Sequence number associated with current transmission
1C	SNLRHO	1	Request/response header byte 0: *Hex* *Meaning* 80 Header type indicator: On—response Off—request 08 Format indicator 04 Sense data included indicator 02 Begin chain indicator 01 End chain indicator

Figure 2-207 (Part 4 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1D	SNLRH1	1	Request/response header byte 1: *Hex* *Meaning* 80 Definite response 1 20 Definite response 2 10 Exception response indicator (request header only) or 10 Response type indicator (response header only) On—negative response Off—positive response
1E	SNLRH2	1	Request/response header byte 2: *Hex* *Meaning* 80 Begin bracket indicator 40 End bracket indicator 20 Change direction indicator 08 Code selection indicator
1F	SNLRU0	1	Request unit byte 0
20	SNLRU1	1	Request unit byte 1
	or		
	SNLACTCD	1	STSN action control byte

Figure 2-207 (Part 5 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
21	SNLRU2	1	Request unit byte 2
22	SNLRU3 or	1	Request unit byte 3
	SNLINS#	1	STSN inbound sequence number
23	SNLRU4	1	Request unit byte 4
24	SNLRUL or	1	Request unit length
	SNLSTSN or	1	Data associated with STSN request
	SNLOTS#	1	STSN outbound sequence number
25	SNLQUEUE	2	SNA 4/4 queuing field—current usage: address of next SNA unit block on waiting-for-transmit-IOB queue
27	SNLCRH0	1	RH0 for chain assembly
28	SNLCRH2	1	RH2 for chain assembly
29	SNLRSVD	1	Reserved
2A	SNLSTAT1	1	Initialization status byte: *Hex* *Meaning* 80 First call of SNA by this SNA unit block 40 Initialization sequence complete 20 Initialization sequence pending
2B	SNLISEQC	2	Inbound sequence count
2D	SNLOSEQC	2	Outbound sequence count
2F	SNLECMDS	1	Expedited flow command byte sent

Figure 2-207 (Part 6 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	SNLNCMDS	1	Normal flow command byte sent
31	SNLRCMD	1	Command byte received
32	SNLRPC	1	Reserved
33	SNLSPC	1	SLU send pacing count
34	SNLSPCV	1	SLU current send pacing counter value
35	SNLRUMAX	2	SLU maximum send length computed from BIND
37	SNLFMTSP	1	FM and TS profiles: *Hex* *Meaning* 40 FM profile 4 04 TS profile 4
38	SNLBINDP	1	BIND state save area: *Hex* *Meaning* 30 Bound definite or exception response mode 20 Bound definite response mode 10 Bound exception response mode 08 FM header indicator: On—FM headers allowed Off—No FM headers allowed 04 Bracket termination rule: On—Rule 1 Off—Rule 2 01 Secondary send EB indicator: On—Sec may send EB Off—Sec may not send EB

Figure 2-207 (Part 7 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
39	SNLCTSEC	1	Secondary state indicator: *Hex* *Meaning* 80 Normal flow FMD response required by secondary 40 Expedited flow DFC command response required by secondary 20 Normal flow DFC command response required by secondary 10 Secondary allowed to send negative response 08 Secondary must send negative response 04 Receive queue open indicator
3A	SNLCTPRI	1	Primary state indicator: *Hex* *Meaning* 80 Expedited flow command response required from primary 40 Normal flow FMD response required from primary 20 Normal flow DFC command response required from primary 10 Pacing response required from primary

Figure 2-207 (Part 8 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3B	SNLFSM1	1	Finite state machines byte 1: *Hex* *Meaning* 80 On—HSID.CONWIN=PENDING Off—HSID.CONWIN=RESET 40 On—SEC.STSN.RCV=PENDING Off—SEC.STSN.RCV=RESET 20 On—HSID.ERROR=PENDING Off—HSID.ERROR=RESET 04 On—PAC.RSP.RCV=ACTIVE Off—PAC.RSP.RCV=RESET 02 On—CHAIN.SEND=IN CHAINS Off—CHAIN.SEND=BETWEEN CHAINS
3C	SNLFSM2	1	Finite state machines byte 2: *Hex* *Meaning* 03 SHUTD.RCV=ACTIVE 02 SHUTD.RCV=PEND.ACTIVE.RSP 01 SHUTD.RCV=PEND.ACTIVE.SHUTC 00 SHUTD.RCV=RESET

Figure 2-207 (Part 9 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3D	SNLFSM3	1	Finite state machines byte 3: *Hex* *Meaning* C4 HDX=CONT.ERP1 C0 HDX=CONTENTION 80 HDX=SEND 48 HDX=PEND.RCV 40 HDX=RECEIVE 20 HDX=PEND.1
3E	SNLFSM4	1	Finite state machines byte 4: *Hex* *Meaning* 0C BSM.FSP=PEND.BETB.PURGE.S 0B BSM.FSP=PEND.BETB.PURGE.R 0A BSM.FSP=PEND.BETB.EC.S 09 BSM.FSP=PEND.BETB.RSP.S 08 BSM.FSP=INB 07 BSM.FSP=PEND.BETB.RSP.R 06 BSM.FSP=PEND.BB 05 BSM.FSP=PEND.BETB.EC.R 03 BSM.FSP=PEND.INB 02 BSM.FSP=PEND.BETB.S 01 BSM.FSP=PEND.BETB.R 00 BSM.FSP=BETB
3F	SNLFSM5	1	Finite state machines byte 5: *Hex* *Meaning* 02 CHAIN.RCV=PURGE 01 CHAIN.RCV=IN CHAINS 00 CHAIN.RCV=BETC

Figure 2-207 (Part 10 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
40	SNLFSM6	1	Finite state machines byte 6: *Hex* *Meaning* 05 QEC.RCV=ACTIVE 04 QEC.RCV=PEND.RESET.2 03 QEC.RCV=PEND.RESET.1 02 QEC.RCV=PEND.ACTIVE.QC 01 QEC.RCV=PEND.ACTIVE.RSP 00 QEC.RCV=RESET
41	SNLFSM7	1	Finite state machines byte 7: *Hex* *Meaning* 04 QEC.SEND=ACTIVE 03 QEC.SEND=PEND.RESET 02 QEC.SEND=PEND.ACTIVE.QC 01 QEC.SEND=PEND.ACTIVE.RSP 00 QEC.SEND=RESET

The following is the XSUB hold area:

42	SNXCOMP1	1	Completion code 1
43	SNXCOMP2	1	Completion code 2
44	SNXCMOD	1	Operation modifier
45	SNXCMND	1	Operation code
46	SNXDATA@	2	Record area address
48	SNXOUTL or SNXEFFL	2 2	Output length Effective input length
4A	SNXASGNL	2	Assign buffer length
4C	SNXSSB@	2	Address of OCL session block
4E	SNXXSCR@	2	Extended subsystem configuration record address

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
50	SNXSNUB@	2	Address of associated SNA unit block
52	SNXBFFLG	1	Buffer flag byte: *Hex* *Meaning* 80 Buffer preallocated 40 Data can be on disk 20 Data on disk 10 Negative response allowed 08 This is a pass through user 04 Common queue space is allocated 02 Subsystem queue space is allocated 01 Definite response—does not read ahead
53	SNXXFACT	2	Length of pad in front of buffer
55	SNXXPRM@	2	Address of operation parameter list
57	SNXCURB@	3	Current record buffer disk address
5A	SNXDCSUC	1	Current sector use count
5B	SNXASGN@	2	Allocate buffer address
5D	SNXSUB@	2	Address of associated session unit block
5F	SNXDSK@	3	SSS address PF disk area
62	SNXRECL	2	Maximum record length
64	SNXXPRL	2	Length of associated parameter list
66	SNXBFLG2	1	Buffer flag byte 2
67	SNDSSN	1	Session number

Figure 2-207 (Part 12 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
68	SNDRUBB@	3	Main store RU buffer begin address or disk sector RU buffer begin address
6B	SNDSDISP	1	Displacement from sector start to data
6C	SNDRUDLG	2	Request unit effective data length
6E	SNDMIPL	2	Maximum allowable input length
70	SNDOPC	1	Operation code: *Hex* *Meaning* C3 Logoff with user data C2 Terminate with logoff C1 Init without logon C0 Init with logon 80 Get 75 Put request recovery 74 Put release quiesce 73 Put quiesce at end-of-chain 72 Put shutdown complete 71 Put request shutdown 70 Put signal 64 Put quiesce complete 63 Put ready to receive 62 Put logical unit status 61 Put chase 60 Put cancel 51 Put negative response 50 Put positive response 40 Put data

Figure 2-207 (Part 13 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
71	SNDCMPC	1	Completion code:

The following descriptions contain SNA protocol violation completion codes:

Hex	*Meaning*
83	Put operation and response required from primary
82	Protocol state error: ● Chaining error—MC or EC element specified and not in chains or BC specified and already in chains ● Bracket error—EB specified and not in brackets or session bound such that secondary may not send EB, or BB specified and already in brackets, or BB not specified on a request issued when between brackets. ● Put invalid after shutdown complete sent ● Put invalid in ERP mode ● Format indicator invalid with MC or EC element ● Get data operation invalid while in send state ● Put data operation invalid while in receive state ● Change direction indicator invalid with BC or MC element ● BB or EB specified with MC or EC element ● Definite response specified with BC or MC element, or session bound exception response chains only ● Exception response specified on EC element and session bound definite response chains only
81	Get or put operation and response due

Figure 2-207 (Part 14 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
71 (cont.)			

Hex	*Meaning*
80	This code has the following meanings: ● Response operation and no response required ● Response not allowed ● Positive response and negative response required

The following are exception action completion codes:

Hex	*Meaning*
68	Connection has failed
67	LU-SSCP FMD received
66	Maximum input length exceeded
65	Permanent disk error, ICFDM disk buffer
64	Permanent disk error, CPM disk queue
63	CPM disk queue overflow
62	LUSTAT received
61	STSN received
60	Get operation successfully cancelled
5F	Release quiesce (RELQ) received
5E	Quiesce complete (QC) received
5D	Purging chain state exited
5C	Transmit control usage error
5B	Exception request received; put negative response required
5A	Positive response received on expedited flow
59	Negative response received on expedited flow
58	Negative response received on normal flow
57	Shutdown command received
56	SIGNAL command received

Figure 2-207 (Part 15 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
71 (cont.)			*Hex* *Meaning* 55 BID command received 54 CHASE command received 53 CANCEL command received 52 BIND received 51 Start data traffic (SDT) received 50 Quiesce at end of chain (QEC) received The following session initiation/termination completion codes: *Hex* *Meaning* 48 UNBIND received 47 Logon failed—no message available 46 Logon failed—unformatted message available in intermediate buffer 45 BIND command rejected by SNA—BIND parameters available in intermediate buffer 43 Invalid request of SNA 4/4 This may occur for one of the following reasons: ● Init operation was not first request of SNA ● Put response to BIND was not second operation requested of SNA ● Invalid operation code 42 Logical unit/logical unit session reset—one of the following commands has been received: UNBIND, DACTLU, ACTLU (cold), DACTPU, ACTPU (cold) 41 Permanent error on data link

Figure 2-207 (Part 16 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
71 (cont.)			The following code indicates normal completion: *Hex* *Meaning* 40 Successful completion. This code has the following meaning: ● Requesting program is in transmit state and operation has a put that was successfully posted to SDLC ● Requesting program is in transmit state and operation was a get and a positive response was received on normal flow ● Requesting program is in receive state and function management data was received ● Requesting program is in transmit state and a valid put DFC command operation was successfully posted to SDLC
72	SNDCMPCM	1	Completion code modifier
73	SNDRCTL1	1	Receive control byte 1
74	SNDRCTL2	1	Receive control byte 2
75	SNDRCTL3	1	Receive control byte 3
76	SNDTCTL1	1	Transmit control byte 1
77	SNDTCTL2	1	Transmit control byte 2
78	SNDTCTL3	1	Transmit control byte 3

Figure 2-207 (Part 17 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
79	SNDSSNS	5	Sense information (2 bytes of system sense information, 2 bytes of user sense information, and 1 unused byte)
	or SNDSTSN	5	Data associated with response to STSN (1 byte of action code, 2 bytes of inbound sequence number, and 2 bytes of outbound sequence number)
7E	SNDISEQ#	2	Inbound sequence number to host
80	SNDOSEQ#	2	Outbound sequence number from host
82	SNDSTATN	2	Station XSCR address
84	SNUDEPL	1	Session parameter list: *Hex* *Meaning* 40 Incoming chain assembly 20 Outgoing chain assembly 10 Message protect for current transaction 08 Pass function management header to user 04 Password specified 02 Pass up LU-SSCP message 01 Exception response for DFC command
SNUF only fields:			
85	SNSTEMP	2	Temporary address storage area

Figure 2-207 (Part 18 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
87	SNSTOP	2	Pointer to top of stack
89	SNSSTACK	14	Address stack
The following 33 bytes contain SNA upline facility control information:			
97	SNUDDATA@	2	Save area for SNXDATA@
99	SNUDSTA1	1	SNA upline facility status byte 1: *Hex* *Meaning* 80 Program start successful 40 Program start error 20 Retry operation required 10 Session failed 08 Termination pending 04 Session allocated 02 Initialization pending 01 Program start post pending
9A	SNUDSTA2	1	SNA upline facility status byte 2: *Hex* *Meaning* E8 Session is in contention state (if bits off) 80 Session is in receive state 40 Session is in send state 20 Session is in contention pending state 10 Message waiting 08 Session is in chains 04 End bracket sent 02 Assign for logon buffer failed 01 Recovery in progress

Figure 2-207 (Part 19 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
9B	SNUDSTA3	1	SNA upline facility status byte 3: *Hex* *Meaning* 80 Response due to host 40 Reply needed from host 20 Ready-to-receive pending 10 SNA get operation in progress 08 Operation complete (OPCOMP) 04 Terminal error (TRMERR) 02 Restart required 01 Session released
9C	SNUDSTA4	1	SNA upline facility status byte 4: *Hex* *Meaning* 80 Program start session flag 40 Logical unit in use flag for program start 20 Request change direction received 10 Data waiting flag 08 Disk read op code for IUSDSK 04 Disk write op code for IUSDSK 02 Shut down pending 01 Quiesce at end of chain received
9D	SNUDXSTA1	1	Transient status: *Hex* *Meaning* 80 Transient error occurred 40 First exception call 20 RU data length needs conversion 10 Communicating program is processing 08 Program start transaction complete 04 STSN test negative indicator 02 Link error posted to user

Figure 2-207 (Part 20 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
9E	SNUDOPST	1	SNA upline facility operation status: *Hex* *Meaning* 80 Put in progress 40 Get in progress 20 Termination in progress 10 End of transaction pending 08 Response in progress 04 Perform in progress
9F	SNUDRCAL	2	Session recall address
A1	SNUDRCV@	2	Recovery recall address
A3	SNUDINSY	2	Inbound sync point sequence number
A5	SNUDOTSY	2	Outbound sync point sequence number
A7	SNUDSSB1	1	Session specification block parameters byte 1: *Hex* *Meaning* 80 Host name—Other specified 40 Host name—IMS specified 20 Host name—CICS specified 10 Host name—IMSRTR specified
A8	SNUDAPLD	8	Application identification
B0	SNUDASN@	2	Save area for put assign address
B2	SNUDASNL	2	Save area for put assign length
B4	SNUDREST	2	Save status area for restart
B6	SNUDRMLN	2	Remaining length of put operation

Figure 2-207 (Part 21 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
B8	SNUDOPLG	2	Save area for output data length
BA	SNUDXNT@	2	Cross reference resolver where-to-go table transient address entry
3270 only fields:			
85	SNZDBIND	1	SNA 4/4 state fields are saved here after each post
86	SNZDINIT	1	SNA 4/4 state fields are saved here after each post
87	SNZDSEC	1	SNA 4/4 state fields are saved here after each post
88	SNZDPRI	1	SNA 4/4 state fields are saved here after each post
89	SNZDFSM1	1	SNA 4/4 state fields are saved here after each post
8A	SNZDFSM2	1	SNA 4/4 state fields are saved here after each post
8B	SNZDFSM3	1	SNA 4/4 state fields are saved here after each post
8C	SNZDFSM4	1	SNA 4/4 state fields are saved here after each post
8D	SNZDFSM5	1	SNA 4/4 state fields are saved here after each post
8E	SNZDDES1	1	3270 device emulation states: *Hex* *Meaning* 80 Device emulation is sender 40 Get outstanding to SNA 4/4 20 Get response outstanding to SNA 4/4 10 Positive response to bind outstanding 08 Presentation space altered pending 04 Initialization request outstanding 01 Unacceptable bind received

Figure 2-207 (Part 22 of 23). Format of the SNA Unit Block (SNUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8F	SNZDDES2	1	3270 device emulation states: *Hex* *Meaning* 80 Logical unit status (power on) due 40 Screen integrity lost 20 PSA pending on a write command 10 Clear stack on subroutine exit 08 Logical unit status (nothing to send) due 02 Send signal 01 Signal sent
90	SNZDRES	1	Reserved
91	SNZDRCAL	2	SNUB recall address
93	SNZDRIT	2	Associated RIT address
95	SNZDXCHN	2	Chain field
97	SNZDARR	2	ARR save for stack
99	SNZDSTKT	2	Stack top address
9B	SNZDSTKS	16	Subroutine return address stack
AB	SNZDSTE@	2	Stack rightmost byte address
AD	SNZDBNDC	1	Left byte of bind buffer
AE	SNZDBNDE	1	Right byte of bind buffer

Figure 2-207 (Part 23 of 23). Format of the SNA Unit Block (SNUB)

Source Get Parameter List

This 19-byte area is required for the source get transient (RIB=X'08') or the source get module (#MASYL). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Format for a find request (supported only by transient):			
00	GETDFNCT	1	Function byte: *Hex* *Meaning* 80 Find request-source get sets off (transient only) 40 Get first-source get sets off 20 Get next
01	GETDTYPE	1	Type number: S=source P=procedure
02	GETDNAME	8	Name of member
0A	GETDLBF1	2	Format 1 address of library to search (0=system library)
0C	GETADDR	2	Address of record buffer
0E	GETDSIZE	1	Size of buffer in bytes
0F	GETDFCT2	1	Function byte 2: *Hex* *Meaning* 20 Return start of blanks indicator in record buffer (hex FF) 10 Reprime request—read previous buffer and recalculate buffer end

Figure 2-208 (Part 1 of 2). Format of a Source Get Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	GETDIOBF	2	Buffer for source gets read
12	GETDBFSZ	1	Size of buffer in sectors (minimum=1)
Format for a source get request:			
00	GETDREPL	1	Reply byte: *Hex* *Meaning* 08 Terminal error—bad member 04 Truncated record 02 No find 01 End of file
01	GETDSSS	3	Sector address processing now
04	GETDEND	3	Sector address of last sector
07	GETDBNOW	2	Address of byte in I/O buffer to process (source get only)
09	GETDBEND	2	Address of last byte in I/O buffer to process (source get only)
0B	GETDLGTH	1	Record length
0C	GETDADDR	3	Record buffer address and size in bytes
0F	GETDCOMP	1	Completion switches: Reserved
10	GETDIOBF	3	I/O buffer address size in sectors

Note: The source get transient (RIB=X'08') uses the next 15 bytes following the parameter list as a work area. The INCLUDE or LOAD versions of source get (#MASYL) do not require a work space.

Figure 2-208 (Part 2 of 2). Format of a Source Get Parameter List

Spool Buffer Pool

Spooling causes specific printer I/O commands to be intercepted, and uses fixed disk storage in place of the printer.

The spool buffer pool (SBP) is a header for spool information. It locates the writer descriptor blocks (WDB), the spool print buffer for the 5211/3262 printer, and the resident portion of the spool master segment (SMS).

How to Find

The address of the spool buffer pool is in the field SCADSBFP in the system communication area.

Format

Figure 2-209 shows the format of the spool buffer pool.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SBPMXIOB	28	Fixed disk IOB writes the resident portion of the SMS to the spool file. The IOB data address pointer ($IOBDDAT) locates the resident portion of the SMS in main storage.
1C	SBPFWDB@	2	Pointer to the first WDB
1E	SBPLPWB@	2	Pointer to the spool writer print buffer
20	SBPLPWBL	1	Number of spool writer print buffers for the line printer
21			Pad area to advance to an 8-byte boundary. From 0 to 7 bytes may be necessary.

Beginning on the 8-byte boundary, storage is reserved for the print buffers (line printer). The area reserved for each buffer is sufficient for a 1-sector buffer and a printer IOB.

The resident copy of the SMS follows the buffers and IOBs and occupies 68 bytes of storage.

Figure 2-209. Format of the Spool File Buffer

Spool File Descriptor

The spool file descriptor (SFD) is the control block used by spool intercept. It consists of two parts:

- The task portion of the SFD (TSFD) describes spool intercept on a task basis. It contains common information for all print files intercepted for the task, as well as information that is unique to each print file and that can be renewed for each print record intercepted. There is one TSFD for each task that is intercepted. A TSFD is created when the first print file for the task is intercepted, and it is deleted when the last print file for the task is closed.
- The print file portion of the SFD (PSFD) describes spool intercept on a print file basis. It contains information that is unique to each print file. A separate PSFD is created when the print file is opened, and it is deleted when the print file is closed.

When spool intercept is processing a particular print file, it moves the corresponding PSFD into an area immediately following the TSFD so that the two parts may be referenced as a single unit. The PSFD is returned to its normal location after the print record is processed.

When there is only one print file for a task, the PSFD is normally located in the area behind the TSFD. If a second print file is opened for the task, a new location is found for the first PSFD, so that the area behind the TSFD may then be used for either print file.

How to Find

The TSFD is located by the field TCBSPOOL in the TCB.

The first PSFD is located by the field SFDFPSFD in the TSFD. The PSFDs are chained together using the field SFDCHAIN.

Format

Figure 2-210 shows the format of the writer's spool file descriptor.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

The TSFD is defined as follows:

00	SFDFDIOB	28	Disk IOB for intercept	
1C	SFDFLAGS	1	Flag byte:	
			Hex	*Meaning*
	SFDCLOSE		80	Spool file full close
	SFDXLATE		40	Source record in translated storage
	SFDCHKPT		20	Checkpoint close
	SFDERROR		10	Terminal error in close
	SFDATCHP		08	Writer attach pending in close
	SFDCLALL		04	Close all print files for task
1D	SFDNXBKS	3	Save area for SSS address of next block	
20	SFDINWRK	2	Work area	
22	SFDTRSV0	2	Reserved	
24	SFDFPSFD	2	First PSFD address	
26	SFDCPSFD	2	Current PSFD address	
28	SFDMOVEL	2	Length of data to move	
2A	SFDSRCEL	2	Source record length-1	
2C	SFDPRLEN	1	Length of print record	
2D	SFDPRPAG	2	Page number of print record	
2F	SFDPRFLG	1	Flags for print record	
30	SFDTRSV1	8	Reserved	
	SFDTLENG		Length of TSFD	

Figure 2-210 (Part 1 of 2). Format of a Spool File Descriptor

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

The PSFD is defined as follows (displacements are relative to the start of the TSFD):

38	SFDCHAIN	2	Next PSFD address
3A	SFDAPSB@	2	Associated PSB address
3C	SFDAWDB@	2	Associated WDB address
3E	SFDINIOB	2	Intercepted IOB address
40	SFDINBUF	2	Intercept buffer address
42	SFDINBFL	1	Intercept buffer length (sectors-1)
43	SFDSIZES	1	Remaining segment and buffer sizes
44	SFDDEST@	2	Destination record address
46	SFDDESTL	2	Destination record length-1
48	SFDPRSGX	4	XSSS address of primary segment for print file
4C	SFDPVBKX	4	XSSS address of previous block for print file
50	SFDCRBKX	4	XSSS address of current block for print file
54	SFDPRSGS	3	SSS address of primary segment for print file
57	SFDCRSGS	3	SSS address of current block for print file
5A	SFDPAGCT	2	Current page count
5C	SFDRCDCT	3	Current intercept record count
5F	SFDUNPAG	1	Count of unused pages
60	SFDPRSV0	8	Reserved
68	SFDLNGTH		Length of SFD

Figure 2-210 (Part 2 of 2). Format of a Spool File Descriptor

Spool Master Segment

The spool master segment (SMS) is the first segment of the primary file (##SPOOL1) in the spool file. The spool file consists of a primary file (##SPOOL1) and up to five other extents as needed. The primary file and each extent are divided into segments. All segments are of equal size and can be from one to 16 blocks each. A segment is the smallest allocatable unit of the spool file. All segments in the spool file may contain print data except the first segment of the primary file. The first segment of the primary file is the master segment, which manages the rest of the spool file.

Only the first block of the SMS is defined. In cases where segments are two or more blocks, the remaining blocks of the SMS are unused.

How to Find

Fields SCADSSPR in the system communications area and $IOBDSS in the fixed disk IOB at the start of the spool buffer pool contain the sequential sector address of the SMS (start of the spool file).

Format

Figure 2-211 shows the format of the first block of the SMS.

Sector Offset into Block	Label	Length in Sectors	Description
00	SMS#QEXD	1	Spool queue and extent descriptors
01	SMS#EX12	1	Extent usage descriptors for extents 1 and 2
02	SMS#EX34	1	Extent usage descriptors for extents 3 and 4
03	SMS#EX56	1	Extent usage descriptors for extents 5 and 6
04	SMS#RSVQ	6	Reserved

Figure 2-211. Format of the First Block of Spool Master Segment

Figure 2-212 shows the format of the spool queue and extent descriptor portions of the SMS (first sector).

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00		2	Spool file identifier (C'SP')
02		1	Reserved
03	SMSRFLID	1	Spool file release indicator
04	SMSFSPFX	4	XSSS address of the first print file on the queue where X = extent ID, and SSS = relative sector offset in the extent (hex FF indicates the queue is empty)
08	SMSLSPFX	4	XSSS address of the last print file on the queue
0C	SMSSPLID	4	Spool ID to use for the next print file
10	SMSSIZES	3	Spool file size information of the format X'abcccc' where: a = one less than the number of blocks per segment b = one less than the number of sectors per block (constant of 9) c = the maximum number of segments per extent
13	SMSTATUS	1	Spool file status: *Hex* *Meaning* 80 Spool queue hold 40 Spool file reformat needed
14	SMSEXTNT	8	Extent descriptor for extent 1
1C		8	Extent descriptor for extent 2
24		8	Extent descriptor for extent 3
2C		8	Extent descriptor for extent 4

Figure 2-212 (Part 1 of 2). Format of Spool Queue and Extent Descriptor Portions of the Spool Master Segment

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
34		8	Extent descriptor for extent 5
3C		8	Extent descriptor for extent 6
44		188	Unused

Note: The spool queue and extent descriptors are also maintained in the resident copy of the SMS in main storage.

Figure 2-212 (Part 2 of 2). Format of Spool Queue and Extent Descriptor Portions of the Spool Master Segment

Figure 2-213 shows the format of the spool extent descriptor for a given extent.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SMSEXTID	1	Extent ID
01	SMSEXSSS	3	Real sequential sector address for the start of the extent (all zeros indicate that the extent does not exist)
04	SMSALSEG	2	Total number of segments in the extent
06	SMSAYSEG	2	Number of available segments in the extent
08	SMSEXTDL	8	Length of extent descriptor

Figure 2-213. Format of Spool Extent Descriptor for a Given Extent

Spool extent usage descriptors keep track of segments that are used and segments that are available within an extent. Figure 2-214 shows the format of the extent usage descriptor for a given extent.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SMSEXTID	1	Extent ID
01	SMSXURSV	27	Reserved
1C	SMSUSAGE	100	Bit mask describing available segments. Bits from right to left describe segments in ascending sequence. If the bit is on, the corresponding segment is used; if the bit is off, the corresponding segment is available. For extent 1, the rightmost bit should always be on, describing the SMS, as it is never available. Although 100 bytes are used by the bit mask, in actuality the bit mask never extends to the left of the bit corresponding to the last segment in the extent.
	SMXUSDL	128	Length of extent usage descriptor

Figure 2-214. Format of Extent Usage Descriptor for a Given Extent

Spool Print File

Each print file in the spool file uses one or more segments depending on how much spool file space is required to contain the data. The first block of the first (primary) segment in a print file contains information about the print file as well as print data. All other blocks in the primary segment and all blocks in other segments contain only print data.

Figure 2-215 shows the format of the first block in a print file:

Sector Offset into Block	Label	Length in Sectors	Description
00	SPF#CTRL	1	Print file control sector
01	SPF#EX12	1	Extent usage descriptors for extents 1 and 2
02	SPF#EX34	1	Extent usage descriptors for extents 3 and 4
03	SPF#EX56	1	Extent usage descriptors for extents 5 and 6
04	SPF#RSVQ	2	Reserved
06	SPF#PIMG	1	Print belt image
07	SPF#PRST	1	Printer specification table
08	SPF#DATA	2	Print data

Figure 2-215. Format of the First Block in a Print File

Figure 2-216 shows the format of the print file control sector.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPFSPLID	4	Spool ID
04	SPFNXPFX	4	XSSS pointer to primary segment to the next print file
08	SPFPVPFX	4	XSSS pointer to primary segment of the previous print file
0C	SPFPRIOR	1	Priority on queue

Figure 2-216 (Part 1 of 3). Format of the Print File Control Sector

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
0D	SPFSTATS	1	Print file status:	
			Hex	*Meaning*
	SPFPHELD		80	Print file held
	SPFWRITE		40	Spool writer using print file
	SPF$UASF		20	Print file used by $UASF
	SPFITCPT		10	Print file is being intercepted
	SPFSTOPD		08	Writer stopped while printing entry
	SPFDEFER		04	DEFER-YES specified/defaulted
0E	SPFATTRB	1	Print file attributes:	
			Hex	*Meaning*
	SPFTPIGC		80	TYPE—ideographic character generator
	SPFEXTOF		40	EXTRN—OFF
	SPF15CPI		20	15 characters per inch
	SPFGT132		10	More than 132 characters per line
	SPFALIGN		08	ALIGN—YES
	SPFHAPRT		04	Hold after printing
	SPFCNCLP		02	Cancel pending from $UASF
0F	SPFUASFC	1	$UASF use counter	
10	SPFPROCR	8	First level procedure name	
18	SPFUSRID	8	User ID	
20	SPFPFNAM	8	Print file name	
28	SPFWKSTN	2	Work station ID	
2A	SPFJOBNM	6	Job name	
30	SPFFORMS	4	Forms number	
34	SPFPRTID	2	Printer ID	

Figure 2-216 (Part 2 of 3). Format of the Print File Control Sector

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
36	SPFCOPYS	1	Number of copies
37	SPFLINEP	1	Number of lines per page
38	SPFLINEI	1	Number of lines per inch
39	SPFSPAGE	2	Page number stopped on
3B	SPFPAGES	2	Total number of pages
3D	SPFRECDS	3	Total number of intercepted records
40	SPFCPBKX	4	XSSS checkpoint block
44	SPFCPEOD	2	Sector displacement of checkpoint EOD relative to SPFCPBKX. This field has the format X'abcc' where: a = the number of blocks remaining in the checkpoint segment following the checkpoint block b = the sector offset into the checkpoint block to the checkpoint sector c = the displacement into the checkpoint sector of the checkpoint location
46	SPFTSFD@	2	Address of associated TSFD (intercept)
48	SPFUNPAG	1	Unused page count
49		183	Reserved

Figure 2-216 (Part 3 of 3). Format of the Print File Control Sector

Extent usage descriptors keep track of segments in each extent that are used by the print file.

Figure 2-217 shows the format of the extent usage descriptor for a given extent.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPFEXTID	1	Extent ID
01	SPFACSEG	2	Number of segments in the extent used by the print file
03	SPFXRSRV	25	Reserved
1C	SPFUSAGE	100	Bit mask describing segments used by the print file. Bits from right to left describe segments in ascending sequence. If the bit is on, the corresponding segment is used by the print file; if the bit is off, it is not used by the print file.
	SPFEXTDL	128	Length of extent usage descriptor

Figure 2-217. Format of Extent Usage Descriptor

Figure 2-218 shows the format of print records.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SPFPRLEN	1	Length of spool print record (inclusive). There are two special cases: *Hex* *Meaning*
	SPFPREOD		00 End-of-print data
	SPFPREOB		01 End-of-current block
01	SPFPRPAG	2	Page number associated with print record

Figure 2-218 (Part 1 of 2). Format of Print Records

Disp of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	SPFPRFLG	1	Print record flags:
			Hex *Meaning*
	$IOBPPRT		40 Intercepted print record contains data
	$IOBP2BS		10 Intercepted print record begins in 2-byte mode (IGC data)
	$IOBPRPR		04 Intercepted print record contains extended IGC data
	$IOBP2BC		02 Intercepted print record contains IGC data
04	SPFPRDAT		Start of intercepted print data

Figure 2-218 (Part 2 of 2). Format of Print Records

Print records start in the ninth sector of the first block in a print file and continue to the end of the block. A print record is not split across blocks. When a print record does not fit entirely in the block with at least 1 byte to spare (for the end-of-block or end-of-data record), the block is finished and the print record is placed at the start of the next block. This process continues with new blocks and new segments until all print data is in the spool file.

The end of each block in the print file contains information that indicates the next and previous blocks in the print file, and the last page used in the current block.

Figure 2-219 shows the format of the last sector of each block in the print file.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00		246	Print records
F6	SPFLPAGE	2	Last page number in block
F8	SPFNXBXX	4	XSSS address of the next block in the print file
FC	SPFPVBXX	4	XSSS address of the previous block in the print file

Figure 2-219. Format of the Last Sector of Each Block in the Print File

Spool File Overview

The spool file can consist of six extents. #SPOOL1 is always present. The others are added as needed. Each extent can consist of 2 to 800 segments.

Each segment consists of one to 16 blocks (10 sectors per block). The first segment of #SPOOL1 is the SMS. The SMS contains the print queue descriptor and a descriptor for each of the spool file extents.

Figure 2-220 shows the spool file extents.

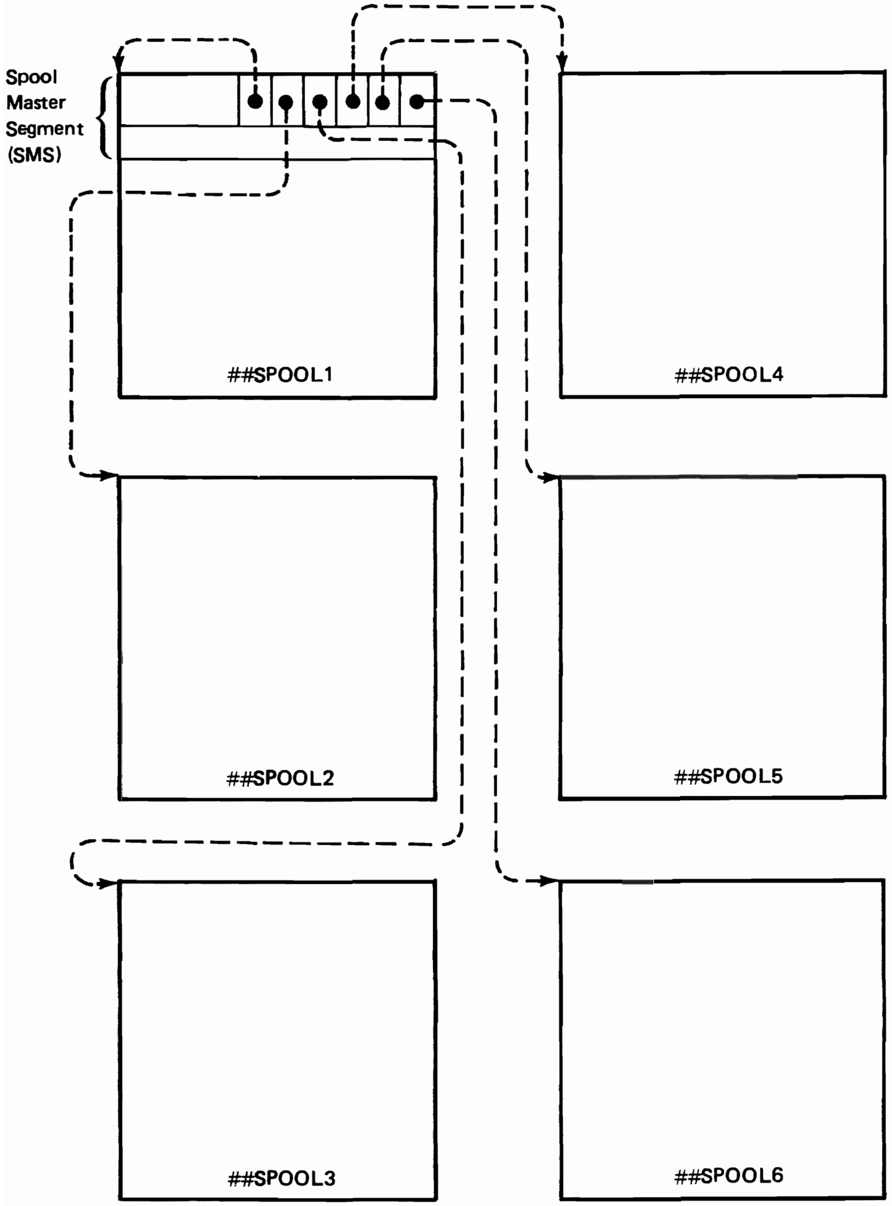


Figure 2-220. Spool File Extents

Spool File Extents in ##SPOOL1

Each spool file extent is divided into segments (1-16 blocks each). The segments are the smallest allocatable units of the spool file. The first segment of ##SPOOL1 is the SMS. All other segments can be used for spool data. Figure 2-221 shows the spool file extents in ##SPOOL1.

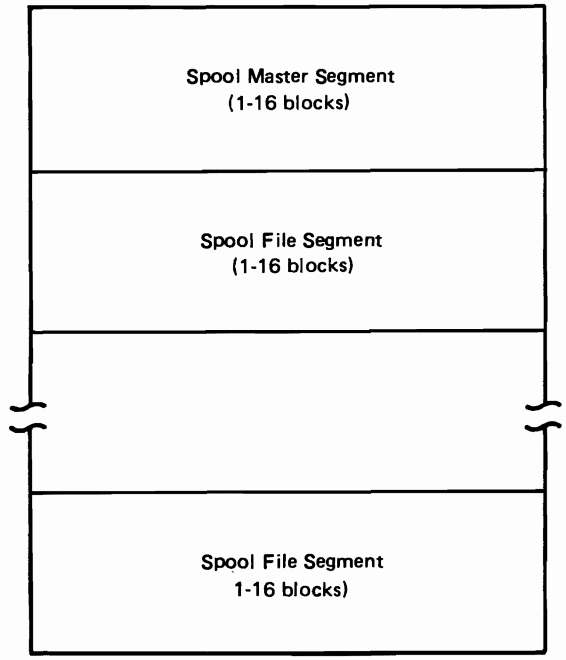


Figure 2-221. Spool File Extents in ##SPOOL1

Spool File Segment

Each spool file segment consists of one to 16 blocks. When a segment is used to contain print data, its blocks are chained together within the segment, and chained to and from the preceding and following segments. Figure 2-222 shows how the blocks are chained.

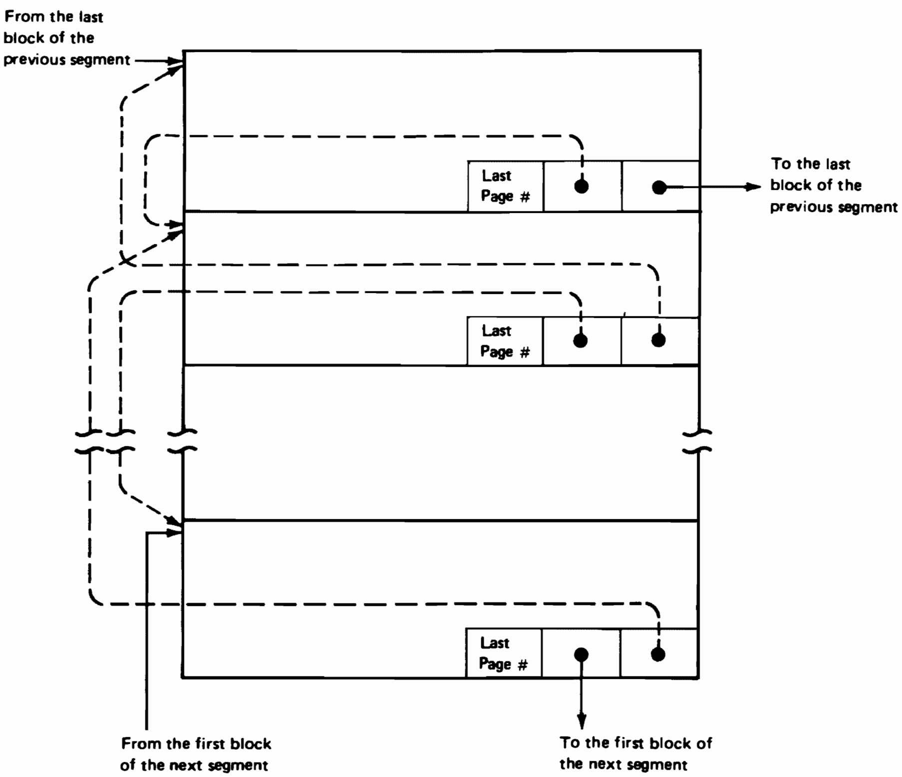


Figure 2-222. Blocks within the Spool File Segment

First Block of the Spool Master Segment

The first sector of the SMS is the master index. A copy of it is kept resident in the nucleus. It contains the print queue descriptor and the extent descriptors. The next three sectors of the SMS are the extent usage descriptors. Six sectors are reserved. Any remaining blocks in the SMS are unused.

Figure 2-223 shows the first block of the spool master segment.

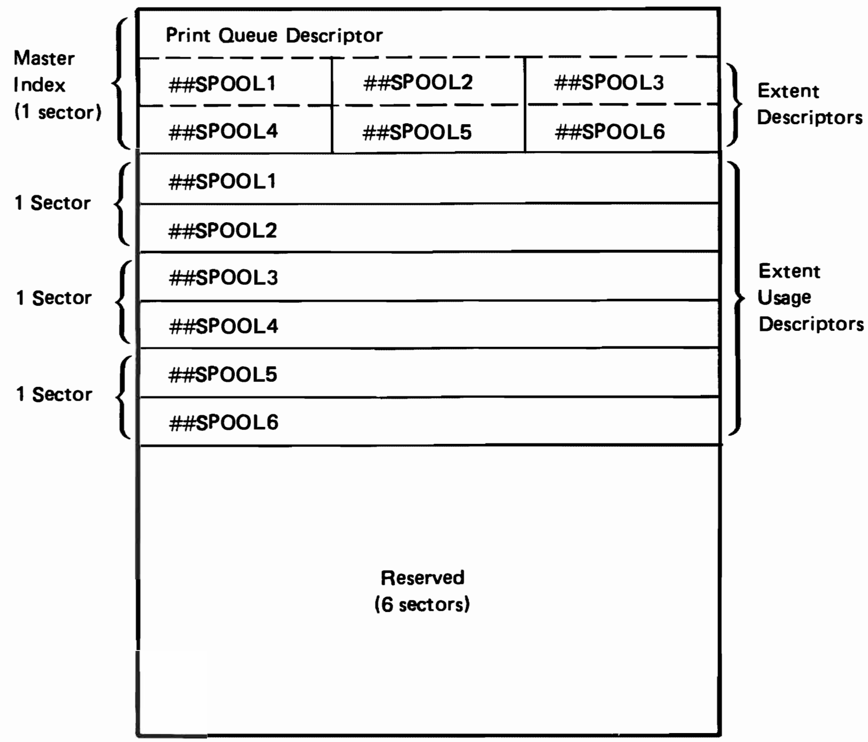


Figure 2-223. First Block of the Spool Master Segment

Primary Block of the Primary Segment in a Print File

Print records start in the last two sectors of the block. The block ends with the last page number and the next and previous block pointers. Figure 2-224 shows the primary block.

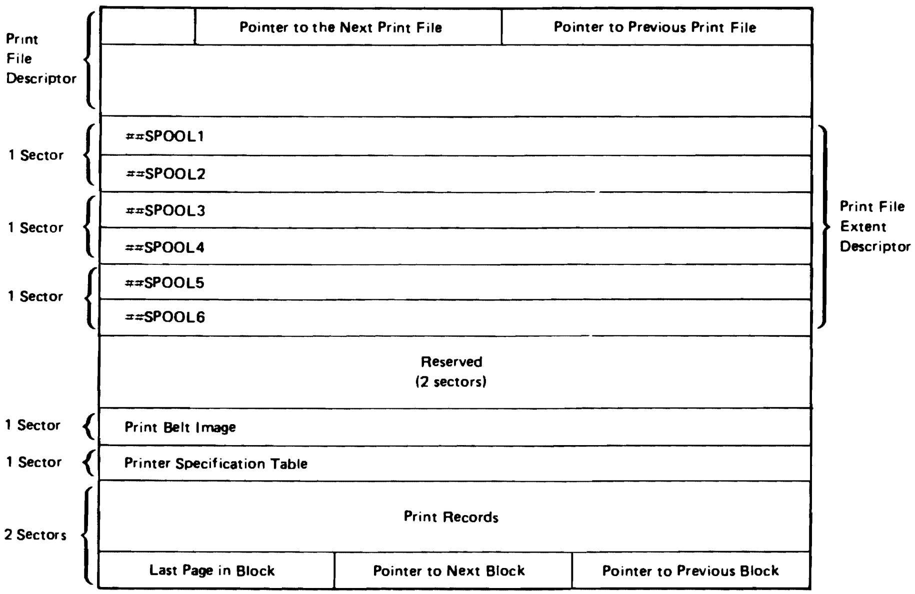


Figure 2-224. Primary Block of the Primary Segment in a Print File

Secondary Block of a Primary Segment or any Block of a Secondary Segment

All 10 sectors of the block are used to contain print records. The last sector ends with the last page number and the next and previous block pointers. Figure 2-225 shows the secondary block.

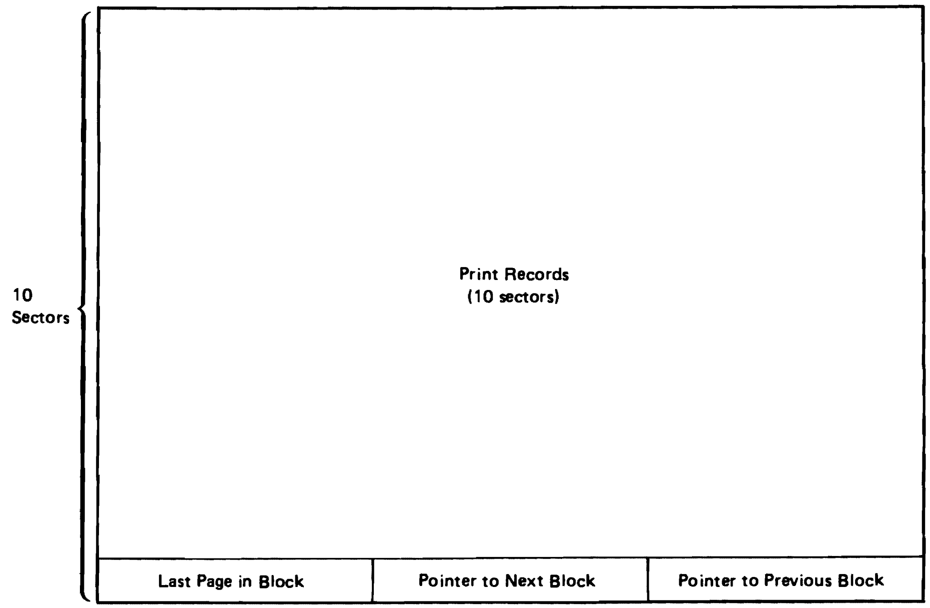


Figure 2-225. Secondary Block of a Primary Segment or any Block of a Secondary Segment

Empty Spool File

Figure 2-226 shows the format of an empty spool file.

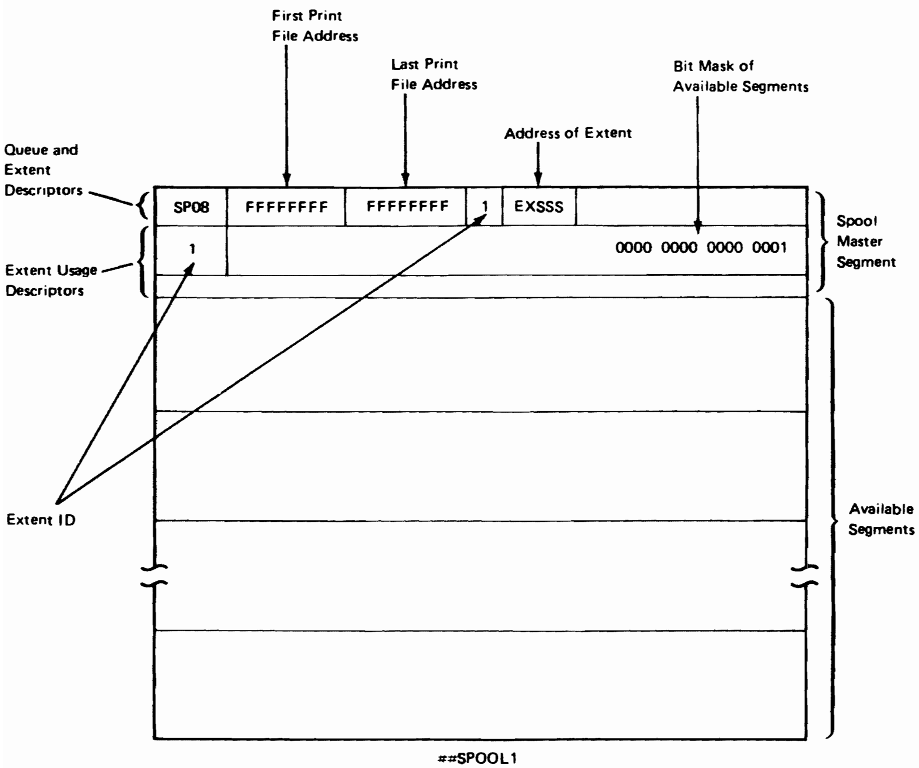


Figure 2-226. Empty Spool File

One Print File on a Queue

Figure 2-227 shows one print file on a queue. Assume one block per segment.

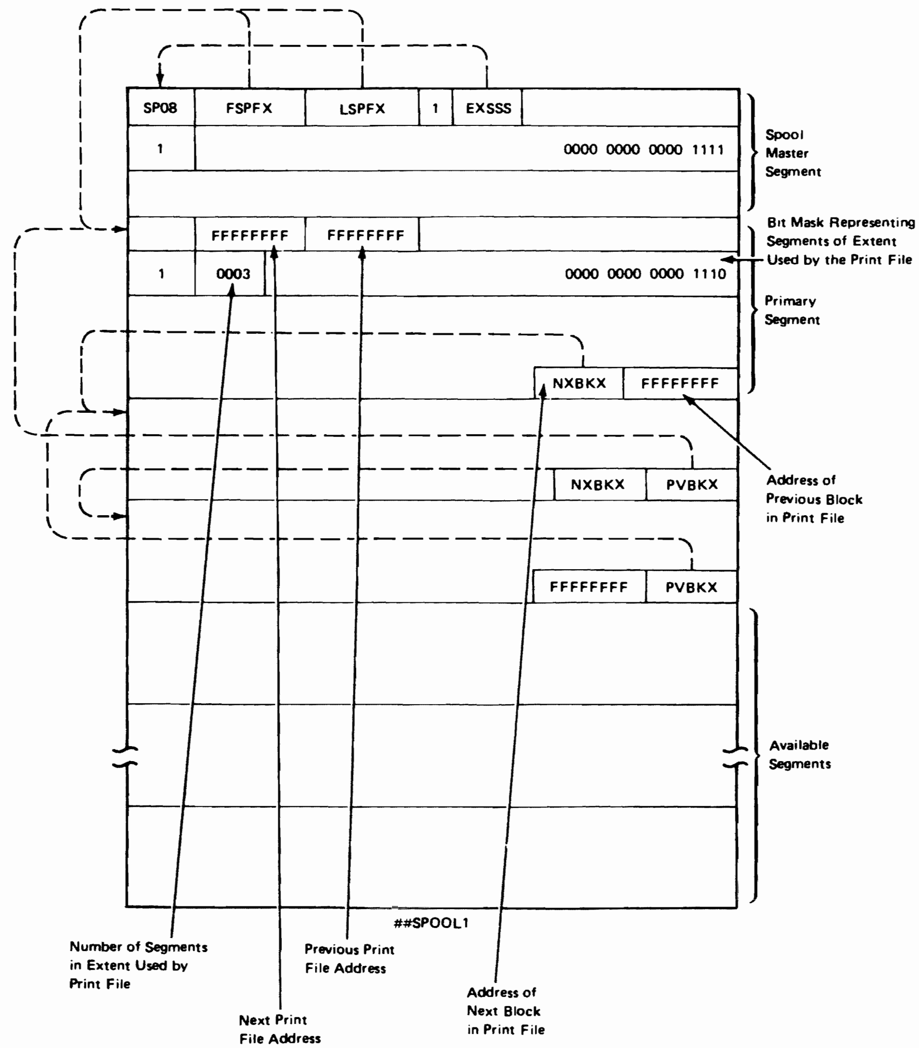


Figure 2-227. One Print File on Queue (3 segments)

Multiple Print Files on a Queue

Figure 2-228 shows multiple print files on a queue. Assume one block per segment.

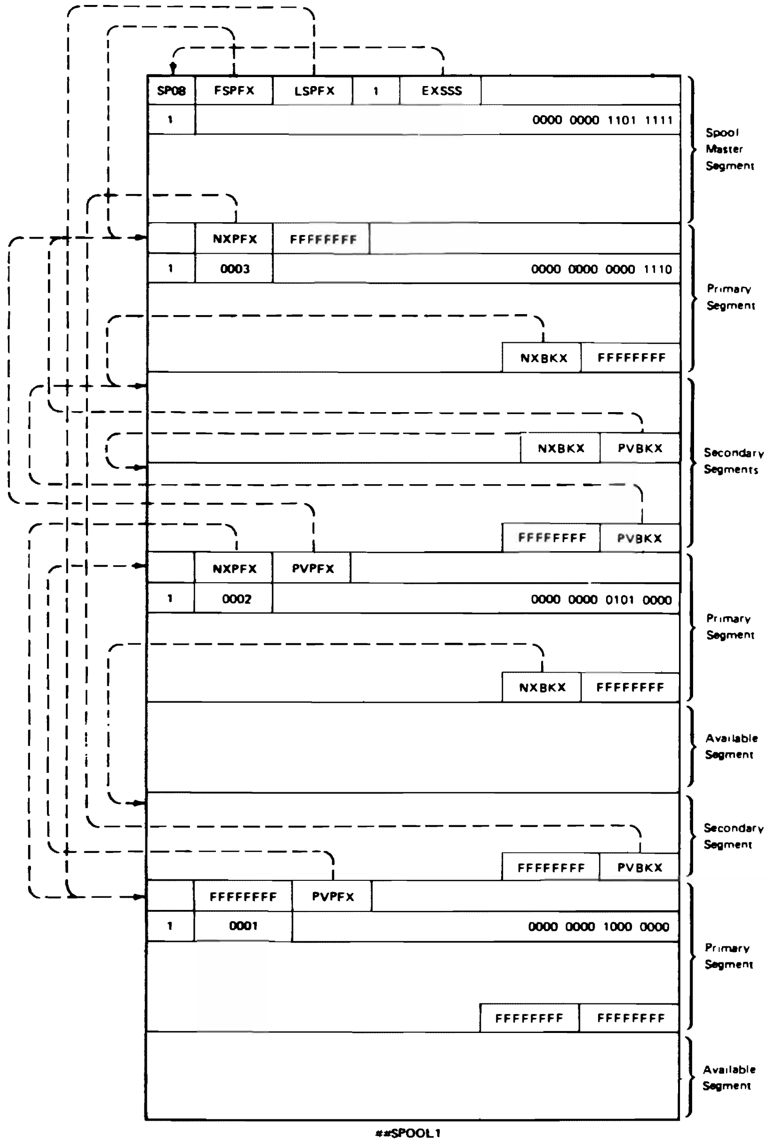


Figure 2-228. Multiple Print Files on Queue

Multiple Print Files Across Two Extents

Figure 2-229 shows multiple print files across two extents. Assume one block per segment.

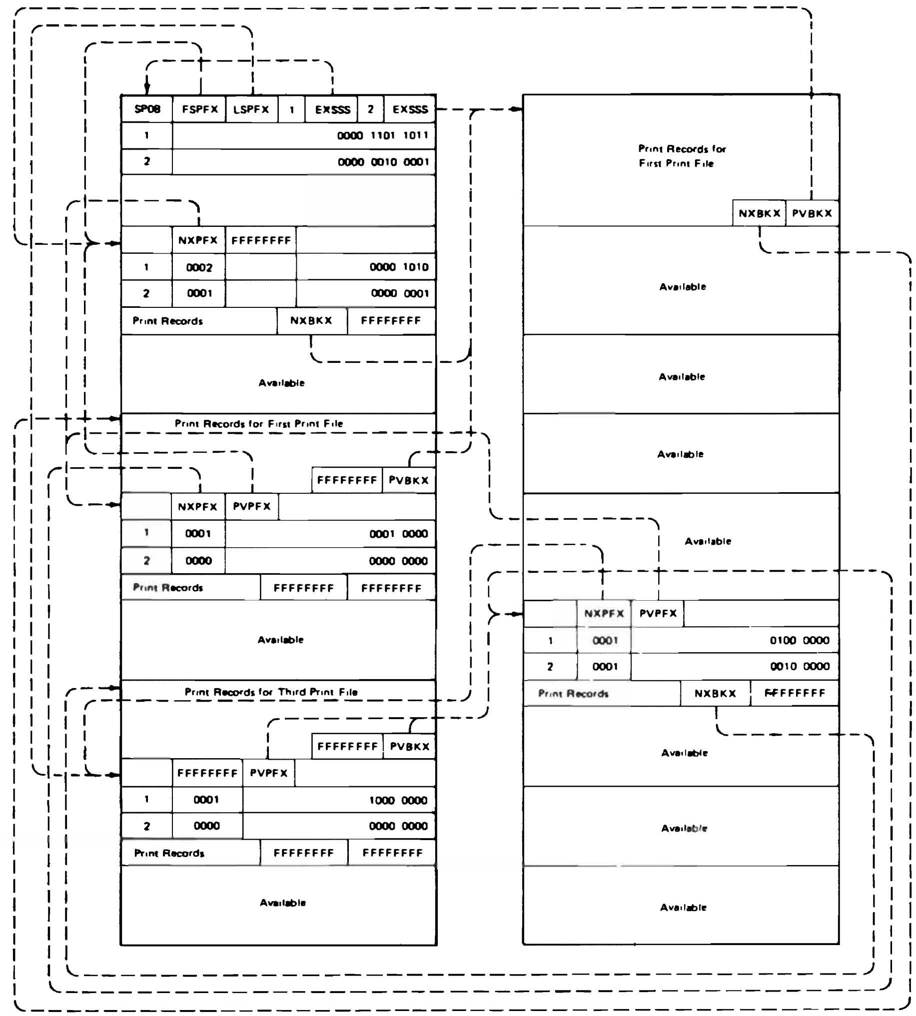


Figure 2-229. Multiple Print Files Across Two Extents

SRJE Communications and Control Table (CCT)

This 256-byte area is a table of addresses and control information commonly used by all SRJE functions.

How to Find

The communications and control table is located at logical address E000 of the SRJE supervisor region.

Format

Figure 2-230 shows the format of the SRJE communications and control table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CCTDECM	2	Supervisor ECM
02	CCTDFCB	2	FCB chain pointer
04	CCTDSID	3	Supervisor identification bytes
07	CCTDTID	1	SRJE supervisor task ID
08	CCTDTCB	2	Address of supervisor TCB
0A	CCTDTUB	2	Address of SRJE console TUB
0C	CCTDSSF	1	Supervisor state flags: *Hex* *Meaning* 80 Initialization in progress 40 SRJE supervisor monitoring SRJE console 20 SRJE console reader started 10 On—automode Off—no automode 08 Permanent SRJE console error occurred 04 Termination pending 02 Start console reader requested 01 Termination in progress

Figure 2-230 (Part 1 of 4). Format of the SRJE Communications and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	CCTDTIF	1	Test and set interlock flags: *Hex* *Meaning* 80 SRJE console interlock 40 SNA SSB chain interlock 20 SNA SSB availability interlock 10 Processor terminator interlock 08 Processor initiator interlock 04 Reserved 02 Reserved 01 Reserved
0E	CCTDSCI	2	SRJE console interlock owner
10	CCTDSSI	2	SNA SSB chain interlock owner
12	CCTDSAI	2	SNA SSB availability interlock owner
14	CCTDGWE	2	SRJE supervisor's general wait address
16	CCTDQRQ	2	SRJE supervisor's queued request queue
18	CCTDMM1	3	SRJE level 1 message member (SSS)
1B	CCTDMM2	3	SRJE level 2 message member (SSS)
1E	CCTDTRM	1	Termination processing: *Hex* *Meaning* 80 Request shutdown sent 40 Timer set 20 Set timer request 10 End statement processed 08 Work station error at SRJE console 04 Abnormal termination occurred 02 Reserved 01 Reserved
1F	CCTDTAS	1	Total active sessions

Figure 2-230 (Part 2 of 4). Format of the SRJE Communications and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
20	CCTDTAT	1	Total active SRJE tasks
21	CCTDFSN	3	File sequence number
24	CCTDRRP	3	Number of 80-character reader records processed
27	CCTDPRP	3	Number of 132-character print records processed
2A	CCTDPURP	3	Number of 80-character punch records processed
2D	CCTDSRP	3	Number of SNA format records processed
30	CCTDSSB	2	SNA SSB chain pointer
32	CCTDSBF	2	SRJE supervisor SNA buffer address
34	CCTDFIT	2	Format index table address
36	CCTDSBA	2	SRJE status buffer address
38	CCTDCTID	2	SRJE console work station ID
3A	CCTDCIE	2	SRJE console inquiry ECM
3C	CCTDMSZ	1	Saved SRJE main storage size
3D	CCTDTSN	1	Saved SRJE swap count
3E	CCTDFCT	4	Forms control table address
42	CCTDPPI	10	Processor procedure initiator
4C	CCTDPIN	10	Processor initiator
56	CCTDICP	10	Inbound console processor

Figure 2-230 (Part 3 of 4). Format of the SRJE Communications and Control Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
60	CCTDIRP	10	Inbound reader processor
6A	CCTDODP	10	Outbound data processor
74	CCTDPTR	10	Processor terminator
7E	CCTDDII	10	Disk input interface
88	CCTDKDI	10	Keyboard device interface
92	CCTDSDI	10	Syslog device interface
9C	CCTDPDI	10	Printer device interface
A6	CCTDDDI	10	Disk device interface (output)
B0	CCTDLDI	10	Library device interface
BA	CCTDLR1	10	Reserved
C4	CCTDSGD	10	SNA get data management
CE	CCTDSPD	10	SNA put data management
D8	CCTDLR2	10	Reserved
E2	CCTDCSM	10	Console command specification module
EC	CCTDRSM	10	Reader command specification module
F6	CCTDSCK	10	Syntax checker

Figure 2-230 (Part 4 of 4). Format of the SRJE Communications and Control Table

SRJE Function Control Block (FCB)

This 64-byte area contains individual work areas for each SRJE I/O driver containing information unique to each driver (console input, console output, reader input, printer output, punch output).

How to Find

Displacement 02 of the communications and control table (CCT) contains the logical address of the first FCB. Displacement 02 of the current FCB contains the next FCB logical address. The last FCB in the chain is identified by hex 0000 at location 02. Each FCB points to the RU buffer, the device control block, and the PIB if there is one.

Format

Figure 2-231 shows the format of an SRJE function control block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	FCBDECM	2	Function driver ECM
02	FCBDCHN	2	FCB chain pointer
04	FCBDFID	3	Function identification bytes
07	FCBDTCBI	1	Associated TCB identification
08	FCBDTCB	2	Address of associated TCB
0A	FCBDTUB	2	Address of associated TUB

Figure 2-231 (Part 1 of 6). Format of the SRJE Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	FCBDFSF	1	Function state flags: *Hex* *Meaning* 80 Function enabled 40 Function active 20 TUB attached 10 FCB interlocked 08 Supervisory function request queued 04 Function suspended 02 Function termination in progress 01 Function abnormal termination
0D	FCBDFRF	1	Function request flags: *Hex* *Meaning* 80 Function initialization requested 40 Console function waiting for work (console FCB only) 20 SRJE termination requested 10 Increment CCT record counter 08 Function suspend requested 04 SNA suspend requested 02 Function disable requested 01 Function termination requested

Figure 2-231 (Part 2 of 6). Format of the SRJE Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	FCBDLRB	2	Address of logical buffer
10	FCBDLBS	2	Logical buffer size
12	FCBDCIF	1	Command interpreter flags: *Hex* *Meaning* 80 Command continuation expected 40 Command error occurred 20 Reserved 10 EOF command processed 08 Transparent data in file 04 Data file (not command file) 02 Forms control command processed 01 Reserved
13	FCBDSCF	1	SNA data flow control flags: *Hex* *Meaning* 80 Inbound/outbound indicator (on = inbound) 40 Awaiting SNA data flow allocation 20 SNA data flow allocated to this function 10 SNA destination active 08 SNA type 1 FM header 04 SNA default FM header in use 02 SNA RU OK 01 SNA destination error occurred

Figure 2-231 (Part 3 of 6). Format of the SRJE Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
14	FCBDSDC1	1	SNA DTF control byte one save area (values defined in SNA DTF)
15	FCBDSDC2	1	SNA DTF control byte two save area (values defined in SNA DTF)
16	FCBDSDC3	1	SNA DTF control byte three save area (values defined in SNA DTF)
17	FCBDSOP	1	SNA DTF operation code save area (values defined in SNA DTF)
18	FCBDFMS	1	FM header media select byte
19	FCBDFPR	1	FM header properties save area (values defined in type 1 FM header)
1A	FCBDSSB	2	SNA interface SSB address
1C	FCBDSRL	2	SNA record length
1E	FCBDSBA	2	SNA buffer address
20	FCBDSW1	2	SNA interface work area 1
22	FCBDSW2	2	SNA interface work area 2
24	FCBDSW3	2	SNA interface work area 3
26	FCBDSW4	2	SNA interface work area 4

Figure 2-231 (Part 4 of 6). Format of the SRJE Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	FCBDDIF	1	Device interface flags: *Hex* *Meaning* 80 Device interface opened 40 Data end-of-file or end-of-file extent occurred 20 SRJE console allocated to function 10 Transparent data in file 08 Prime first buffer 04 Data present in buffer 02 Normal close requested 01 Device interface error
29	FCBDNLC or	1	Nesting level counter (reader only)
	FCBDLPI	1	Lines per inch (printer only)
2A	FCBDCDI	1	Current device indicator
2B	FCBDRDI	1	Requested device indicator: *Character* *Meaning* W Work station device P Printer device D Fixed disk device L Library source/procedure member device S SNA data stream data format disk device N No device assigned

Figure 2-231 (Part 5 of 6). Format of the SRJE Function Control Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2C	FCBDCPI	1	Characters per inch (printer)
2D	FCBDFS2	1	Function state flag byte 2: *Hex* *Meaning* 80 Function currently is using syslog 40 Work station error at attached work station 20 Function initiated 10 Function owns termination interlock 08 Function owns initiation interlock 04 Reserved 02 Reserved 01 Reserved
2E	FCBDDIB	2	Device interface control block address
30	FCBDLFN or	8	Current/last print/punch/read file name
	FCBTIMER	6	Delay time
38	FCBDPIB or	2	PIB address
38	FCBDTID	2	Reader TUB identification
3A	FCBDSPC or	2	Number of blocks to allocate for disk file
	FCBDLF1	2	Reader library format 1 address
3C	FCBDTW1	2	Transient work area 1
3E	FCBDTW2	2	Transient work area 2

Figure 2-231 (Part 6 of 6). Format of the SRJE Function Control Block

SRJE Horizontal Tab Table (HTT)

The horizontal tab table contains horizontal formatting controls for printer and punch functions. These controls include maximum presentation position, left and right margins, and horizontal tab stops.

How to Find

The PIB contains the address of the horizontal tab table.

Format

Figure 2-232 shows the format of the SRJE horizontal tab table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$SHTT	*	Horizontal tab table
00	$SHTTMPC	1	Page width
01	$SHTTRM	1	Right margin
02	$SHTTLM		Left margin
02	$SHTTTAB		First horizontal tab stop

*Table length is variable dependent on number of tab stops.

Figure 2-232. Format of the SRJE Horizontal Tab Table

SRJE Local Area

This 256-byte area is used for communication between the SRJE procedures and the SRJE supervisor program. Figure 2-233 shows the format of the SRJE local area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LADDULA	232	Beginning of unused local area
E8	LADDPHL	8	Phone list for autocall
F0	LADDEMM	4	Error message MIC
F4	LADDSRS	2	SRJE supervisor's region size
F6	LADDWSI	2	SRJE console work station ID
F8	LADDRQD	1	Request disconnect parameter (Y or N)
F9	LADDLIN	1	Line number for COMM statement
FA	LADDAUT	1	Automode or no auto (automode—A, attended mode—N)
FB	LADDRSV	5	Reserved

Figure 2-233. Format of the SRJE Local Area

SRJE Print/Punch Information Block (PIB)

This 80-byte area is a work area for the SRJE print and punch functions containing parameters for PRINTER and IMAGE statement processing. The PIB also contains horizontal and vertical tab table addresses.

How to Find

Label FCBDPIB in the SRJE function control block contains the address of the PIB.

Format

Figure 2-234 shows the format of the SRJE print/punch information block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	PIBDVTT@	2	Vertical tab table address
02	PIBDHTT@	2	Horizontal tab table address
04	PIBDCID	2	Current printer device ID
06	PIBDRID	2	Requested printer device ID
08	PIBDLFN	4	Local forms name
0C	PIBDCPP	1	Current printer priority
0D	PIBDRPP	1	Requested printer priority
0E	PIBDFLG	1	PIB flag byte: *Hex* *Meaning* 80 Spooling active on current printer device 40 Spooling active on requested printer 20 PDIR forms name resolved 10 Reserved 08 PIB interlocked 04 Reserved 02 DEFER (1—yes, 0—no) 01 SPOOL (1—yes, 0—no)
0F	PIBDPID	1	PDIR identifier
10	PIBDPD	8	Date
18	PIBDPT	8	Time
20	PIBDPFN	8	Forms name
28	PIBDPFCB	8	FCB name
30	PIBDPTN	8	Train name (print belt image member name)

Figure 2-234 (Part 1 of 2). Format of the SRJE Print/Punch Information Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
38	PIBDPAC	8	Additional copies
40	PIBDPVIO	8	Volume of I/O
48	PIBDPJN	8	Job name

Figure 2-234 (Part 2 of 2). Format of the SRJE Print/Punch Information Block

SRJE Session Status Block (SSB)

This 92-byte area contains the SNA DTF, FM header stacks, and other status relative to the logical unit-logical unit session.

How to Find

Label CCTDSSB in the communications and control table and label FCBDSSB in the function control block contain the logical address of the SSB.

Format

Figure 2-235 shows the format of the SRJE session status block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SSBDDTF	34	SNA DTF
22	SSBDECM	2	SSB ECM
24	SSBDCHN	2	SSB chain field

Figure 2-235 (Part 1 of 4). Format of the SRJE Session Status Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
26	SSBDFGA	1	Logical unit flag byte 1 (allocate): *Hex* *Meaning* 80 Session active 40 Send state 20 Receive state 10 Contention state 08 Allocate/deallocate interlocked 04 Reserved 02 Shutdown complete sent 01 Bid accepted
27	SSBDFGS	1	Logical unit flag byte 2 (states): *Hex* *Meaning* 80 Inchain state 40 In bracket state 20 PEND.INB (+RSP → INB, -RSP → BETB) 10 PEND.BETB.RSP (+RSP → BETB, -RSP → INB) 08 PEND.BETB (EC → BETB) 04 SRJE is bracket owner 02 Host is bracket owner 01 Reserved
28	SSBDFGR	1	Logical unit flag byte 3 (event/request): *Hex* *Meaning* 80 Signal received 40 Get issued for a response 20 Shutdown received 10 Change direction sent/received 08 Expedited response outstanding 04 Send signal 02 Send shutdown complete 01 Send request shutdown

Figure 2-235 (Part 2 of 4). Format of the SRJE Session Status Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
29	SSBDFGF	1	Logical unit flag byte 5 (FM stack management): *Hex* *Meaning* 80 Reserved 40 Reserved 20 Type 1 function management header chain being processed 10 Positive response sent 08 Negative response sent 04 Positive response received 02 Negative response received 01 Function management header received
2A	SSBDFGE	1	Logical unit flag byte 4 (Bind, etc): *Hex* *Meaning* 80 Inbound compression allowed 40 Reserved 20 Reserved 10 Reserved 08 Peek outstanding (get needed) 04 Nonsupervisory check request issued 02 FCB found (for peek request) 01 FCB not found (for peek request)
2B	SSBDFAL	2	Address of FCB allocated to this logical unit
2D	SSBDFAW	2	Address of FCB awaiting this logical unit
2F	SSBDFCS	2	FCB save area (for nonsupervisory check requests)
31	SSBDAIO	2	Allocate/deallocate interlock owner (FCB address)
33	SSBDDIO	2	SNA DTF interlock owner (FCB address)
35	SSBDSTP	2	Current stack pointer

Figure 2-235 (Part 3 of 4). Format of the SRJE Session Status Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
37	SSBDSTS	6	Send stack (2-byte top entry of stack, 2-byte middle entry of stack, and 2-byte bottom entry of stack)
3D	SSBDSTR	6	Receive stack (2-byte top entry of stack, 2-byte middle entry of stack, and 2-byte bottom entry of stack)
43	SSBDSTS@	2	Send stack address
45	SSBDSTR@	2	Receive stack address
47	SSBDCFM	6	Current type 1 function management header
4D	SSBDPKB	6	Peek buffer
53	SSBDECM@	2	Address of ECM contained in this SSB (used by SRJE supervisor)
55	SSBDDTF@	2	Address of DTF contained in this SSB (used by SRJE supervisor)
	or SSBDSSB@	2	Address of this SSB
57	SSBDWKA	2	Work area A
59	SSBDWKB	2	Work area B
5B	SSBDRSV	5	Reserved

Figure 2-235 (Part 4 of 4). Format of the SRJE Session Status Block

SRJE Vertical Tab Table (VTT)

The vertical tab table contains vertical formatting controls for printer and punch functions. These controls include maximum presentation position (for example, page size), top margin, bottom margin, and vertical tab stops.

How to Find

The PIB contains the address of the vertical tab table.

Format

Figure 2-236 shows the format of the SRJE vertical tab table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$SVTT	*	Vertical tab table
00	$SVTTMPL	1	Page length
01	$SVTTBM	1	Bottom margin
02	$SVTTTM		Top margin
02	$SVTTTAB		First vertical tab stop

*Table length is variable, dependent on number of tab stops.

Figure 2-236. Format of the SRJE Vertical Tab Table

SSP-ICF BSC Interrupt Handler Active Session Table

The SSP-ICF BSC interrupt handler active session table is pointed to by the SSP-ICF BSC interrupt handler work area. Each entry in the table consists of a one byte hex representation of the active session name and one reserved byte. There can be a maximum of 16 entries in the table. The end of the SSP-ICF BSC interrupt handler active session table is identified with hex FF.

SSP-ICF BSC Interrupt Handler Remote ID Table

The SSP-ICF BSC interrupt handler remote ID table is pointed to by the SSP-ICF BSC interrupt handler work area. Each entry in the table is 16 bytes and consists of one byte that defines the length of the remote ID, and the remote ID itself. The remote ID can be a maximum of 15 characters. Unused bytes in the 15-character remote ID are zero-filled. There can be a maximum of 56 entries in the SSP-ICF BSC interrupt handler remote ID table. End of table is identified by hex FFFF.

SSP-ICF BSC Interrupt Handler Work Area

This 256-byte area is used by the interrupt handler to save all communication line status information. One work area is allocated for each SSP-ICF subsystem that is enabled.

How to Find

The line work area conversion table in module #IBHL at label LWATBL contains the address of the work area for each communications line.

Format

Figure 2-237 shows the format of the SSP-ICF BSC interrupt handler work area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	LMPBUBST	32	Multipurpose BSC unit block
The following bytes contain the BSC line control characters:			
20	ACK0	2	ACK0
22	ACK1	2	ACK1
24	DLESTX	2	DLE STX
26	SYN	1	SYN
27	SYNEOT	1	SYN EOT
28	WACK	2	WACK
2A	TTD or ENQ	2 2	TTD (STX ENQ) ENQ
2C	RVI	2	RVI
2E	DISC	2	DISC

Figure 2-237 (Part 1 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	ETB	1	ETB
31	NAK	1	NAK
32	BLNK	1	BLANK
The following bytes contain the SVC log trace parameter list for IOB op ends:			
33	TRIDI	1	Interrupt handler trace ID
34	TRMSKI	1	Op end mask and line number (hex F0—op end mask value)
35	TRSNSI	1	IOB sense byte
36	TRQBI	1	IOB Q-byte
37	TRRBI	1	IOB R-byte
38	TRFXMIT	3	First 3 bytes transmitted
3B	TRLXMIT	3	Last 3 bytes transmitted
3E	TRFRCVD	2	First 2 bytes received
40	TRLRCVD	2	Last 2 bytes received
The following bytes contain the SVC log trace parameter list for subsystem requests:			
42	TRIDS	1	Interrupt handler trace ID
43	TRMSKS	1	Subsystem request mask and line number (hex C0—subsystem request mask value)
44	TROPC	1	Op code
45	TROPM	1	Op code modifier

Figure 2-237 (Part 2 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
46	TRLBFRL	2	Line buffer length
48	TRLBFR@	2	Line buffer address
4A	TRLWA@	2	Line work area address
4C	TRSSNA	1	Session address
4D	TRBUB@	2	BSC unit block address
4F	TRXSUB@	2	Translated session unit block address
The following bytes contain the BSC job counters:			
51	BSLECSIO	1	Start of the binary synchronous communications job counters parameter list
52	BSLTBTFJ	1	Number of text blocks transmitted
53	BSLTBRFJ	2	Number of text blocks received
55	BSLNAKFJ	2	Number of negative acknowledgements received
57	BSLDCKFJ	2	Number of data checks
59	BSLFARFJ	2	Number of forward aborts received
5B	BSLABTFJ	2	Number of aborts received
5D	BSLACTFJ	2	Number of adapter checks during transmission
5F	BSLSCRFT	2	Number of adapter checks while receiving
61	BSLIRRFJ	2	Number of invalid responses received
63	BSLEAAFJ	2	Number of inquiries received as affirmative acknowledgement

Figure 2-237 (Part 3 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
65	BSLLDEFJ	2	Number of lost data errors
67	BSLDTOFJ	2	Number of disconnect time-outs
69	BSLRTOFJ	2	Number of receive time-outs
6B	BSLTWTFJ	2	Number of transmission time-outs
The following bytes contain the BSC error history data:			
6D	BSLQBYTE	1	Command code
6E	BSLRBYTE	1	Command modifier
6F	BSLSENSE	2	Reserved and sense information byte 1
71	BSLERCNT	1	Error retry count
72	BSLBSCCC	1	BSC completion code
73	BSLTERAD	2	Terminal address
The following bytes contain the communication parameter list for logging:			
75	CPLFLADD	2	Address of the parameter list which contains the data to be logged
77	CPLFLLIN	1	Communications line number (UDT unit address)
78	CPLFLFLG	1	Flag byte: *Hex* *Meaning* 80 Update the counter table 40 Update the error history table 01 Error occurred during logging process
79		7	Reserved

Figure 2-237 (Part 4 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following bytes contain the delay and monitor buffers:			
80	DLYBFRST	8	Delay buffer
88	MTRBFRST	24	Monitor buffer
The following bytes contain a working copy of the BSC IOB:			
A0	WIOBECM	1	Event control mask
A1	WIOBHCMP	1	Completion code (hardware)
A2	WIOBPROT	1	Protocol byte
A3	WIOBQ	1	Command byte (Q-code)
A4	WIOBR	1	Command modifier byte (R-code)
A5	WIOBADR	1	Multipoint tributary address
A6	WIOBSTAR	2	Start data address
A8	WIOBRLN	2	Data buffer length (receive)
AA	WIOBSNS1	1	First sense byte
AB	WIOBSNS2	1	Second sense byte
AC	WIOBCAR	2	Current buffer address
AE	WIOBRES	2	Reserved
B0	WIOBTCB	2	TCB address
B2	WIOBQHDR	1	Queue header
B3	WIOBLDEF	1	Line definition
B4	WIOBTLN	2	Data buffer length (transmit)
	or		
	WIOBWCNF	1	Wrap configuration byte

Figure 2-237 (Part 5 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
B6	WIOBDUM2	2	Reserved
B8	WIOBDAT	2	Data buffer address
BA	WIOBNXT	2	Chain to next IOB
BC	WIOBDBL	2	Data buffer length
BE	WIOBFLA	1	Flag byte
BF	WIOBWKA	2	Pointer to BSC work area
C1	WIOBCMP	1	IOB completion code (logical)
C2	WIOBERC	1	Error retry count
C3	WIOBRSV	1	Reserved
C4	WIOBDLY	2	Delay time
C6	WIOBBUB	2	Associated BSC unit block address
The following bytes contain the line fields and flags:			
C8	DLYBFR@	2	Address of delay buffer
CA	MTRBFR@	2	Address of monitor buffer
CC	DLYIOB@	2	Delay IOB address
CE	CURIOB@	2	Current IOB address
D0	LSTIOB@	2	Last IOB address
D2	FPRIOB@	2	First process IOB address
	or		
	RIDIOB@	2	RID IOB address
D4	LOGPL@	2	Address of parameter list for logging
D6	PBUBQHDR	2	Pending BSC unit block queue header

Figure 2-237 (Part 6 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
D8	ASTD	3	Active session table descriptor
	or		
D8	AST@	2	If subsystem is defined to have multiple session addresses (multipoint line), this label contains a pointer to an active session table.
	or		
D8	RID@	2	If subsystem is defined to have multiple switched line remote IDs, this label contains a pointer to a table of remote IDs.
	or		
D8	ASTSSNA	2	Zero
	and		
DA	ASTPRTC	1	Appended return code
DB	EXTLNG	2	Length of line work area extension area
DD	SSTCB@	2	TCB address of subsystem
DF	XSCR@	2	Address of extended subsystem configuration record
E1	BUB@	2	Address of active BSC unit block
E3	OPC	1	Op code for scan
E4	SSNA	1	Active session address
E5	SCNBUB@	2	Results of scan
E7	DLYCNT	2	Delay count work area
E9	SWARR	2	Switched line ARR save area

Figure 2-237 (Part 7 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
EB	MODE	1	Mode byte: *Hex* *Meaning* 80 Mode equals master 40 TTD was transmitted 20 A forward abort is in process 08 Mode equals slave 04 WACK was transmitted 02 Incomplete message flag 01 An RVI was sent last
EC	STATE	1	State byte: *Hex* *Meaning* 80 State equals monitor 08 State equals text
ED	ACKSWTCH	1	Which ACK to send/receive switch
EE	PATHCTL	1	Flag byte for path control: *Hex* *Meaning* 80 Wait for IOB/BSC unit block control block to op end 40 BSC line is active 20 Use transmit/receive init as op 10 Return code is pending 08 Execute HW—first time, SW line 04 LC is waiting for a subsystem get op 02 Init is required 01 Reset line state post flag

Figure 2-237 (Part 8 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
EF	LCFLAG1	1	Flag bits for LC logic flow: *Hex* *Meaning* 80 IOB was cancelled 40 Timer is active 20 Transmit an EOT next 10 Transmit a disconnect 08 STX was received 04 Abort in progress 02 Schedule receive initial delayed 01 Receive initial delayed active
F0	HNINTARR	2	Waiting subroutines ARR save area
F2	WAITARR	2	Return address of waiting routine
F4	WAITCB@	2	Control block address being waited for
F6	PATHCTL2	1	Path control flags: *Hex* *Meaning* 80 Post all BUBs until start monitor received 40 A general poll was received 20 Special flag for abort received during ERP with BUB queued 10 Flag to test status of autocall 08 Use prepared IOB for ERP
F7	MLCALB@	2	MLCA load buffer address

Figure 2-237 (Part 9 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
F9	MLCASTAT	1	MLCA status byte: *Hex* *Meaning* 80 MLCA active 40 MLCA permanent controller check occurred 20 Line is enabled 10 Disable this line 08 Autocall is active 04 Data set ready has occurred 01 Autocall called
FA	MLCAERCT	2	MLCA controller check count
FC		4	Reserved

Figure 2-237 (Part 10 of 10). Format of the SSP-ICF BSC Interrupt Handler Work Area

SSP-ICF Communications Area

This 64-byte area is built in the System/34 nucleus by MSIPL when SSP-ICF is configured on the system. The SSP-ICF communications area contains common information required by all SSP-ICF subsystems.

How to Find

The system communications area (SCA) contains a pointer to the SSP-ICF communications area (SCADICS@).

Format

Figure 2-238 shows the format of the SSP-ICF communications area.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ICADLSUB	2	Last session unit block ID used
02	ICAD#2KP	1	Size of SSP-ICF common queue space in 2K pages
03	ICADSSQS	2	Address of SSQS queue header
05	ICADCMTR	1	SSP-ICF trace indicator: *Hex* *Meaning* 80 Log trace active for intra 40 Reserved 20 Reserved 10 Reserved 08 Line 4 log trace active 04 Line 3 log trace active 02 Line 2 log trace active 01 Line 1 log trace active
06	ICADTRSV	3	Reserved
09	ICAD3270	2	Address of 3270 RIT information control block (RICB): *Hex* *Meaning* FFF8 High order RICB address bits 0004 Reserved 0002 Reserved 0001 RICB interlock
0B	ICAD0001	2	Binary constant of 1
0D	ICADTRA@	2	Address of ICFDM's trace subroutine
0F	ICADTRST	16	ICFDM's trace subroutine when log trace or extended trace is not active
1F	ICADICSV	12	Reserved

Figure 2-238 (Part 1 of 2). Format of the SSP-ICF Communications Area

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2B	ICADXTCB	2	TCB address of SSP-ICF subsystem task that owns SSP-ICF transient area
2D	ICADXFLG	1	SSP-ICF transient area flag byte: *Hex* *Meaning* 80 SSP-ICF transient area is busy 40 Wait on SSP-ICF transient wait request 20 Wait on SSP-ICF transient area 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
2E	ICADICDE	2	Storage address of #ICDE
30	ICADRESV	16	Reserved

Figure 2-238 (Part 2 of 2). Format of the SSP-ICF Communications Area

SSP-ICF Control RIB Values

The subroutines in Figure 2-239 are located in module #ICCNT.

RIB	*Function*	*Subroutine Name*
00	Wait	ICFWAIT
01	Post link control	ICFPOSTI
02	Post user	ICFPOSTU
03	Program start	ICFPS
04	Move XSUB to SUB	ICFMXR
05	Move SUB to XSUB	ICFMRX

Figure 2-239 (Part 1 of 2). SSP-ICF Control RIB Values

RIB	*Function*	*Subroutine Name*
06	Move data from real to translated	ICFMVD
07	Global assign	ICFGA
08	Buffer assign	ICFBA
09	Global free	ICFGF
0A	Buffer free	ICFBF
0B	Build EIB block	ICFBEIB
0C	New transient request	ICFXNT
0D	New transient request with address	ICFXNTW@
0E	Transient calling transient	ICFXCX
0F	Transient calling transient with address	ICFXCXW@
10	Transient exit	ICFXEX
11	Transient exit with address	ICFXEXW@
12	Transient wait	ICFXWR
13	Trace request	ICFTRACE
14	Procedure start with data greater than 120 bytes	ICFSPS

Figure 2-239 (Part 2 of 2). SSP-ICF Control RIB Values

SSP-ICF Move Variable Length Data Parameter List

This SSP-ICF move variable length data parameter list is a 3-byte area. This parameter list is used by SSP-ICF subsystems to call the SSP-ICF control move variable length data subroutine. This subroutine moves variable length data (1 to 256 bytes) from real storage to translated storage.

How to Find

When an SSP-ICF subsystem calls the ICSMVD subroutine, register 2 contains the address of the parameter list.

Format

Figure 2-240 shows the format of the SSP-ICF move variable length data parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ICMDL	1	Length of data to be moved
01	ICMRD@	2	Address in real storage data is moved from

Figure 2-240. Format of the SSP-ICF Move Variable Length Data Parameter List

SSP-ICF Program Start Parameter List

This 52-byte area is the parameter list used by SSP-ICF subsystems when calling the SSP-ICF program start subroutine in SSP-ICF control.

How to Find

On entry to the SSP-ICF program start subroutine, register 2 contains the address of the SSP-ICF program start parameter list.

Format

Figure 2-241 shows the format of an SSP-ICF program start parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ICPFLAG1	1	Flag byte: *Hex* *Meaning* 80 Start procedure with priority 40 Do not check password security 20 Security check only procedure start 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
01	ICPPROC@	2	Address of procedure and data/parameter buffer
03	ICPPLNG	1	Buffer length
04	ICPUSEID	8	User ID
0C	ICPLIBR	8	User library name
14	ICPPSWD	4	Password
18	ICPRESV1	8	Reserved area for command processor
20	ICPLNGCP or ICPSUBRT	1 2	Length of input to command processor SUB return code

Figure 2-241 (Part 1 of 2). Format of the SSP-ICF Program Start Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
22	ICPXSCR@	2	Extended subsystem configuration record address
24	ICPXSUB@	2	Translated session unit block address
26	ICPHSLP@	2	Program start work area address for halt syslog
28	ICPFAP@	2	First accept parameter address
2A	ICPRETCD	2	Return code: *Hex* *Meaning* 44 Buffer length greater than 120 43 Too many active sessions now 42 Invalid user ID (bad syntax) 41 Assign/free failure 40 Successful scheduling of procedure start
2C	ICPRESV2	8	Reserved area in subsystem part

Figure 2-241 (Part 2 of 2). Format of the SSP-ICF Program Start Parameter List

SSP-ICF Subsystem Configuration Record

The SSP-ICF subsystem configuration records are saved as object library members in the user specified library. Each member varies in length, depending on the subsystem type.

How to Find

Use the LISTLIBR command to obtain a hexadecimal listing of the configuration record. You must know both the library member name and the library name for each configuration record.

Format

Figure 2-242 shows the format of the SSP-ICF subsystem configuration record.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to all subsystems:			
00	CNIDINFO	1	Flag bits for subsystem: *Hex* *Meaning* 80 Error exists in data set 40 Not used 20 Not used 10 Not used 08 Not used 04 Not used 02 Not used 01 Not used
01	CNIDCQSZ	1	Common queue space in 2K pages
02	CNIDSBID	1	Task ID for the subsystem (a complete list of task IDs is in the task control block (Figure 2-236))
03	CNIDQSSZ	1	Size of SSQS in 2K pages
04	CNIDCNFG	1	Flag byte: *Hex* *Meaning* 80 Subsystem is swappable
05	CNIDREL#	1	Release number of last update
06	CNIDCHEK	1	Check byte (summation of CNIDINFO, CNIDCQSZ, CNIDSBID, CNIDQSSZ, and CNIDCNFG)

Figure 2-242 (Part 1 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
07	CNIDCNTR	2	Counter for integrity
09	CNIDXTRA	6	Unused
0F	CNIDENTY	1	'I' identifier for SSP-ICF module
10	CNIDLCNM	8	Location name
18	CNLINTRA		Length of intra configuration record
The following fields are common to all communications subsystems:			
18	CNIDMXRL	2	Maximum user record length
1A	CNIDST@	1	Station address (address of this line on a multi-point network)
	or CNIDLS@	1	Local (SDLC) station address
1B	CNIDLTYP	1	Line type byte (shared with switch type): *Hex* *Meaning* 0C Switched point-to-point line 08 Multipoint line 04 Nonswitched point-to-point line
	or CNIDSTYP	1	Switch type byte (shared with line type): *Hex* *Meaning* 80 Reserved 40 Manual call 20 Manual answer 10 Auto answer

Figure 2-242 (Part 2 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are common to the BSC subsystems:			
1C	CNIDBFLG	1	BSC flag byte: *Hex* *Meaning* 80 On—use ASCII code (N/A IMS) 40 Not used 20 Multiple session subsystem: On—CICS and CCP Off—BSCEL and IMS 10 On—transparency (N/A IMS) 08 Reserved 04 Refresh phone list
1D	CNIDBWTM	2	Wait time (always 999 for IMS)
1F	CNIDBLID	15	Local switched ID (N/A to IMS) (for CCP, the requested local ID)
2E	CNIDBRID	15	Remote switched ID (N/A to IMS) (N/A to BSCEL if multiple RIDS)
The following fields are for the BSC IMS/IRSS subsystem:			
1F	CNIDMPRC	8	Name of procedure for inactive destination file
27	CNIDMLIB	8	Library that contains procedure
2F	CNIDMRPT	2	Remote physical terminal
31	CNIDMPT1	2	Local physical terminal 1

Figure 2-242 (Part 3 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
33	CNIDMPT2	2	Local physical terminal 2
35	CNIDMPT3	2	Local physical terminal 3
37	CNIDMPT4	2	Local physical terminal 4
39	CNIDMPT5	2	Local physical terminal 5
3B	CNIDMPT6	2	Local physical terminal 6
3D	CNIDMPT7	2	Local physical terminal 7
3F	CNIDMPT8	2	Local physical terminal 8
41	CNIDMPT9	2	Local physical terminal 9
43	CNIDMPTA	2	Local physical terminal 10
45	CNIDMPTB	2	Local physical terminal 11
47	CNIDMPTC	2	Local physical terminal 12
49	CNIDMPTD	2	Local physical terminal 13
4B	CNIDMPTE	2	Local physical terminal 14
4D	CNIDMPTF	2	Local physical terminal 15
4F	CNLIMS		Length of IMS/IRSS configuration record

Figure 2-242 (Part 4 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

The following fields are for BSCEL subsystems:

3D	CNIDQFLG	1	BSCEL flag byte: *Hex* *Meaning* 80 Not used 40 On—multiple remote IDs 20 Partner: On—ATTR Off—Norm 10 ITB mode 08 3740 multiple files 04 Not used 02 Truncation selected 01 Compression selected 00 No compression/truncation
3E	CNIDQRCS	1	Record separator character
3F	CNIDQBLK	2	Block length
41	CNIDQPHL	8	Phone list
49	CNLBSCEL		Length of BSCEL configuration record

The following fields are common to BSC CICS and BSC CCP subsystems:

3D	CNIDCPF1	1	Pool address byte 1: *Hex* *Meaning* 80 Address AA in the pool 40 Address BB in the pool 20 Address CC in the pool 10 Address DD in the pool 08 Address EE in the pool 04 Address FF in the pool 02 Address GG in the pool 01 Address HH in the pool

Figure 2-242 (Part 5 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3E	CNIDCPF2	1	Pool address byte 2: *Hex* *Meaning* 80 Address II in the pool 40 Address JJ in the pool 20 Address KK in the pool 10 Address LL in the pool 08 Address MM in the pool 04 Address NN in the pool 02 Address OO in the pool 01 Reserved
3F	CNIDCDF1	1	Defined address byte 1: *Hex* *Meaning* 80 Address AA is defined 40 Address BB is defined 20 Address CC is defined 10 Address DD is defined 08 Address EE is defined 04 Address FF is defined 02 Address GG is defined 01 Address HH is defined
40	CNIDCDF2	1	Defined address byte 2: *Hex* *Meaning* 80 Address II is defined 40 Address JJ is defined 20 Address KK is defined 10 Address LL is defined 08 Address MM is defined 04 Address NN is defined 02 Address OO is defined 01 Incoming address defined

Figure 2-242 (Part 6 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following fields are for BSC CICS subsystems:			
41	CNIDCPRC	8	Name of procedure for inactive destination file
49	CNIDCLIB	8	Library that contains procedure
51	CNIDCFLG	1	Flag byte (not used)
52	CNIDCPHL	8	Phone list
5A	CNLCICS		Length of CICS configuration record
The following fields are common for BSC CCP subsystems:			
41	CNID3FLG	1	Flag byte: *Hex* *Meaning* 80 On—sign on at enable Off—sign on at acquire 40 On—queuing yes
42	CNID3LID	15	Requester local ID
51	CNID3PAS	6	CCP password
57	CNID3DME	6	Data mode escape sequence
5D	CNID3DHM	1	Disp of unsolicited host messages: *Hex* *Meaning* 80 Display at system console 40 Log to history file only 00 Ignore if bits 0 and 1 are off

Figure 2-242 (Part 7 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5E	CNID3PHL	8	Phone list
66	CNLCCP		Length of CCP configuration record
The following fields are common to SNA subsystems:			
1C	CNIDSDLC	1	Number of 2K pages for SDLC buffers
1D	CNIDS#XB	1	Number of transmit buffers
	or		
	CNIDS#XP	1	Number of transmit pages (SPS)
1E	CNIDS#RB	1	Number of receive buffers (calculated)
	or		
	CNIDS#RP	1	Number of receive pages (SPS)
1F	CNIDSXID	3	Local ID (XID) (SNUF only)
22	CNIDSM#S	1	Maximum number of active sessions (total not to exceed 100 for SPS)
23	CNIDSRPC	1	Maximum receive pacing count
The following fields are for SNA upline facility (SNUF) subsystems:			
24	CNIDFFLG	1	Flag byte (not used)
25	CNIDFPRC	8	Name of procedures for inactive destination
2D	CNIDFLIB	8	Library that contains procedure
35	CNIDFAID	8	Application ID

Figure 2-242 (Part 8 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3D	CNIDFHNM	1	Host name (default):

Hex	Meaning
80	Other
40	IMS
20	CICS
10	Not used
08	Not used
04	Not used
02	Not used
01	Extended configuration record

3E	CNIDFLLN	8	Logical unit configuration library name
46	CNIDFLMN	8	Logical unit configuration member name

The following fields are for SNA upline facility (SNUF) subsystems and SNA 3270 device emulation subsystems:

B4	CNIDOHS#	1	Number of table entries
B5	CNIDOHSL	1	Leftmost byte of table

The following table contains 32 entries. Each entry is 32 bytes in length.

00	CNIDOFLG	1	Flag byte (hex 01—location activated)
01	CNIDORLN	8	Remote location name

Figure 2-242 (Part 9 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	CNIDOSID	2	System services control point ID
0B	CNIDOPHL	8	Phone list name
13	CNIDORST	13	Reserved
04B5	CNLSNUF		Length of SNA upline configuration record

The following fields are for SNA peer subsystem:

24	CNIDP#ST	1	Number of stations in dictionary
25	CNIDPRPC	1	Receive pacing count
26	CNIDPFLG	1	Flag byte:

Hex	Meaning
80	On—primary Off—secondary
40	Auto disconnect
20	Configuration stays operational
10	Six sector format (internal)
08	Not used
04	Not used
02	Not used
01	Not used

27	CNIDVIPL	2	Variable interval polling value
29	CNIDPRES	4	Reserved

Figure 2-242 (Part 10 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description

Node dictionary

The following table contains 32 entries. Each entry is 40 bytes in length.

2D	CNIDPSTC	1	Station flag byte:

Hex	*Meaning*
80	On—primary Off—secondary
40	Auto disconnect
20	Reserved
10	Reserved
08	Reserved
04	Reserved
02	Reserved
01	Location activated

2E	CNIDPLOC	8	Remote location name
36	CNIDPST@	1	SDLC station address
37	CNIDPMXA	1	Maximum number of sessions
38	CNIDPMXP	1	Pre-established sessions
39	CNIDSPOL	1	Slow poll value (0—no poll)
3A	CNIDMLOC	1	Maximum number of I-frames
3B	CNIDPST1	1	Flag byte 1:

Hex	*Meaning*
80	Duplicate address
40	Duplicate remote name

3C	CNIDPPHL	8	Phone list

Figure 2-242 (Part 11 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
44	CNIDPRS1	17	Reserved
	CNLSPS		Length of SNA peer subsystem configuration record

The following fields are for BSC 3270 device emulation subsystem:

1D	CNID7WTM	2	Wait time
1F	CNID7TPR	8	Printer translate table name
27	CNID7TWS	8	Work station translate table name
2F	CNID7TTL	8	Translation table library
37	CNID7LBL	2	Line buffer length

The following table contains 32 entries. Each entry is 5 bytes in length.

38	CNID7DAL	1	Leftmost byte of table
00	CNID7DID	2	Device ID
02	CNID7DTP	1	Device type and attributes:

Hex	*Meaning*
80	Not used
40	Not used
20	Not used
10	Not used
08	3277
04	UC/LC
02	3288
01	Program

Figure 2-242 (Part 12 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	CNIM7XTA	2	Not used
D8	CNLB3270		Length of BSC 3270 device emulation configuration record
The following fields are for SNA 3270 device emulation subsystem:			
24	CNIDOTPR	8	Printer translate table name
2C	CNIDOTWS	8	Work station translate table name
34	CNIDOTTL	8	Translation table library
3C	CNIDORS1	1	Reserved
3D	CNIDOAT1	1	Attributes (hex 01—extended configuration record)
3E	CNIDOLLN	8	Logical unit configuration library name
46	CNIDOLMN	8	Logical unit configuration member name
4E	CNIDORS2	6	Reserved
The following table contains 16 entries. Each entry is 6 bytes in length.			
54	CNIDODAL	1	Leftmost byte of table
00	CNIDOLU@	1	Logical unit address
01	CNIDODID	2	Device ID
03	CNIDODTP	1	Device type and attributes: *Hex* *Meaning* 08 3277 04 UC/LC 02 3288 01 Not used

Figure 2-242 (Part 13 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	CNIM0XTA	2	Not used
B5	CNLS3270		Length of SNA 3270 device emulation configuration record
The following fields are for SNA upline facility (SNUF) subsystems and SNA 3270 device emulation subsystems:			
B4	CNIDOHS#	1	Number of table entries
B5	CNIDOHSL		Leftmost byte of table
The following table contains 32 entries. Each entry is 32 bytes in length.			
00	CNIDOFLG	1	Flag byte (hex 01—location activated)
01	CNIDORLN	8	Remote location name
09	CNIDOSID	2	System services control point ID
0B	CNIDOPHL	8	Phone list name
13	CNIDORST	13	Reserved
The following fields are for the finance subsystem:			
24	CNIDZ#ST	1	Number of stations in dictionary
25	CNIDZTLS	2	Total number of logical sessions
27	CNIDZRES	6	Reserved
Node dictionary:			
The following table contains 16 entries. Each entry is 32 bytes in length.			
2D	CNIDZNOD		Leftmost byte of table

Figure 2-242 (Part 14 of 15). Format of the SSP-ICF Subsystem Configuration Records

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CNIDZSTC	1	Station flag byte: *Hex* *Meaning* 80 Delayed entry 40 Automatic recovery 20 Activate system monitor 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Location activated
01	CNIDZLOC	8	Remote location name
09	CNIDZST@	1	SDLC station address
0A	CNIDZLWS	1	Maximum number of logical work station sessions
0B	CNIDZXID	3	Exchange ID
0E	CNIDZST1	1	Flag byte 1: *Hex* *Meaning* 80 Duplicate address 40 Duplicate remote name 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
0F	CNIDZRS1	17	Reserved
2D	CNLSFS		Length of finance subsystem configuration record

Figure 2-242 (Part 15 of 15). Format of the SSP-ICF Subsystem Configuration Records

SSP-ICF Wait List

This 18-byte area is passed by the subsystem to the SSP-ICF wait subroutine in SSP-ICF control. The SSP-ICF wait subroutine will pass control to the address specified in the SSP-ICF wait list for the operation that is satisfied by the wait.

How to Find

When the SSP-ICF wait subroutine in SSP-ICF control is called, register 1 contains the address of the leftmost byte of the SSP-ICF wait list.

Format

Figure 2-243 shows the format of the SSP-ICF wait list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	ICWNSUB@	2	Address if SSP-ICF data management post
02	ICWPSSC@	2	Address of successful program start
04	ICWPSNS@	2	Address if program start not successful
06	ICWIHSC@	2	Address if good interrupt handler post
08	ICWIHNS@	2	Address if other interrupt handler post
0A	ICWNBLE@	2	Address if subsystem enabled
0C	ICWDBLE@	2	Address if subsystem disabled
0E	ICWOTHR@	2	Address if event not one of the other (above) events in the wait list (register 1 posted with a value greater than hex 13)
10	ICWXSUB@	2	Address of translated session unit block (this is the address of the XSUB if the op-end involves an associated XSUB)

Figure 2-243. Format of the SSP-ICF Wait List

Status Queue Element

A status queue element (SQE) is built for each terminal unit block with an active status. The elements are chained together by field STATNEXT within the SQE.

How to Find

The 16-byte status queue element is pointed to from field QHDSQE to the queue header area located in the fixed nucleus at location hex 0100.

Format

Figure 2-244 shows the format of a status queue element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	STATNEXT	2	Chain pointer to next element
02	STATTUB@	2	Terminal unit block address of status station
04	STATOPC	1	Status op-code field
05	STATPNTR	3	Status pointer field
08	STATRESV	4	Save area for status modules
0C	STATELEN	2	Length of extension (0 if no extension)
0E	STATEXT@	2	Address of extension

Figure 2-244. Format of a Status Queue Element

Figure 2-245 shows the format of a status queue element extension for STATUS PRT.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	STATPTOP	4	Xsss address of print file at top of display
04	STATPBOT	4	Xsss address of print file at bottom of display
08	STATPLNG	8	Length of SQE extension

Figure 2-245. Format of a Status Queue Element Extension

Subsystem Control Table (SCT)

This 48-byte area contains information created by the ENABLE procedure when an SSP-ICF subsystem configuration is enabled. A subsystem control table exists for each active SSP-ICF subsystem configuration.

How to Find

Subsystem control tables are in real addressable main storage and are chained together. Field QHDSCT in the system queue header, fixed nucleus location 0100, contains the address of the first subsystem control table in the chain. Field SCTDFCHN in the subsystem control table points to the next subsystem control table in the chain. End of chain is designated by hex 0000.

Field XSCDSCT@ in the extended subsystem configuration record contains the address of the corresponding subsystem control table.

Format

Figure 2-246 shows the format of the subsystem control table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SCTDSBID	1	TCBTSKID of subsystem task
01	SCTDFCHN	2	Address of next subsystem control table (0—last subsystem control table)
03	SCTDFLAG	1	Flag byte for subsystem status: *Hex* *Meaning* 80 On—primary Off—secondary 40 On—BSC ASCII subsystem 20 On—subsystem code is non-swap 10 Subsystem is completely enabled (set by subsystem) 08 Subsystem is going down 04 Abnormal termination of subsystem

Figure 2-246 (Part 1 of 3). Format of the Subsystem Control Table (SCT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03 (cont.)			*Hex* *Meaning* 02 Pend disable until active sessions complete 01 Disable subsystem immediately, terminate active sessions If only bit 4 is on, this is a disable request with no active sessions
04	SCTDCFID	8	Name of subsystem (CONFIGID)
0C	SCTDQSSZ	1	Number of 2K pages for SSQS.
0D	SCTDLIN#	1	The numeric portion of this byte contains the line number
	and SCTDTRCE		The zone portion of this byte contains the trace information (if bit 0 is on, log trace is active; if bit 1 is on, extended trace is active)
0E	SCTDXSCR	2	Address of extended subsystem configuration record in SSP-ICF common queue space
The next 24 bytes are a save area for the 24 high address translation registers for this subsystem. Address translation registers 9–32 (16K–64K) are saved here by enable. Then enable, communications protocol module ICFDM, and subsystems can retrieve them.			
10	SCTDATRL	1	Left address translation register—actually 9th (16K)
11	SCTDATRC	1	Right SSP-ICF control address translation register
12	SCTDATRQ	2	First common queue space address translation register (5800)
27	SCTDATRR	1	Rightmost address translation register (62K)

Figure 2-246 (Part 2 of 3). Format of the Subsystem Control Table (SCT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
28	SCTDFLG2	1	Second flag byte: *Hex* *Meaning* 80 Processed by SSP-ICF BSC interrupt handler during disable or termination 40 SSP-ICF BSC interrupt handler open complete 20 Enable part of initialization complete
29	SCTDRESV	4	Reserved
2D	SCTDRES2	3	Reserved

Figure 2-246 (Part 3 of 3). Format of the Subsystem Control Table (SCT)

Supervisor Calls

A supervisor call (SVC) serves as a communication link between the main storage processor and the control processor. Delayed SVCs use the ASSIGN facility to obtain space for the queuing. For immediate SVCs, after the requested function is completed, control returns to the calling task. For delayed SVCs control is optionally returned to the calling task (depending on the Q-code, see following chart) or to another task that is ready to use the main storage processor. For a complete description of the SVCs, see *IBM System/34 Functions Reference Manual,* SA21-9243.

Supervisor Call Q-Byte Values

Bit (hex) **Description**

80 Bit zero (X'80') will be on if the SVC was called from control storage.

40 Reserved

20 1 = Return XR2 from ACE when wait is complete.

10 1 = This event need not complete before swapping out task.

08 0 = Not used
1 = a. Multiple input/output wait. This bit allows the main storage caller to issue requests for input/output from more than one device using a no wait supervisor call, then issue one final request with zeros in index register one. The main storage caller will regain control when the first input/output operation is complete.
b. Asynchronous command processor error wait.

04 0 = Translate on. Address translation is to be used when fetching the input/output block and/or parameter list from main storage.
1 = Real addressing is to be used when fetching the input/output block and/or parameter list from main storage.

02 0 = Transient refreshable. A main storage transient has issued a supervisor call and is at a point where it may be overlaid. The transient will be reloaded, if required, before control is returned.
1 = Transient nonrefreshable. A main storage transient has issued a supervisor call and is not at a point where it may be overlaid.

Bit (hex) **Description**

01 0 = Not used
1 = a. If the request is for input/output, the input/output operation is completed before control is returned to the main storage caller.
b. If the request is for a resource and the resource is busy, control is not returned to the main storage caller until the resource is available.
c. If it is a main storage transient request, a main storage transient requesting another transient, or a main storage transfer control request, control is returned to the caller when the called routine is complete. A request block is created before control is passed to the called routine.
d. Miscellaneous internal special meanings dependent upon the SVC R-byte.

Figure 2-247 shows the supervisor calls and their associated request byte and inline parameters.

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
General wait	SVCGWAIT	00	02	N/A	0–1	General wait mask
General post	SVCGPOST	01	00	N/A	0–1	General wait mask post code
Wait	SVCWAIT	02	20, 09, or 04 or 02	Input—XR1: @ of event to be tested (IOB or TUB) Output—XR1: @ of event that satisfied this wait (IOB)		Not used
Post	SVCPOST	03	02	XR1: @ of event to be posted (IOB)	0 1	Queue header where posted action control element can be found (left byte) Bit: X'80'=1 — Do not preempt task issuing event post SVC X'40'=1 — Priority queue action control element to complete queue of task being posted Bits 4—7: Completion code (0—F)
Transfer control/ system transient	SVCXFER	04	02 or 01	N/A	0	Offset in transient/transfer control table
Free current request block (unattach)	SVCUNSTK	05	00	N/A		Not used
Assign	SVCASSGN	06	02 or 01	Output—XR1: @ of area assigned	0–1 2	Length of area to assign Type of request: X'80'=1 — Queue area to task control block X'01'=0 — Use work station queue space 1 — Use system queue space
Free assigned areas	SVCFREE	07	00	Input—XR1: @ of area to free	0–1 2	Length of area to free Type of request: X'80'=1 — Area has been queued by assign X'01'=0 — Use work station queue space 1 — Use system queue space

Figure 2-247 (Part 1 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Increase system event counter	SVCISEC	08	00	N/A	0	Offset of system event counter to be increased
Sense address data switches	SVCSNSSW	09	00	Output–XR1: Data switches value		Not used
Assign system queue space	SVCASGN	0A	01 or 02	Input–XR1: Length of area to assign Output–XR1: @ of assigned area	0	Type of request: X'80'=1 – Queue area to task control block X'01'=0 – Use work station queue space 1 – Use system queue space
Post action controller status word	SVCPPSVC	0B	00	N/A	0	Mask value associated with action controller routine to be posted
Load ATR	SVCLDATR	0C	00	N/A		Not used
Set program mode register	SVCPMR	0D	00	N/A	0	X'80'=Disable task dispatching X'70'=Reserved X'08'=Turn on instruction address register translation (see note) X'04'=Turn on operand 2 address translation X'02'=Turn on operand 1 address translation X'01'=Change from privileged to nonprivileged mode
					1	X'80'=Enable task dispatching X'70'=Reserved X'08'=Turn off instruction address register (see note) X'04'=Turn off operand 2 address translation X'02'=Turn off operand 1 address translation *Note:* Altering the instruction address register translation results in branching from the current translation to the same address in the opposite translation.

Figure 2-247 (Part 2 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Queue/Dequeue	SVCQUEUE	0E	00	Input—XR1: @ of control block XR2: @ of queue header for nonsystem requests	0 1 2	Queue header displacement from start of system queue headers (for system request) (left byte) Displacement into control block of queuing field (0–256) (left byte) Queuing indicators and priority field displacement: X'80'=1 — Priority request X'40'=1 — System request (system queue header passed) X'20'=1 — Dequeue request X'10'=1 — Last in first out request Bits 4–7: Priority field displacement (0–15)
System control block access	SVCSCB	0F	00	Input—XR2: Displacement Output—XR2: Data area (if put request)	0 1	Area and function: X'30'=Direct area 0–3 00=Direct area 0 01=Direct area 1 10=Direct area 2 11=Direct area 3 X'02'=1— Queue header request X'01'=1 — Put request Field displacement in area
Main storage transient scheduler	SVCXIENT	10	00	N/A	0–1	Address in main storage of a 4-byte (SSN) transient transfer control table entry (may be in either real or translated storage; however, it must be the same translation as the callers instruction address register)
Main storage transient exit	SVCEXIT	11	00	N/A		Not used
Get page	SVCGETP	12	02	N/A	0–1	Address of where to store last logical address plus 1 of storage allocated
Free page	SVCFREEP	13	00	N/A		Not used
Interval timer (usable from control storage only)	SVCTIN SVCTID SVCTIR	14 15 16	00 00 00	N/A N/A N/A		Not used *Note:* R-byte=14—Enqueue 15—Dequeue 16—Remainder

Figure 2-247 (Part 3 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Asynchronous task wait	SVCTKWT	17	00	Input–XR1: @ of task control block to be placed in a wait state	0	Wait mask
Set transient area to not busy	SVCXNTOF	18	00	N/A		Not used
Post action control element	SVCPOSTA	19	00	Input–XR1: Action control element address	0 1	Queue header displacement where action control element can be found (left byte) Completion code: X'80'=1 — Do not preempt X'40'=1 — Queue last in first out to task control block complete queue Bits 4–7: Completion code
Log trace information	SVCLOG	1A	00	Input–XR2: @ of information (15 bytes) to be placed in trace buffer		Not used
Scan system queue	SVCQSCAN	1B	00	Input–XR1: Search argument XR2: Queue header @ of queue to be scanned Output–XR2: @ of control block with passed argument	0 1	Displacement within control block where argument is located (left byte) Chain field displacement (left byte)
Task post	SVCTPOST	1D	00	Input–XR1: Task control block address of task to be posted	0	Task post condition
Task wait	SVCTWAIT	1E	02	N/A	0	Wait condition to be set on in task control block field TCBSTAT2
Interval timer interrupt handler (usable from control storage only)	SVCTIH	1F		N/A		Not used

Figure 2-247 (Part 4 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Alter quiesce counter	SVCQS	20		Input–XR1: Task control block address of task where quiesce counter is to be decremented	0 1	Not used X'01'=Decrement quiesce counter
Resource enqueue/dequeue	SVCRENQ or SVCRDEQ	21	02 or 01	Input–XR2: @ of queue header where allocation queue element is to be built	0	Share level: X'80'=1 – Enqueue request X'40'=1 – NEP request Bits 6–7: 00=Shares with 0, 1, and 2 01=Shares with 0 and 1 10=Shares with 0 11=Does not share
Dump main storage/terminate task	SVCDUMP	22	00	N/A	0–1	Abend MIC
Test and set	SVCTEST	23	04 02 01	Input–XR1: Address minus one of byte where bit value is to be tested Output–PSR: False if the bit is on and the no wait Q-byte is specified	0	Bit value to be tested
Task control block priority queue	SVCPRIQ	24	00	Input–XR1: @ of task control block	0	New priority
Asynchronous task ready check	SVCRDYCK	25	00	Input–XR1: @ of task control block to be checked		Not used
Prepare print buffer	SVCPREP	26	00	Input–XR1: @ of IOB		Not used
Dispatcher SVC	SVCDSPCH	27	00	N/A		Not used
Remote printer set-up	SVCRPT	28	00	Input–XR1: @ of IOB		Not used

Figure 2-247 (Part 5 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Sector enqueue/ dequeue	SVCSQ	29	04	Input—XR1: @ of disk IOB		Not used
Move data by ID	SVCMOVEI	2A	00 or 10	X'10' on = ATRs for area are found in the SCT for task whose ID is in byte 2 Input—XR1: @ of from buffer XR2: @ of to buffer ARR: length	0 1	From ID To ID
Post task by ID	SVCPOSTI	2B	00		0 1	Task ID of task to post Type of post
Quiesce counter wait	SVCQWAIT	2C	00	N/A		Not used
Translated assign/free	SVCXAF	2D	06 07 16 17	(assign) (free) XR2: queue header of free area (assign) (free) X'10' on = ATRs for area are found in the SCT for task whose ID is in byte 2	0–1 2	Length of area to be assigned/freed ID of task where area is mapped
Time of day in timer units	SVCTOD	2E	00	Input—none	0	The time of day is returned in timer units in XR1 and XR2
Delayed SVCs:						
Disk IOS	SVCFD	40	10 08 04 02 01	Input—XR1: Points to IOB		Not used

Figure 2-247 (Part 6 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Diskette IOS	SVCIO	41	10 08 04 02 01	Input—XR1: Points to IOB		Not used
Work station printer/ printer IOCH	SVCPT	42	10 08 04 02 01	Input—XR1: Points to IOB		Not used
Work station terminal IOCH	SVCWSC	43	10 08 04 02 01	Input—XR1: Points to IOB		Not used
Data communications IOCH	SVCCOMM	44	10 08 04 02 01	Input—XR1: Points to IOB		Not used
I/O transient request	SVCIOXNT	45	10 08 04 02 01	Input—XR1: Points to IOB		Not used
	Reserved	46–4B				
Action control element build and queue	SVCPQSVC	4C	10 08 04 01	Output—XR2: @ of action control element if requested in input	0	Queue header displacement (left byte): X'01'=Return action control element address
	Reserved	4D–4F				
Control storage scheduler	SVCCXNT	50	02	N/A	0 1–2	Control storage transient ID Input to the transient

Figure 2-247 (Part 7 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex) R	Byte (hex) Q	Register Value	Inline Parameters Byte (0–3)	Inline Parameters Description
Task work area access	SVCTWA	51	02	Input—XR1: @ of task control block if system request XR2: Main storage address of data	0	Type X'40'=1 — Real data addresses X'04'=1 — Work station area request 0 — Task work area request X'02'=1 — System request X'01'=1 — Put request 0 — Get request
					1	Key (0–59)
					2	Number of sectors
Main storage relocation loader	SVCLOAD	52	04 or 02 40 (see note)	Input—XR2: Loader parameter list	0	Value determines type of request: Hex: 01=Load by relative address—Adds the task loader disk address to the relative address passed in the users parameter list. The resulting address is the location of the desired module on the disk. The module is loaded at its link-edit address and control is returned to the calling program. 02=Load to address—Reads the module into storage and returns control to the calling program. 04=Fetch—Adds the task relocation factor to the module link-edit address and, using the resulting value as the load address, reads the module into storage and passes control to the module start control address.

Note: Bit 1 is on if SVC is called from control storage.

Figure 2-247 (Part 8 of 9). Supervisor Call Instructions

SVC	Label	Byte (hex)		Register Value	Inline Parameters	
		R	Q		Byte (0–3)	Description
						06=Fetch to address—Reads the module into storage and passes control to the module start control address. 0A=System load to address—Updates the task relocation factor and disk address values in the tasks task control block from the loaders parameter list. Reads the module into storage and returns control to the calling program. 0E=System fetch to address—Updates the task relocation factor and disk address values in the tasks task control block from the loaders parameter list. Reads the module into storage and passes control to its start control address.
	Reserved	53 5B				

Figure 2-247 (Part 9 of 9). Supervisor Call Instructions

SYSIN Parameter List

This 5-byte area is required as input for SYSIN routine (RIB=X'07'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SINDOPTN	1	Option and reply byte: Input: *Hex* *Meaning* 10 Do not scan record for substitution expressions 08 SYSIN called by the image processor 04 Perform logging to the history file and the SYSLOG device 02 Handle records with an asterisk in column one (source SYSIN) 01 SYSIN called by initiator Output: *Hex* *Meaning* 50 EOF found in current record 40 Normal completion
01	SINDSTAT	1	Status byte: *Hex* *Meaning* 80 Record came from keyboard 40 Record contains ideo-graphic data 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
02	SINDNEXT	1	Reserved
03	SINDCRNT	2	Current byte address (points to left-most byte of 120-byte area)

Figure 2-248. Format of SYSIN Parameter List

SYSLIST Parameter List

This 5-byte area is required as input for the SYSLIST routine (RIB=X'06'). When a routine is requested, XR2 contains the address of the associated parameter list if a transient SYSLIST is called. XR1 contains the address of the associated parameter list if a loadable SYSLIST is called.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Type 1—output from message member:			
00	LSTDOPT1	1	Option byte: *Hex* *Meaning* 80 Heading and miscellaneous text 20 System support program product (SSP) 10 Program products 08 User defined message access 04 Allocate printer and return sector address 02 Overflow while printing 01 Output from message member
01	LSTDMIC	2	Message identification code
03	LSTDADDR	2	Buffer address (leftmost byte of 170-byte buffer)
Type 2—output from program:			
00	LSTDOPT2	1	Option byte: *Hex* *Meaning* 40 Do not truncate message 01 Off—output from program

Figure 2-249 (Part 1 of 2). Format of the SYSLIST Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	LSTDPAGE	1	Page control byte: Bits 0—3=Any bit on causes skip to line six before printing Bits 4—5=Must be zero Bits 6—7=Space after value *Hex* *Meaning* 03 Space 3 lines after printing 02 Space 2 lines after printing 01 Space 1 line after printing 00 No space after printing
02	LSTDLEN	1	Length of output message (maximum 132 bytes)
03	LSTDADDR	2	Buffer address (leftmost byte of 170-byte buffer)

Figure 2-249 (Part 2 of 2). Format of the SYSLIST Parameter List

SYSLOG Parameter List

The SYSLOG parameter list is required as input for the SYSLOG routine (RIB=X'05'). This size is variable depending on the output type. When a routine is requested, XR2 contains the address of the associated parameter list. If SS YES is specified, XR1 contains the address of the disk sector where the caller will reside. Output types are:

1 — Output from message member without data response (13-byte parameter list) and with variable length insert data (16-byte parameter list)

1R — Output from message member with data response (16-byte parameter list)

2 — Output from user program without data response (8-byte parameter list)

2R — Output from user program with data response (11-byte parameter list)

3 — Output from user program with format line (16-byte parameter list)

4 — Type 1 output with 8 bytes of user-supplied information added to front of message (24-byte parameter list)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$LGDFNC1	1	SYSLOG function byte 1:
			Hex *Meaning*
			80 On—output from message member with or without halt Off—output from user program
			40 On—work station routing Off—system console routing
			20 On—data response required Off—data response not required
			10 On—option response requested Off—no option response
			08 On—build format line for output from message member Off—omit format line for output from message member
			04 On—add 8 bytes to message Off—do not add 8 bytes to message
			02 On—log message to the history file Off—do not log message to the history file
			01 On—display message on the CRT Off—do not display message on the CRT

Figure 2-250 (Part 1 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	$LGDFNC3	1	SYSLOG function byte 2:
			Hex *Meaning*
			80 On—TUB address specified
			40 On—variable length data insert
			20 On—no wait for command processor at console (for messages without data response)
			10 On—address of sector for push given
			08 On—special console routing indicator
			04 On—pull user back in if 3 option taken
			02 On—subconsole routing
			01 Reserved
02	$LGDMMEM	1	Message member:
			Hex *Meaning*
			80 Headings message member
			20 SSP message member
			10 Program message member
			08 User message member

Figure 2-250 (Part 2 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	$LGDPRID	1	Program ID: *Hex* *Meaning* 12 Network resource directory utility 11 SNA 3270 device emulation 10 Two-byte language sort 0F Character generating utility 0E BSC 3270 device emulation 0D BASIC 0C COBOL 0B Screen design aid 0A User-defined message access 09 FORTRAN 08 Assembler 07 Work station utility 06 Data file utility 05 Sort 04 Source entry utility 03 Auto 02 RPG 01 SSP
04	$LGDCOMI	2	Component identification
06	$LGDSUBI	2	Subcomponent identification
08	$LGDMIC	2	Message identification code

Figure 2-250 (Part 3 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	$LGDACT	1	Operator action byte: Output (options taken) *Hex* *Meaning* 80 Ignore (proceed) 40 Retry 20 Controlled cancel 10 Call the EOJ transient Input to SYSLOG (options allowed) *Hex* *Meaning* 08 Ignore (proceed) 04 Retry 02 Controlled cancel 01 Terminate the job
0B	$LGDTUB1	2	TUB address if type 1
	or		
	$LGDSBC1	2	Subconsole ID field for type 1
Variable length data insert for type 1 only:			
0D	$LGD1LEN	1	Length of variable data
0F	$LGD1ADR	2	Address of leftmost byte of variable data
Data response for type 1R only:			
0B	$LGDDRLN	1	Data response length
0C	$LGDDRAD	2	Data response address
0E	$LGDTB1R	2	TUB address if type 1R
	or		
	$LGDSC1R	2	Subconsole ID field for type 1R

Figure 2-250 (Part 4 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Message length and address for type 3 only:			
0B	$LGD3LEN	1	Length of message (maximum=132 bytes)
0C	$LGD3ADR	2	Leftmost address of message buffer
0E	$LGDTUB3 or	2	TUB address if type 3
	$LGDSBC3	2	Subconsole ID field for type 3
8-byte insert for type 4 only:			
0E	$LGD8BYT	8	8 bytes to add to message
16	$LGDTUB4 or	2	TUB address if type 4
	$LGDSBC4	2	Subconsole ID field for type 4
Parameter list for type 2 and 2R only:			
00	$LGDFNC2	1	SYSLOG function byte 1: *Hex* *Meaning* 80 On—output from message member with or without halt Off—output from user program 40 On—work station routing Off—system console routing 20 On—data response required Off—data response not required 10 Output from message member with operator action 08 On—build format line for output from message member Off—omit format line for output from message member

Figure 2-250 (Part 5 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)			*Hex* *Meaning* 04 Add 8 bytes to message 02 On—log message to the history file Off—do not log message to the history file 01 On—display message on the CRT Off—do not display message on the CRT
01	$LGDFNC4	1	SYSLOG function byte 2: *Hex* *Meaning* 80 On—TUB address specified 20 On—no wait on command processor at console for messages with no data response 10 On—address of sector for push given 08 On—special console routine indicator
02	$LGDPAGE	1	Page control byte: Bits 0–3=Any bit on causes a skip to line 1 of the next page Bits 4–5=Must be zero Bits 6–7=Space after value or *Hex* *Meaning* 03 Space 3 lines after printing 02 Space 2 lines after printing 01 Space 1 line after printing
03	$LGDLEN	1	Length of message (maximum 132 bytes)
04	$LGDADDR	2	Leftmost address of message buffer

Figure 2-250 (Part 6 of 7). Format of a SYSLOG Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	$LGDTUB2	2	TUB address if type 2
	or		
	$LGDSBC2	2	Subconsole ID field for type 2
Data response for type 2R only:			
06	$LGD2DRI	1	Data response length
07	$LGD2DRA	2	Data response address
09	$LGDTB2R	2	TUB address if type 2R
	or		
	$LGDSC2R	2	Subconsole ID field for type 2R

Figure 2-250 (Part 7 of 7). Format of a SYSLOG Parameter List

System Communications Area (SCA)

The system communications area (SCA) is a 208-byte common area that is used by various components of the system support program product to communicate with each other. Its contents consist of configuration data, addresses (disk and main storage) of system areas as well as other system information.

How to Find

The location of the system communications area is the first area of the fixed nucleus, starting at hex 0000 of main storage.

Format

Figure 2-251 shows the format of the SCA.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SCADPSVC	3	Dump SVC
	or		
	SCADDMIC	2	Abnormal termination error MIC (seen in a dump only)
03	SCADXSVC	3	Transient exit SVC
06	SCAMSIZE	1	Main storage size in 2K blocks: *Hex* *Meaning* 80 256K bytes in main storage 40 128K bytes in main storage 30 96K bytes in main storage 20 64K bytes in main storage 18 48K bytes in main storage 10 32K bytes in main storage
07	SCA2KBAD	2	Address of bad 2K blocks save
09	SCADSPI@	2	Address of spool intercept routine (#SPINT)
0B	SCADCFSZ	1	Size of configuration record (sectors)
0C	SCA#2KMS	1	Number of available 2K blocks of main storage (main storage size minus number of bad 2K blocks)
0D	SCAMS#2K	1	User main storage in 2K blocks
0E	SCAMAXRG	1	Swappable task region size (2K blocks)

Figure 2-251 (Part 1 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	SCASDISK	1	Disk configuration: *Hex* *Meaning* 80 Multiple spindle disk 40 Disk configuration flag: 0—62EH disk 1—62PC disk 20 3 spindle disk 10 4 spindle disk The following flags are valid for a 62EH disk (60 sectors per track) only: 81 27 megabyte disk 01 13 megabyte disk 00 8 megabyte disk The following flags are valid for a 62PC disk (64 sectors per track) only: E1 195 megabyte disk D1 260 megabyte disk C1 130 megabyte disk 41 65 megabyte disk
10	SCADPIND	1	System dump indicator: *Hex* *Meaning* A5 Valid dump 5A Valid dump has been accessed
11	SCACSIZE	1	Control storage size in 4K blocks: *Hex* *Meaning* 04 16K control storage

Figure 2-251 (Part 2 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
12	SCADCFG1	1	Spool and job queue indicators: *Hex* *Meaning* 80 Auto writer supported 40 Reserved 20 Spool all writers 10 Spool is active 08 Spool compress run or reformat spool file at MSIPL 04 Hold job queue 02 Reformat job queue at MSIPL or input job queue post flag 01 Allocate file on disk drive B
13	SCADCFG2	1	SSP configuration options: *Hex* *Meaning* 80 Reserved 40 Password security 20 Job queue 10 Spool 08 Display station data management transient 04 Display station data management resident 02 Keep informational messages at EOJ 01 Reserved 0C *Note:* If bits 4 and 5 are both on, then resident/transient version of display station data management is specified.

Figure 2-251 (Part 3 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
14	SCADCFG3	1	Communications features: *Hex* *Meaning* 80 BSCA 40 Multi-leaving remote job entry (MRJE) 20 SRJE 10 SNA 08 Remote work station 04 SSP-ICF 02 MLCA 01 Autocall/X.21 task active
15	SCAMBSV	1	SSP configuration options: *Hex* *Meaning* 80 Single program mode 40 MLCA SMF active 20 SMF active 10 Console history file posted 08 Security file flag 04 Build configuration records at MSIPL time 02 Model indicator 01 Dedicated execution
16	SCADREL#	1	System release level
17	SCADMOD#	1	System modification level

Figure 2-251 (Part 4 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18	SCADCMTR	1	Communications trace indicator: *Hex* *Meaning* 80 Extended trace line 4 40 Extended trace line 3 20 Extended trace line 2 10 Extended trace line 1 08 Trace communications line 4 04 Trace communications line 3 02 Trace communications line 2 01 Trace communications line 1
19	SCASSTWA	2	Sector address of task work area
1B	SCATWASZ	2	Size in sectors of task work area
1D	SCAFVTOC	2	Sector address of disk VTOC
1F	SCAFVTON	2	Size of disk VTOC in sectors
21	SCAIVTOC	2	Sector address of diskette VTOC work area
23	SCAIVTON	1	Size of diskette VTOC work area in sectors
24	SCASIOSS	2	Sector address of I/O table directory
26	SCALOGSS	2	Sector address of logging table directory
28	SCADSSMS	2	Sector address of main storage dump area
2A	SCADSSCS	2	Sector address of control storage dump area
2C	SCADSSIO	2	Sector address of I/O controller dump area
2E	SCACONFG	2	Sector address of configuration record

Figure 2-251 (Part 5 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
30	SCASHIST	2	Start sector address of history file
32	SCAHFSIZ	2	Size of history file in sectors
34	SCAHFCUR	2	Sector address of current history file entry
36	SCASMSG1	3	Sector address of first level SSP message member (##MSG1)
39	SCASHMSG	3	Sector address of SSP headings message member (##MSG2)
3C	SCASWMSG	3	Sector address of SSP work station message member (##MSG9)
3F	SCASMSG2	3	Sector address of second level SSP message member (##MSG4)
42	SCADSSJQ	3	Sector address of input job queue file
45	SCADSSPR	3	Sector address of spool primary file
48	SCAUSER@	2	Start address of user storage
4A	SCADSBFP	2	Address of spool buffer pool
4C	SCADMERP	2	Address of control storage processor error save area
4E	SCADLBF1	2	Address of #LIBRARY format 1
50	SCADF1ST	2	First active format 1 on chain
52	SCAD#TUB	1	Number of local configuration terminal unit blocks
53	SCADBSCT	1	Number of users of BSC data management

Figure 2-251 (Part 6 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
54	SCADVICE	2	Address of device allocate table
56	SCADSEU@	2	Address of SEU member chain
58	SCADSEUQ or SCAIPLW6	2 2	SEU queue header MSIPL work area
5A	SCADSLOG	1	History file assigned indicator: *Hex* *Meaning* E0 History file assigned to printer 10 History file assigned to work station
5B	SCASYS1	1	System configuration byte 5: *Hex* *Meaning* 80 Error in history file 40 MSIPL—processing complete 20 MSIPL—override received 10 MSIPL—sign on complete 08 MSIPL—file rebuild executing 04 History file eject at EOJ 02 Configuration record interlock 01 Prepare request issued

Figure 2-251 (Part 7 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5C	SCASYS2	1	System configuration byte 6: *Hex* *Meaning* 80 Communications task being assigned 40 System console check 20 High level dedication 10 IPL—startup procedure 08 System date received 04 DDMMYY date—world trade 02 MMDDYY date—domestic 01 YYMMDD date—special
5D	SCADYEAR	1	System year
5E	SCADMNTH	1	System month
5F	SCADDAY	1	System day
	or		
	SCADDATE	3	System date (YMD)
60	SCADCTUT	1	Count of user tasks in system
	or		
	SCAIPLWK		MSIPL work area start
61	SCARDVOL	6	Diskette volume label

Figure 2-251 (Part 8 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
67	SCARDFMT	1	Diskette physical format: *Hex* *Meaning* 80 IPL autoloader flag 0=auto-yes 1=auto-no 40 2 sided—modified frequency modulation recording 20 2 sided—frequency modulation recording 10 1 sided—frequency modulation recording 08 Record size—1024 04 Record size—512 02 Record size—256 01 Record size—128
68	SCADKLRC	4	Diskette volume LRC characters
6B	SCAIPLW1		MSIPL work area end
6C	SCADMTUB	2	System console terminal unit block address
6E	SCADPTUB	2	System printer terminal unit block address

Figure 2-251 (Part 9 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
70	SCADCPS1	1	Switch byte 1: *Hex* *Meaning* 80 Stop complete message sent 40 No jobs can be initiated 20 Spool writer/job queue EOJ required 10 Work station data management send EOJ completion code 08 Spool writer has been started 04 Job queue has been started 02 Reserved 01 Call I/O error recovery procedure transient
71	SCADCPS2	1	Switch byte 2: *Hex* *Meaning* 80 Keysort all files at shut down 40 Console ready to output message 20 Help feature active 10 Command processor work station queue space assign failure 08 Rebuild—execute rebuild 04 Rebuild—delete files in error 02 Rebuild—examine old files also 01 Rebuild—display labels in error
72	SCADMGOI	2	Message order index address
74	SCADSEC@	3	Sector address of security file
77	SCADABCT	1	Auto buffer disable count

Figure 2-251 (Part 10 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
78	SCADXTRA	1	Extended trace indicators: *Hex* *Meaning* 80 Extended trace active 40 Extended trace line 0 (intra) 20 Log trace line 0 (intra) 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
79	SCADMCFG	1	Data management options: *Hex* *Meaning* 80 Deleted record and extendable disk file capability 40 Sequential processing of added records by key 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
7A	SCAD#N2K	1	Number of nucleus 2K blocks
7B	SCADMCTR	1	Counter of MRT jobs active
7C	SCADSCIM	2	Address of system console image matrix
7E	SCADMID#	1	Message ID number for system console reply
7F	SCADRSCZ	1	Size of resource security file
80	SCADSECZ	1	Size of security file

Figure 2-251 (Part 11 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
81	SCADCPW@	2	Command processor work area address
83	SCACSATB	2	Control storage allocate table
85	SCADXSLT	1	Diskette 2 slot number (hex)
86	SCADSLOT	5	Diskette 2 slot number (decimal)
8B	SCADMQNT	1	Message queue count
8C	SCADCSP1	1	Main storage processor interface byte: *Hex* *Meaning* 80 1255 MICR attachment on system 40 Diskette 2 attachment 20 Reserved for address compare dump 10 Error on dump—partial dump taken 08 Display address compare dump message 04 Address compare dump was taken 02 Task suspended by address compare dump 01 Trace to disk active
8D	SCADSCP2	1	Control storage processor interface byte: *Hex* *Meaning* 80 System/32 mode log printer error 40 Printer translate feature 20 FORTRAN execution support 10 Last 2K of nucleus assigned 08 MICR SUBR08 SSP support 04 Reserved 02 MICR SUBR25 SSP support 01 Reserved

Figure 2-251 (Part 12 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
8E	SCADCSP3	1	Control storage processor/main storage processor interface byte: *Hex* *Meaning* 80 MLCA controller attached 40 Work station control expansion C 20 Configuration record TUB count error 10 Reserved 08 Reserved 04 Reserved 02 Terminal unit block chain locked 01 Reserved
8F	SCADSNAT	2	Task control block address of SNA task
91	SCADLIN#	1	Communications configuration: *Hex* *Meaning* 88 X.21 on line 1 80 Communications line 1 configured 44 X.21 on line 2 40 Communications line 2 configured 22 X.21 on line 3 20 Communications line 3 configured 11 X.21 on line 4 10 Communications line 4 configured 08 Autocall on line 1 04 Autocall on line 2 02 Autocall on line 3 01 Autocall on line 4
92	SCADREOJ or	4	End-of-job SVC
	SCAIPLW5	2	MSIPL work area
93	SCADCON1	1	Constant hex 01
96	SCADTBUF	2	Communications buffer size (sectors)

Figure 2-251 (Part 13 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
98	SCADWSQS	1	Work station queue space size (number of 256-byte multiples)
99	SCADSQS	1	System queue space size (number of 256-byte multiples)
9A	SCADTRSZ	1	Trace buffer size (sectors)
9B	SCADSNA1	1	SNA batch task use count
9C	SCADSNA7	1	SNA remote task use count
9D	SCADSDLS	1	SDLC secondary task use count
9E	SCADSDLP	1	SDLC primary task use count
9F	SCADCFG7	1	History file configuration: *Hex* *Meaning* 80 History—automatic wrap indicator 1—auto wrap 0—no auto wrap 40 History—overflow file delete 1—delete 0—do not delete 20 History—reformat overflow file 1—reformat 0—do not reformat or 20 History—allocate overflow file after IPL 10 History—overflow file preferred location 1—spindle A1 0—spindle A2 0x History—overflow file size (bits 4–7) in multiples of the history file (where x = 1–8)

Figure 2-251 (Part 14 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
A0	SCADRSEC	3	Reserved for security use
A3	SCADHFWK	2	Sector offset of VTOC entry for history overflow file (#HISTOVF)
A5	SCADWRK@	2	Address compare work area address
A7	SCADCFG8	1	Spool configuration byte 2: *Hex* *Meaning* 80 Reserved 40 Use work station printer 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
A8	SCADCFG9	1	Remote configuration byte: *Hex* *Meaning* 80 Remote work stations active for this IPL 40 Perform auto vary online at IPL 20 Vary online not allowed 10 Vary on in process by #RWVY 08 Remote work station support has set SCAMRWNV 04 Remote work station task swappable 02 At least one remote configured 01 At least one remote configured for IPL auto vary online

Figure 2-251 (Part 15 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
A9	SCADTKSZ	2	Disk sectors per track
AB	SCADCFGS	1	Security features: *Hex* *Meaning* 80 Resource security 40 Badge security
AC	SCADWDBT	12	Work station data management branch table (low side)
	or SCA#WDB0	2	#WDB0 storage address
AE	SCA#WDB1	2	#WDB1 storage address
B0	SCA#WDB2	2	#WDB2 storage address
B2	SCA#DWDM or	2	#DWDM storage address
	SCA#ICDM	2	#ICDM storage address (This address will be the address of SSP-ICF data management if SSP-ICF is active, otherwise, it will be the address of the work station data management router (#DWDM).)
B4	SCA#WDB3	2	#WDB3 storage address
B6		1	Reserved
B7	SCADWDBR	1	Work station data management branch table (high side)
B8	SCADRSPC	8	Reserved
C0	SCADCPS4	1	Command processor switch 4; (if hex 80, compress is active)

Figure 2-251 (Part 16 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
C1	SCADXMID	2	EXTN address mapping (EXAM) High byte: *Hex* *Meaning* 80 00—reserved 40 01—extended index data management 20 02—MLCA SMF 10 03—reserved 08 04—reserved 04 05—reserved 02 06—reserved 01 07—reserved Low byte: *Hex* *Meaning* 80 08—reserved 40 09—reserved 20 0A—reserved 10 0B—reserved 08 0C—reserved 04 0D—reserved 02 0E—reserved 01 0F—reserved
C3	SCADCPS3	1	Command processor switch 3: *Hex* *Meaning* 80 Stop session active 40 Rebuild-delete checkpoint files 20 Initialize line printer 10 MLCA IOCH loaded 08 MLCA error attach failure 04 Diskette has extended labels 02 Switched line X.21 feature 01 Diskette has non-sequential records

Figure 2-251 (Part 17 of 18). Format of the System Communications Area (SCA)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
C4	SCADCFG6	1	Configuration byte 6: *Hex* *Meaning* 80 Checkpoint/restart configured 40 Reserved 20 SMF feature configured 10 Dump file analysis configured 08 I-exchange 04 Subconsole support 02 Spool file access support 01 Extended data management support
C5	SCADICS@	2	SSP-ICF communications area address
C7	SCADRFTR	8	Reserved
CF	SCADUDT4	2	Line 4 configuration (byte 0)
D1	SCADUDT3	2	Line 3 configuration (byte 0)
D3	SCADUDT2	2	Line 2 configuration (byte 0)
D5	SCADUDT1	2	Line 1 configuration (byte 0)

Note: See compressed unit definition table (CUDT) for definition of bits within the individual configuration bytes (Figure 2-268). Each entry is two bytes long. Byte 0—see label UDTDCMF1. Byte 1—see label UDTDCMF3 for bits 0–3. Bits 4–7 (hex 0F) map the device address (priority) of the UDT line entry. For example, hex 80 maps to hex 08 and hex 20 maps to hex 02. Hex 04 and hex 01 are reserved. Hex 40 maps to hex 04 and hex 10 maps to hex 01.

D7	SCADKKK@	2	IGC communication area address
D9	SCADSSPF	1	Feature indicators (hex 80—IGC support, hex 01—X.21 feature installed on system)
DA	SCADPYR	32	Copyright

Figure 2-251 (Part 18 of 18). Format of the System Communications Area (SCA)

System Console/Subconsole Matrix Image

The system console/subconsole matrix image is a sequential list of 20 6-byte areas. Each area describes a particular line of the system console mode or subconsole mode display roll area. The first area describes the top line of the roll area, the second area describes the second line of the roll area, and so forth.

How to Find

The system console matrix image is pointed to by label SCADSCIM in the system communications area.

The subconsole matrix image is pointed to by label TUBDMATX in the terminal unit block or label QHDSUBRA in the system queue headers.

Format

Figure 2-252 shows the format of the system console/subconsole matrix image.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CMCIMID	1	Message ID or X'FF' for EOT (Hex AA = message not immediately overlay-able mask)
01	CMCIOPT	1	SYSLOG option switches: *Hex* *Meaning* 80 On—option 0 is available Off—option 0 is not available 40 On—option 1 is available Off—option 1 is not available 20 On—option 2 is available Off—option 2 is not available 10 On—option 3 is available Off—option 3 is not available 0C On—message member—reserved Off—user message member

Figure 2-252 (Part 1 of 2). System Console/Subconsole Matrix Image

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01 (cont.)			*Hex* *Meaning* 08 Message member —p p 04 Message member—system 02 On—this is a control storage request Off—this is not a control storage request 01 Reserved
02	CMCISWH	1	Switch byte: *Hex* *Meaning* 80 On—this line is chained to next Off—this line is not chained to next 40 On—this line is responded to Off—this line is not responded to 20 On—throw response away Off—do not throw response away 10 Input data length is 120 bytes of data plus an AID byte 08 Input data length is 1 byte data plus an AID byte 04 Input data length is 8 bytes data plus an AID byte 02 Input data length is 60 bytes of data plus an AID byte 01 On—this was an EOJ response Off—this was not an EOJ response
03	CMCITG#	1	Tag number containing image of data on the screen
04	CMCITB@	2	TCB address or ERB address for control storage halt or queue element address if response needed and not control storage

Figure 2-252 (Part 2 of 2). System Console/Subconsole Matrix Image

System Console/Subconsole Message Queue Elements

The system console/subconsole message queue element describes messages that are waiting to be displayed at the system console or subconsole.

How to Find

The subconsole message queue element is pointed to by label QHDSUBCN in the system queue headers.

The system console message queue element is pointed to by label QHDCNLG in the system queue headers.

Format

Figure 2-253 shows the format of the system console/subconsole message queue element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	CMCICHN	2	Queue element chain address of X'0000'
02	CMCISWC	1	Switch byte 1: *Hex* *Meaning* 80 On—this is a WTO request Off—this is not a WTO request 40 On—this is a WTOR request Off—this is not a WTOR request 30 On—message member—reserved Off—user message member 20 Message member—system 10 Message member—p p 08 On—this is a SSP-ICF second time post Off—this is a SSP-ICF first time post

Figure 2-253 (Part 1 of 3). System Console/Subconsole Message Queue Element

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02 (cont.)			*Hex* *Meaning* 04 On—this is a message command queue element Off—this is not a message command queue element 02 On—this is a control storage request Off—this is not a control storage request 01 On—this is a SYSLOG halt request Off—this is not a SYSLOG halt request 00 Message member—user
03	CMCISW2	1	Switch byte 2: *Hex* *Meaning* 80 On—process this reply Off—do not process reply 40 On—text in console SYSLOG queue Off—text not in console SYSLOG queue 20 Input data length is 1 byte data plus an AID byte 10 Input data length is 8 bytes data plus an AID byte 08 Input data length is 60 bytes data plus an AID byte 04 On—do not wait for response Off—wait for a response 02 Input data length is 120 bytes data plus an AID byte 01 On—special SSP-ICF message SVC Off—not special SSP-ICF message SVC

Figure 2-253 (Part 2 of 3). System Console/Subconsole Message Queue Element

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	CMCITCB	2	TCB address or control storage ERB address
06	CMCIFECM	1	Second byte of fake ECM for SYSLOG communication
07	CMCIMGQ or	1	Message queue element number
	CMCINWRP	1	No wait response value return area
Following is the extended area of queue element for subconsoles:			
08	CMCIWSID	2	Subconsole ID
0A	CMCIMSG#	1	Reply ID of the message
0B	CMCITCB@	2	Address of TCB
0D	CMCIERES	3	Reserved

Figure 2-253 (Part 3 of 3). System Console/Subconsole Message Queue Element

System Control Block Get/Put Parameter List

This 2-byte area is required as input for the system control block access SVC (SVC=X'0F'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SCBDFUNC	1	System control block function byte; bits 0 through 3 represent the direct area to be accessed: *Hex* *Meaning* 30 Direct area 3 20 Direct area 2 10 Direct area 1 02 This is a queue header request 01 On—this is a put request Off—this is a get request 00 Direct area 0
01	SCBDISP	1	Field displacement in area

Figure 2-254. Format of a System Control Block—GET/PUT Parameter List

System Event Counter Table

The I/O counter table directory contains a device ID entry of hex 04 for the system event counter table. The event counter table maintains a count of system tasks performed on the System/34.

How to Find

The address of the directory is located in field SCASIOSS in the system communications area.

Format

Figure 2-255 shows the format of a system event counter table entry.

System Event Counter Table (100 bytes)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SECTRTDS	4	Number of task dispatches
04	SECTRTSW	4	Number of task switches
08	SECTRTDT	4	Number of dispatch timeouts
0C	SECTRTTC	4	Number of conversational batch dispatch timeouts
10	SECTRSWI	4	Number of swapins
14	SECTRSWO	4	Number of swapouts
18	SECTRSON	4	Number of net swapouts *Note:* The difference between the number of swapouts and net swapouts is the number of reclaims.
1C	SECTRSWF	4	Number of forced swaps
20	SECTRXCL	4	Number of main storage transient calls
24	SECTRXLD	4	Number of main storage transient loads
28	SECTRXPE	4	Number of main storage transient preempts
2C	SECTRSQF	4	Number of system queue space failures
30	SECTRWQF	4	Number of work station queue space failures
34	SECTRGWT	4	Number of general waits
38	SECTRRWF	4	Number of work station buffer failures on read operations
3C	SECTRWWF	4	Number of work station buffer failures on write operations

Figure 2-255 (Part 1 of 2). Format of the System Event Counter Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
40	SECTRAIE	4	Number of spool index entries allocated
44	SECTRAEX	4	Number of spool extents allocated
48	SECTRSIB	4	Number of spool intercept buffers split
4C	SECTRSNF	4	Number of sector enqueue failures
50	SECTRTWA	4	Task work area (TWA) extensions
54	SECTRRS1	4	Reserved
58	SECTRRS2	4	Reserved
5C	SECTRRS3	4	Reserved
60	SECTRDAT	3	Date (YYMMDD) on which the counters in this table were reset through the system event counter utility program
63	SECTRRES	1	Reserved

Figure 2-255 (Part 2 of 2). Format of the System Event Counter Table

System Find Parameter List

This 12- or 18-byte area is requried as input for the system find routine (RIB=X'01'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Find input parameter list:			
00	$FNDDTYP	1	Library type: *Hex* *Meaning* 08 Load module 04 Subroutine 02 Source module 01 Procedure
01	$FNDDNM8	8	Eight-character member name
09	$FNDDOPR	1	Operation switches: *Hex* *Meaning* 80 Search system library only (skip user library) 40 Build loader parameter list (do not move entire directory entry) 20 Search user library only (skip system library) 10 Search user library in $FNDDF1A instead of designated user library 08 Return library format 1 address of member (with a regular call, the start address field is overlaid) 04 Do not enqueue or dequeue library directory (the caller is doing enqueues and dequeues)
0A	$FNDDF1A	2	Format 1 address of given user library

Figure 2-256 (Part 1 of 3). Format of a System Find Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Find output parameter list:			
00	$FNDDADR	3	Disk address of requested library module
03	$FNDDNOS	1	Type: O—number of text sectors R—category S or P—record size
04	$FNDDLNK or $FNDDNST	2	Link-edit address Number of statements for source or procedure
06	$FNDDSCT or $FNDDF1F	2	Entry point of module Library format 1 address of found member (SET if requested by $FNDMRF1)
08	$FNDDRLD	1	Displacement of RLDs in last text sectors *Note:* If loader-yes is specified, the total number of sectors in the load module is placed after $FNDDRLD, and no more fields are moved from the directory entry.
09	$FNDDTNS	1	Total number of sectors in module
0A	$FNDDLDA	1	Load address (set by caller)
Remainder of output list for a regular call:			
09	$FNDDCRS	1	Size of program (in sectors)
0A	$FNDDATT	3	Three attribute bytes of member
0D	$FNDDMRT	1	For type: O—MRTMAX count P—Hex FF designates a MRT procedure
0E	$FNDDREL	1	Release level of module

Figure 2-256 (Part 2 of 3). Format of a System Find Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	$FNDDTOT	2	Total size of module (in sectors)
11	$FNDDAT4	1	Fourth attribute byte
12	$FNDDXTR	1	Last directory byte—currently unused
13	$FNDDCOM	1	Results of find: *Hex* *Meaning* 80 Found in system library 40 Found in user library

Figure 2-256 (Part 3 of 3). Format of a System Find Parameter List

System Work Area

The system work area (SWA), system file #SYSWORK, is a variable size disk area reserved for system use. The first sector (0) contains the volume label followed by the main storage IPL routine (1–6) and the system configuration record (sectors 7–59). Also included in the work area is the 60-sector system VTOC, and a 60-sector system work area composed of the diskette work area, which contains diskette VTOC format 1's, and printer configuration. The system work area is allocated by RELOAD.

Note: See *configuration record—system* for the printer configuration organization (Figure 2-53).

How to Find

Field D2FDSTRT in control storage direct area 2 points to the system work area.

Task Control Block (TCB)

The 120-byte task control block (TCB) contains the control information related to each task executing on the System/34. TCBs are created in system queue space and are chained together.

How to Find

The command processor TCB is located in main storage at location hex 0200. Field TCBCHAIN of the command processor TCB points to the next TCB in the chain.

Format

Figure 2-257 shows the format of a TCB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TCBSTAT1	1	Task control block status byte 1: *Hex* *Meaning* 80 Task is not on ready queue 40 Task is on disk (swapped) 20 Task has been forced to swap 10 Task is in swappable state/ quiesced (TCBQCNT=0) 08 Task has swapout I/O in progress 04 On when task swapped in until first time interval expires/On when task is fully swapped out 02 No I/O required for swap indicator 01 Task is never swappable

Figure 2-257 (Part 1 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	TCBSTAT2	1	Task control block status byte 2: *Hex* *Meaning* 80 Task waiting for event completion 40 Task waiting for transient area 20 Task waiting for general post 10 Task waiting for dedicated task-task communication 08 Task waiting for internal delayed SVC 04 Task waiting for timer elapse 02 Task is suspended 01 Reserved
02	TCBWMASK	1	First wait mask: *Hex* *Meaning* 80 System queue space assign failure 40 Task work area allocate failure 20 Test and set failure 10 Work station queue space assign failure 08 Resource enqueue post code (see note) 04 Disk resource failure 02 Disk sector enqueue failure 01 Work station release wait *Note:* Bit 4 is not on when task is in general wait. Therefore, any general wait with both mask bytes all zeros is a resource enqueue failure.

Figure 2-257 (Part 2 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	TCBWMSK2	1	Second wait mask: *Hex* *Meaning* 80 Printer allocate failure 40 Communication line allocate failure 20 Diskette allocate failure 10 Disk space allocation failure 08 Other devices allocation failure 04 SSP-ICF transient waiter 02 Assign recovery forced waiter 01 Reserved
04	TCBSTAT3	1	Task control block status byte 3: *Hex* *Meaning* 80 Task is in termination 40 This task is being checkpointed 20 This is an extended trace task 10 Close has been called indicator 08 Keysort has been called indicator 04 Suspended from system operator pending 02 Data mode escape pending 01 Inquiry pending

Figure 2-257 (Part 3 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	TCBPRIOR	1	Queuing priority (order dependent): *Hex* *Meaning* FF Priority not valid (cannot be used) FC Command processor priority FB SMF priority F9 SDLC priority (secondary) F8 SDLC priority (primary) F4 BSC priority F3 3270 device emulation priority F0 Priorities—MRJE, rebuild, extended trace, spool, SRJE, SNA1, SNA2, intra subsystem, BSCEL subsystem, IMS subsystem, SNA upline facility subsystem, CCP subsystem, CICS subsystem, SNA peer subsystem, BSC 3270, or MLCA controller check error routine E0 User defined high priority D0 User defined medium priority (see TCBBAT) or normal (conversational/ interactive) priority C0 Normal (batch) priority B0 User defined low priority 00 SMF wait task priority
06	TCBTTIME	1	Task residual time interval
07	TCBQCNT	1	Quiesce counter (0=swappable state)
08	TCBCMPLQ	2	Task event control queue header
0A	TCBPUSH	2	Push element Q-header

Figure 2-257 (Part 4 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	TCBCHAIN	2	Task control block chain pointer to next task control block
0E	TCBRDYQ	2	System ready queue chaining field
	or		
	TCBSWAPQ		System ready queue special equate
10	TCBXNTQ	2	Transient queuing field
12	TCBRTUB	2	Terminal unit block address of requestor
14	TCBJCB@	2	Address of task job control block
16	TCBCRB	2	Current request block pointer (first RB in chain)
18	TCB@RSE	1	Register save element (left byte of 16-byte register save area)
	or		
	TCB@XR1	2	Current XR1 when task is in wait
1A	TCB@XR2	2	Current XR2 when task is in wait
1C	TCB@ARR	2	Current ARR when task is in wait
1E	TCB@IAR	2	Current IAR when task is in wait
20	TCB@PSMR	2	Current PMR/PSR when task is in wait
22	TCB@RQ	2	Current R-byte and Q-byte when task is in wait
24	TCB@INL1	1	Inline parameter 1
25	TCB@INL2	1	Inline parameter 2
26	TCB@INL3	1	Inline parameter 3

Figure 2-257 (Part 5 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
27	TCB@INL4	1	Inline parameter 4
	or		
	TCBRSE		Current register save element (right byte of 16-byte register save area)
28	TCBTSSN	3	Task disk address of swap area
2B	TCBBEGL	1	Logical program begin ATR number
	or		
	TCBECMGW		Event control mask for control processor WSQS failures
2C	TCBMSSIZ	1	Current size of main storage allocated (2K blocks)
2D	TCBRGSIZ	1	Task region size (maximum for TCBMSSIZ)
2E	TCBSPOOL	2	Spool work area address
	or		
	TCBECMER		Special event control mask for command processor errors
	or		
	TCB@QHDR		Special system queue header for communications
30	TCBATRS	32	Address translation register stack save area
50	TCBTTC	2	Task-task communications area
52	TCBTWA	2	Disk address of task work area
54	TCBWSWA	2	Disk address of session work area
56	TCBLDREL	2	Task relocation factor for loader
	or		
	TCBMIC		Save area for MIC on abnormal program termination

Figure 2-257 (Part 6 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
58	TCBLDISK or	3	Task absolute disk address for loader
5A	TCBSIAR	1	Save IAR on abnormal termination
5B	TCBINVCT	1	Task invite count
5C	TCBASGNQ	2	Assigned elements queue
5E	TCBEXIT or	2	Asynchronous exit address
	TCBAFAIL		Control processor assign failure indicator bytes
60	TCBTQE	8	Timer queue element
68	TCBSQBCT	1	Count of sector queue requests
69	TCBLCKMK	1	Interlock masks: *Hex* *Meaning* 80 Interlock for dedication 40 Interlock for scheduler 20 Interlock for VTOC 10 Interlock for format 5 08 Interlock for procedure name 04 Interlock for history file 02 Interlock for spool 01 Interlock for reserved
6A	TCBSSTID	1	Shared storage task IDSK bits

Figure 2-257 (Part 7 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6B	TCBTSKID	1	Task ID: *Hex* *Meaning* FE EXTN task ID FD Interactive BSC interrupt handler task ID FC SSP-ICF SNA upline task ID FB SDLC task ID (secondary) FA SRJE task ID F9 Rebuild task ID F8 SNA task ID (remote work station) F7 SNA task ID (batch) F6 SDLC task ID (primary) F5 BSC task ID F4 MRJE task ID F3 Finance support ID F2 Job queue task ID F0 Command processor task ID EF Intra subsystem task ID EE BSCEL subsystem task ID ED IMS subsystem task ID EC CICS subsystem task ID EB CCP subsystem task ID EA SNA peer subsystem task ID E9 SNA upline facility subsystem task ID E8 MLCA controller check error task ID E7 SNA 3270 subsystem task ID E6 3270 subsystem task ID E5 BSC interrupt handler for 3270 device emulation task ID E4 Autocall task ID E0 Maximum user ID *Note:* A value of hex 01 through DF in this field identifies the task ID of user tasks. The spool writer runs using a user task ID.

Figure 2-257 (Part 8 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
6C	TCBPRIQ	2	Task control block priority queue chaining field
6E	TCBSTAT4	1	Additional task control block status: *Hex* *Meaning* 80 Shut down return code delivered 40 Attach yes 20 System task not suspendable 10 Task is in abnormal termination 08 Recursive termination due to SVC 22 04 Cancel pending or command processor called for TWA recovery 02 Error on dump—partial dump taken 01 Dump pending on cancel
6F	TCBSTAT5	1	Status byte 5: *Hex* *Meaning* 80 Task has been in termination 40 2 option cancel pending 20 3 option cancel pending 10 Task is in abnormal termination 08 2 option—flush procedure 04 2 option—continue procedure 02 Take asynchronous exit on error only 01 Diskette orient has been processed

Figure 2-257 (Part 9 of 11). Format of a Task Control Block (TCB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
70	TCBAWSCT or TCBCATM	1	Allocated work station count Current active terminal count
71	TCBCAT	1	Current active terminal variable
72	TCBMRTMX	1	Multiple request terminal maximum requestors allowed
73	TCBNSCNT	1	Not swappable counter
74	TCBCNCNT	1	Not cancelable count
75	TCBIQCNT	1	Not inquirable count
76	TCBARQCT	1	Active requestor count
77	TCBSTAT6	1	Status byte 6: *Hex* *Meaning* 80 Task attached nonswappable 40 Diskette cancel recursion indicator 20 Dump taken indicator 10 Security—initiator interlock 08 No dump was taken for error condition 04 Work station queue space interlock 02 SNA required 01 Dedicated override indicator

Figure 2-257 (Part 10 of 11). Format of a Task Control Block (TCB)

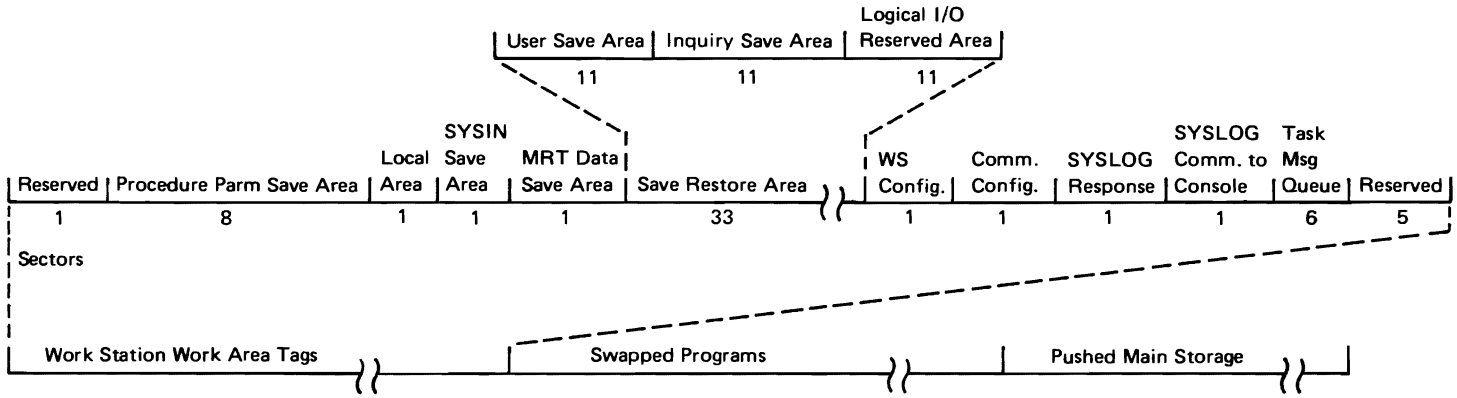
Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
78	TCBBAT	1	Number of batch timeouts allowed (0-5): *Hex* *Meaning* 80 User defined medium priority (see TCBPRIOR)
79	TCBSUSPS	1	Suspension status indicator: *Hex* *Meaning* 80 Task suspended due to unlock 40 Task suspended due to system operator 20 Task suspended due to inquiry 10 Task suspended due to spool suspended/resident 02 Task suspended due to address compare 01 Task suspended due to work station I/O error
7A	TCBWAFLG	1	Work station work area initialization status
7B	TCBSMFPT	2	SMF pointer
7D	TCBX	1	Amount of task swapped out
7E	TCBSTAT7	1	Status byte: *Hex* *Meaning* 80 Spool writer task 40 Spool termination 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved

Figure 2-257 (Part 11 of 11). Format of a Task Control Block (TCB)

Task Work Area

The task work area (TWA), system file #SYSTASK, is a reserved area on disk used for various system functions. It is a variable-sized area that is built during reload and allocated at MSIPL. The TWA contains work station work areas, main storage that has been pushed to disk, and copies of programs that have been swapped to disk. The work station area portion of the TWA contains either the work station work area tags (60 sectors) or the command processor work area tags (120 sectors). The TWA is preallocated for each work station on the system and dynamically allocated for each task requested through the inquiry function. Figure 2-258 shows the work station area tags and the command processor work station work area tags in the TWA.

Work Station Work Area Tags



Command Processor Work Area Tags

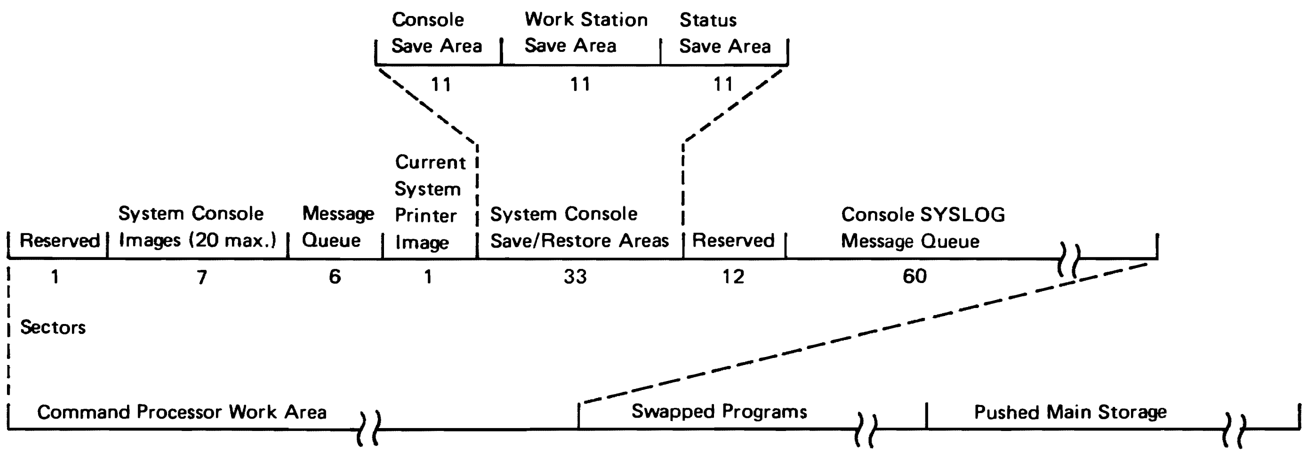


Figure 2-258. Work Station Tags for Work Station and Command Processor

How to Find

The task work area can be found by referring to the system communication area field SCASSTWA for the sector address of the TWA. Also, SCA field SCATWAS2 gives the TWA size in sectors.

To find a specific area in the TWA, refer to the task control block (TCB). Field TCBWSWA points to the work station work area, TCBTWA points to the push area in the TWA if a valid push has been performed, and TCBTSSN points to the swap area of the TWA.

Task Work Area Index

The task work area index is a 40-byte area located in main storage at location hex 0280 (NU@TWAXL).

The first 35 bytes of this area indicate which tracks of the task work area are allocated. Task work area tracks are allocated from the high storage address hex 02A2 (NU@TWAXR) with each bit representing a track. If the bit is off (0) the track is allocated, if the bit is on (1) the track is free. This area is initialized by MSIPL routine #MSTWA. The last 5 bytes of this area (02A3–02A7) are bytes 3–7 of a TWA extension element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TWAXMAP	2	TWA available tracks map
02	TWAXMAPL	1	Length of map field
03	TWAXNEXT	2	Chain field
05	TWAXSS	2	Disk address of this element
07	TWAXN	1	Contains length of task work area extension

Figure 2-259. Task Work Area Extension

Terminal Unit Block (TUB)

A terminal unit block (TUB) is built and maintained for each display station and printer attached to the system. The display station TUB contains information associated with the device IOB, error recovery block (ERB), and miscellaneous display station data. The printer TUB contains information associated with the ERB, and miscellaneous device data. Remote work station TUBs are created by remote work station support when the VARY ON command is entered.

How to Find

Terminal unit blocks must be located in real addressable main storage and they must be chained together.

Field QHDTUB in the system queue header, fixed nucleus location hex 015A and 015B, contains the address of the first TUB in the TUB chain. Field TUBCHAIN points to the next TUB in the chain (end of chain is designated by hex 0000). There may be some session unit blocks (SUBs) at the end of the TUB chain.

Format

Figure 2-260 shows the format of a terminal unit block for a display station and a printer. Figure 2-189 shows the format of a terminal unit block for a remote work station. Figure 2-189 is in addition to the information in Figure 2-260.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TUBECM	1	Event control mask: *Hex* *Meaning* 80 No skip bit 40 Data address is real 20 Non I/O event 10 Reserved (must be zero) 08 Reserved (must be zero) 04 Reserved (must be zero) 02 Reserved (must be zero) 01 Reserved (must be zero)
01	TUBCOMPL	1	IOB completion code: *Hex* *Meaning* 80 IOB request active 40 IOB request complete 20 Reserved (must be zero) 10 Reserved (must be zero) 08 Not used 04 Input buffer assigned 02 Reserved for printer 01 Error found indicator 00 Remote active

Figure 2-260 (Part 1 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02	TUBFLAG	1	Flag byte: *Hex* *Meaning* 80 Indicates system defined error recovery disallowed 40 No return on permanent error 20 Auto input buffer assignment 10 Terminal unit block not allowed off vertical TUBCHAIN 08 Device online 04 Read input issued to terminal unit block 02 Read input not complete 01 Data in control storage
03	TUBDEVIC	1	Device address: *Hex* *Meaning* E0 Native line printer device address C0 Local work station device address 40 Device is locally attached to system *Note:* If this byte contains C0 and TUBDEVID is also C0, this field is a display station IOB command byte; or, if this byte contains C0 and TUBDEVID is E1, E3, or E5, this field is a work station attached printer device address. If bit 1 of this byte is off, the device is remotely attached to the system.

Figure 2-260 (Part 2 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03 (cont.)	or TUBCMND		IOB command byte: *Hex* *Meaning* C3 Cancel invite operation C2 Quiesce C1 Execute invite operation C0 Execute I/O operation code 83 Remote cancel invite operation 81 Remote invite operation 80 Remote execute I/O operation code
04	TUBCMOD	1	IOB command modifier code: *Hex* *Meaning* A7 Put with invite operation 62 Read screen input operation 42 Read input fields operation 27 Output operation 22 Read modified immediate 07 Restore operation 06 Save screen operation 02 Save table operation
05	TUBUNIT@	1	Unit address
06	TUBDATA@	2	Data buffer address (real address)
08	TUBCOUNT	2	Data transfer byte count

Figure 2-260 (Part 3 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
The following 6 bytes are device dependent:			
Display Station:			
0A	TUBSENS0	1	Sense byte 0: *Hex* *Meaning* 80 Data stream reject (see group 1 in TUBSENS4) 40 Work station control field error (see group 2 in TUBSENS4) 20 Resources temporarily not available (see group 3 in TUBSENS4) 10 Work station controller DBI/DBO parity check (does not apply to work station control expansion C) 08 Operation check (see group 4 in TUBSENS4) (If work station control expansion C, see TUBSENS4 and TUBSENS5) 04 Work station controller storage parity check (does not apply to work station control expansion C) 02 Reserved 01 Work station controller long timeout (does not apply to work station control expansion C)

Figure 2-260 (Part 4 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	TUBSENS1	1	Sense byte 1: *Hex* *Meaning* 80 Screen format error (see group 5 in TUBSENS4) 40 No response timeout 20 Transmit activity check 10 Activate command failure 08 Receive parity checks 04 Receive length check 02 Receive buffer overrun (work station control expansion C only) 01 Even/odd response timeout
0C	TUBSENS2	1	Sense byte 2: *Hex* *Meaning* 80 Device busy 40 Line parity check 20 Reserved for printer 10 Outstanding status 08, 04, 02 Exception status: 000—no exception status 001—null or attribute error 010—activate command not valid 011—reserved or RAM load exception status (5255 display station) 100—command or device ID not valid 101—input queue or storage overrun 110—register value not valid 111—power on transition 01 Even/odd response indicator

Figure 2-260 (Part 5 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	TUBSENS3	1	Sense byte 3: *Hex* *Meaning* 00 When terminating a command execution request and no errors were detected, or when terminating the invite mode via a cancel invite and no AIDs were detected. FF When an error is reported that was detected by the work station controller and did not result in operation check being set. The actual error is indicated in one or more of the work station control field/TUB sense bytes. 04 Not valid storage page, I/O buffer boundary, or data byte transfer count (greater than 4096). xx Any of the possible AID codes when terminating the invite mode (xx=AID code: See *Aid Codes* in Section 3).
0E	TUBSENS4	1	Sense byte 4 error codes: *Hex* *Meaning* Group 1—data stream reject errors: 0F Invalid sequence of field format words and field control words (work station control expansion C only) 0E Load display station RAM error (work station control expansion C only) 0D Too many format control words defined

Figure 2-260 (Part 6 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning*
			0C Roll parameter error
			0B Start of header length not equal to 3
			0A Data written past end of screen
			09 Format table overflow
			08 Input field past end of screen
			07 Restore issued to wrong display station
			06 Start field address not valid
			05 Start field length not valid
			04 Escape character missing or command code not valid
			03 Repeat to address is less than present value of the address counter
			02 Row or column address not valid
			01 Premature end of data stream
			Group 2—work station control field errors:
			04 Byte count not equal to that actually transferred
			03 Unit address not found
			02 Byte count not valid (0)
			01 Command modifier not valid
			Group 3—resources temporarily not available errors:
			09 Save or restore error
			08 Reserved
			07 Work station is powered off
			06 Read issued to unlocked keyboard
			05 Not ready due to operator error mode or system request mode
			04 Reserved for printer
			03 Device offline
			02 Work station in error mode
			01 Reserved for printer

Figure 2-260 (Part 7 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning*
			Group 4—operation check errors (does not apply to work station control expansion C):
			05 I/O controller not processing keystrokes
			02 Timeout on cycle steal data
			01 Serdes timeout
			Group 4—operation checks (work station control expansion C only):
			80 Storage data register (SDR) parity check
			40 Micro-operation register (MOR) parity check
			20 Y register parity check
			10 X register parity check
			08 Invalid control storage address/SAR parity check
			04 3-second time-out/SAR parity check
			02 Not used
			01 Not used
			Note: If all the indicators in this group are on (hex FF), see TUBSENS5.
			Group 5—screen format errors:
			04 Shift out/shift in character misplaced or omitted in open field (work station control expansion C only)
			03 Check digit error (does not apply to work station control expansion C)
			02 Resequence error in format table
			01 Field length not valid during keystroke processing (does not apply to work station control expansion C) or read input fields

Figure 2-260 (Part 8 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning* Group 6—Scan codes not valid: nn nn=the not valid scan code Group 7—magnetic stripe reader (MSR) error: 80 Magnetic stripe reader did not have data 00 Magnetic stripe reader not installed, or magnetic stripe reader feature microcode not installed Group 8—remote attachment errors: 98 Undefined remote hardware error 86 Feature not installed 73 Remote cluster feature write error 72 Remote cluster feature overrun 70 Remote cluster feature hardware error 69 SDLC request not valid or protocol violation 68 Permanent SDLC hardware error 67 SDLC data overrun 66 Abnormal termination of SDLC 65 SDLC timeout condition 64 Request-on-line received 63 Undefined SDLC detected error 59 Invalid ACTLU/BIND type or parameter 58 SNA path error 57 SNA RH usage error 56 SNA state error 55 Reserved for printer 54 Undefined remote error

Figure 2-260 (Part 9 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning* 53 Abnormal termination of SNA 52 Component permanent malfunction/power off 51 SNA function not supported 07 Wrong station responded
0F	TUBSENS5	1	Sense byte 5 contains low order 2 digits of operator code if help key in operator mode is active (FB in byte 5 of the work station control field) or *Hex* *Meaning* 20 Not valid scan code and MDT is: X'20'—off (see group 6 of TUBSENS4) or 28 X'28'—on (see group 6 of TUBSENS4) 08 Master modified data tag: 0—MDT off 1—whenever any input field on the screen has its MDT on or 9n Magnetic stripe reader error; n can be any value (see group 7 of TUBSENS4) or F0 Remote attachment error (see group 8 of TUBSENS4)

Figure 2-260 (Part 10 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F (cont.)			Operation checks (work station control expansion C only)

Hex *Meaning*

80 DBO parity check
40 Invalid device assignment
20 DBI parity check
10 I/O time-out
08 Not used
04 System bus out (SBO) parity check
02 Cycle steal check (check occurred during cycle steal operation)
01 Not used

Note: If TUBSENS4 is hex FF and if work station control expansion C is installed, the values in this byte have the following meanings:

Hex *Error*

00 The operation check is a hardware check that does not allow IOCH to retrieve additional data from the controller
01 Interrupt level 2 interrupts were not occurring
02 Interrupt level 5 was evoked for an invalid reason
03 A time-out suspended the processor—processor interface
04 A work station adapter error occurred
05 An undefined instruction has been executed

Figure 2-260 (Part 11 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3262 line printer:			
0A	TUBSENS0	1	Sense byte 0: if bit 0 is on, sense byte 0 contains the following:

Bit *Meaning*

0 On—printer controller unit checks
1 Not used
2–3 00—time out
01—hardware parity check
10—hardware parity check
11—hardware parity check
4 Not used
5–6 00—Jumpers not correctly placed on card
01—Jumpers not correctly placed on card
10—Jumpers not correctly placed on card
11—650 lines per minute printer
7 Reserved

If bit 0 is off, sense byte 0 has the following meanings:

Hex *Meaning*

80 Not used
40 Unprintable character
20 Hammer echo checks
10 Printer not ready
08–04 Belt check
00—no check
01—belt up to speed check
10—belt sync check
11—belt speed check
02 Thermal check 1
01 Any hammer on checks

Figure 2-260 (Part 12 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	TUBSENS1	1	Sense byte 1: *Hex* *Meaning* 80 End of forms 40 Forms jam checks 20 Printer unit (throat) open 10 Thermal check 2 08 Printer busy too long checks 04 Ribbon checks 02 Cable interlock checks 01 Data parity checks (also called hammer bus out parity check)
0C	TUBSENS2	1	Sense byte 2: *Hex* *Meaning* 80 Printer not powered on 40 Data transfer check 20 Data stream reject 10 Reserved 08 SCS parameter not valid 04 SCS command not valid 02 IOB not valid 01 Carriage pedestal check

Figure 2-260 (Part 13 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	TUBSENS3	1	Sense byte 3: *Hex* *Meaning* 80 Printer CE switch is on 40 Eight lines per inch mode indicator 20–10 Printer speed 11–650 lines per minute 08 Fire tier checks 04 Print subscan emitter checks 02–01 Carriage check 00–no check 01–carriage check 1 (deceleration or sync check) 10–carriage check 3 (carriage full speed check) 11–carriage check 4 (acceleration check)
0E	TUBSENS4	1	Sense byte 4: Error identifier: *Hex* *Meaning* FF Device error 04 Storage page or I/O buffer boundary not valid If a device error has occurred and if that error is a hammer echo or any hammer on check, hex FF is replaced with the number of the first failing hammer.
0F	TUBSENS5	1	Sense byte 5: Number of failing hammers (if the error is a hammer echo check or any hammer on check)

Figure 2-260 (Part 14 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5211 line printer:			
0A	TUBSENS0	1	Sense byte 0: if bit 0 is on, sense byte 0 contains the following: *Bit* *Meaning* 0 On—printer controller unit checks 1 Not used 2–3 00—time-out 01—hardware parity check 10—hardware parity check 11—hardware parity check 4 Not used 5–6 00—jumpers not correctly placed on adapter card 01—300 LPM 10—jumpers not correctly placed on adapter card 11—160 LPM 7 CE sense bit If bit 0 is off, sense byte 0 has the following meanings: *Hex* *Meaning* 80 Not used 40 Unprintable character 20 Hammer echo checks 10 Printer not ready 08 Belt sync checks 04 Belt speed checks 02 Belt up to speed checks 01 Any hammer on checks

Figure 2-260 (Part 15 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	TUBSENS1	1	Sense byte 1: *Hex* *Meaning* 80 End of forms 40 Forms jam checks 20 Printer unit open 10 Printer busy too often checks 08 Printer busy too long checks 04 Ribbon checks 02 Cable interlock checks 01 Data parity checks (also called hammer bus out parity check)
0C	TUBSENS2	1	Sense byte 2: *Hex* *Meaning* 80 Printer not powered on 40 Data transfer check 20 Data stream reject 10 Reserved 08 SCS parameter not valid 04 SCS command not valid 02 IOB not valid 01 Printer power check

Figure 2-260 (Part 16 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D	TUBSENS3	1	Sense byte 3: *Hex* *Meaning* 80 Printer CE switch is on 40 Eight lines per inch mode indicator Bits 2 and 3 indicate printer line speed: 00=160 lines per minute 01=300 lines per minute 08 Fire tier checks 04 Print subscan emitter checks 02 Carriage speed check (carriage check 2) 01 Carriage sync check (carriage check 1)
0E	TUBSENS4	1	Sense byte 4: Error identifier: *Hex* *Meaning* FF Device error 04 Storage page or I/O buffer boundary not valid If a device error has occurred and if that error is a hammer echo check, the hex FF is replaced with the first failing hammer.
0F	TUBSENS5	1	Sense byte 5: Number of failing hammers (if the error is a hammer echo check)

Figure 2-260 (Part 17 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5256 Printer:			
0A	TUBSENS0	1	Sense byte 0: Controller/host status: *Hex* *Meaning* 80 Reserved 40 Work station control field error (see group 1 in TUBSENS4) 20 Resources temporarily not available (see group 2 in TUBSENS4) 10 Work station controller DBO/DBI parity check (does not apply to work station control expansion C) 08 Operation check (see group 3 in TUBSENS4) (If work station control expansion C, see TUBSENS4 and TUBSENS5) 04 Work station controller storage parity check (does not apply to work station control expansion C) 02 Reserved 01 Work station controller long timeout check (does not apply to work station control expansion C)
0B	TUBSENS1	1	Sense byte 1: Cable interface status (controller): *Hex* *Meaning* 80 Not used by printer 40 No response timeout 20 Transmit activity check 10 Activate command failure 08 Receive parity check 04 Receive length check 02 Receive buffer overrun (work station control expansion C only) 01 Even/odd response timeout

Figure 2-260 (Part 18 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	TUBSENS2	1	Sense byte 2: Cable interface status (station/device): *Hex* *Meaning* 80 Device busy timeout 40 Line parity check 20 Unit not available 10 Outstanding status 08, 04, 02 Exception status: 000—no exception status 001—activate lost 010—activate command not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—reserved for display station 111—power-on transition 01 Even/odd response indicator (not an error)
0D	TUBSENS3	1	Sense byte 3: Error indicator *Hex* *Meaning* FF Device error D4 Print complete D3 Data transfer complete D1 Cancel key pressed 04 Storage page or I/O buffer boundary not valid or a value greater than 4096 was specified as the data transfer byte count in a printer IOB

Figure 2-260 (Part 19 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	TUBSENS4	1	Sense byte 4: *Hex* *Meaning* Group 1—work station control field errors: 03 Unit address not found 02 Byte count not valid (between 256 and 4097) 01 Command modifier not valid Group 2—resources temporarily not available errors: 07 Printer is powered off 06 Reserved for display station 05 Reserved for display station 04 Printer requires initialization 03 Printer offline 02 Printer in error mode 01 Print buffer not available Group 3—operation check errors (does not apply to work station control expansion C): 05 I/O controller not processing keystrokes 02 Timeout on cycle steal data 01 Serdes timeout

Figure 2-260 (Part 20 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			Group 3—operation checks (work station control expansion C only):

Hex	*Meaning*
80	Storage data register (SDR) parity check
40	Micro-operation register (MOR) parity check
20	Y register parity check
10	X register parity check
08	Invalid control storage address/SAR parity check
04	3-second time-out/SAR parity check
02	Not used
01	Not used

Note: If all the indicators in this group are on (hex FF), see TUBSENS5.

Group 4—printer errors:

80	SCS command not valid
40	SCS parameter not valid
20	Reserved
10	Reserved
08	Reserved
04	Printer mechanism not ready
02	End of forms
01	Unprintable character check

Figure 2-260 (Part 21 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			

Hex	*Meaning*

Group 5—remote attachment error:

98	Undefined remote hardware error
73	Remote cluster feature write error
72	Remote cluster feature overrun
70	Remote cluster feature hardware error
69	SDLC request not valid or protocol violation
68	Permanent SDLC hardware error
67	SDLC data overrun
66	Abnormal termination of SDLC
65	SDLC timeout condition
64	Request-on-line received
63	Undefined SDLC detected error
59	ACTLU/BIND type or parameter not valid
58	SNA path error
57	SNA RH usage error
56	SNA state error
55	Change direction sent to the printer
54	Undefined remote error
53	Abnormal termination of SNA
52	Component permanent malfunction/power off
51	SNA function not supported
07	Wrong station responded

Figure 2-260 (Part 22 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	TUBSENS5	1	Sense byte 5:

Hex *Meaning*

80 Wire check
40 Slow speed check
20 Fast speed check
10 Emitter sequence
08 No emitter check
04 Overrun error
02 Forms stopped
01 Forms position check
or
F0 Remote attachment error (see group 5 of TUBSENS4)

Operation checks (work station control expansion C only)

Hex *Meaning*

80 DBO parity check
40 Invalid device assignment
20 DBI parity check
10 I/O time-out
08 Not used
04 System bus out (SBO) parity check
02 Cycle steal check (check occurred during cycle steal operation)
01 Not used

Figure 2-260 (Part 23 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F (cont.)			

Note: If TUBSENS4 is hex FF and if work station control expansion C is installed, the values in this byte have the following meanings:

Hex *Error*

00 The operation check is a hardware check that does not allow IOCH to retrieve additional data from the controller
01 Interrupt level 2 interrupts were not occurring
02 Interrupt level 5 was evoked for an invalid reason
03 A time-out suspended the processor—processor interface
04 A work station adapter error occurred
05 An undefined instruction has been executed

5224/5225 Printer:

0A	TUBSENS0	1	Sense byte 0:

Hex *Meaning*

80 Reserved
40 Work station control field error (see group 1 in TUBSENS4)
20 Resources temporarily not available (see group 2 in TUBSENS4)
10 Work station controller DBO/DBI parity check (does not apply to work station control expansion C)
08 Operation check (see group 3 in TUBSENS4) (If work station control expansion C, see TUBSENS4 and TUBSENS5)

Figure 2-260 (Part 24 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A (cont.)			*Hex* *Meaning* 04 Work station controller storage parity check (does not apply to work station control expansion C) 02 Reserved 01 Work station controller long time-out check (does not apply to work station control expansion C)
0B	TUBSENS1	1	Sense byte 1: *Hex* *Meaning* 80 Not used by the printer 40 No response time-out 20 Transmit activity check 10 Activate command failure 08 Receive parity check 04 Receive length check 02 Receive buffer overrun (work station control expansion C only) 01 Even/odd response time-out

Figure 2-260 (Part 25 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	TUBSENS2	1	Sense byte 2: *Hex* *Meaning* 80 Device busy time-out 40 Line parity check 20 Unit not available 10 Outstanding status 08, 04, 02 Exception status: 000—no exception status 001—activate lost 010—activate command not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—reserved for display station 111—power-on transition 01 Even/odd response indicator (not an error)
0D	TUBSENS3	1	Sense byte 3: *Hex* *Meaning* FF Device error D4 Print complete D3 Data transfer complete D1 Cancel key pressed 04 Storage page or I/O buffer boundary not valid, or a value greater than 4096 was specified as the data transfer byte count in a printer IOB

Figure 2-260 (Part 26 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	TUBSENS4	1	Sense byte 4: *Hex* *Meaning* Group 1—work station control field errors: 03 Unit address not found 02 Byte count not valid (between 256 and 4097) 01 Command modifier not valid Group 2—resources temporarily not available errors: 07 Printer is powered off 06 Reserved for display station 05 Reserved for display station 04 Printer requires initialization 03 Printer offline 02 Printer in error mode 01 Print buffer not available Group 3—operation check errors (does not apply to work station control expansion C): 05 I/O controller not processing key-strokes 02 Time-out on cycle steal data 01 Serdes time-out

Figure 2-260 (Part 27 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning* Group 3—operation checks (work station control expansion C only): 80 Storage data register (SDR) parity check 40 Micro-operation register (MOR) parity check 20 Y register parity check 10 X register parity check 08 Invalid control storage address/SAR parity check 04 3-second time-out/SAR parity check 02 Not used 01 Not used *Note:* If all the indicators in this group are on (hex FF), see TUBSENS5. Group 4—printer errors: 80 SCS command not valid 40 SCS parameter not valid 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 End of forms 01 Unprintable character check

Figure 2-260 (Part 28 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning*

Group 5—remote attachment error:

Hex	*Meaning*
98	Undefined remote hardware error
73	Remote cluster feature write error
72	Remote cluster feature overrun
70	Remote cluster feature hardware error
69	SDLC request not valid or protocol violation
68	Permanent SDLC hardware error
67	SDLC data overrun
66	Abnormal termination of SDLC
65	SDLC time-out condition
64	Request-on-line received
63	Undefined SDLC detected error
59	ACTLU/BIND type or parameter not valid
58	SNA path error
57	SNA RH usage error
56	SNA state error
55	Change direction sent to a printer
54	Undefined remote error
53	Abnormal termination of SNA
52	Component permanent malfunction/ power off
51	SNA function not supported
07	Wrong station responded

Figure 2-260 (Part 29 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	TUBSENS5	1	Sense byte 5:

Hex	*Meaning*
F0	Remote error (see TUBSENS4 for additional information)
89	Ribbon jam
88	Ribbon jam (5225 only)
87	Machine check (5225 only)
86	Machine check (5225 only)
85	Print check
84	Print check
83	Print check
81	Machine check
48	Forms check (5225 only)
46	Forms check
45	Forms check
43	Forms check (5225 only)
42	Forms check
41	Forms check
39	Print check (5225 only)
38	Print check (5225 only)
36	Print check
35	Print check
34	Print check (5225 only)
32	Print check
31	Print check
11	Machine check

Figure 2-260 (Part 30 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F (cont.)			Operation checks (work station control expansion C only) *Hex* *Meaning* 80 DBO parity check 40 Invalid device assignment 20 DBI parity check 10 I/O time-out 08 Not used 04 System bus out (SBO) parity check 02 Cycle steal check (check occurred during cycle steal operation) 01 Not used *Note:* If TUBSENS4 is hex FF and if work station control expansion C is installed, the values in this byte have the following meanings: *Hex* *Error* 00 The operation check is a hardware check that does not allow IOCH to retrieve additional data from the controller 01 Interrupt level 2 interrupts were not occurring 02 Interrupt level 5 was evoked for an invalid reason 03 A time-out suspended the processor—processor interface 04 A work station adapter error occurred 05 An undefined instruction has been executed

Figure 2-260 (Part 30.1 of 43) Format of a Terminal Unit Block For Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
5219	Printer:		
0A	TUBSENS0	1	Sense byte 0: *Hex* *Meaning* 80 Reserved 40 Work station control field error (see group 1 in TUBSENS4) 20 Resources temporarily not available (see group 2 in TUBSENS4) 10 Work station controller DBO/DBI parity check (does not apply to work station control expansion C) 08 Operation check (see group 3 in TUBSENS4) (If work station control expansion C, see TUBSENS4 and TUBSENS5) 04 Work station controller storage parity check (does not apply to work station control expansion C) 02 Reserved 01 Work station controller long time-out check (does not apply to work station control expansion C)
0B	TUBSENS1	1	Sense byte 1: *Hex* *Meaning* 80 Not used by the printer 40 No response time-out 20 Transmit activity check 10 Activate command failure 08 Receive parity check 04 Receive length check 02 Receive buffer overrun (work station control expansion C only) 01 Even/odd response time-out

Figure 2-260 (Part 31 of 43) Format of a Terminal Unit Block For Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C	TUBSENS2	1	Sense byte 2: Cable interface status (station/device): *Hex* *Meaning* 80 Device busy timeout 40 Line parity check 20 Unit not available 10 Outstanding status 08, 04, 02 Exception status: 000—no exception status 001—activate lost 010—activate command not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—reserved for display station 111—power-on transition 01 Even/odd response indicator (not an error)
0D	TUBSENS3	1	Sense byte 3: Error indicator *Hex* *Meaning* FF Device error D4 Print complete D3 Data transfer complete D1 Cancel key pressed 04 Storage page or I/O buffer boundary not valid or a value greater than 4096 was specified as the data transfer byte count in a printer IOB

Figure 2-260 (Part 31.1 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	TUBSENS4	1	Sense byte 4: *Hex* *Meaning* 03 Unit address not found 02 Byte count not valid (between 256 and 4097) 01 Command modifier not valid Group 2—resources temporarily not available errors: 07 Printer is powered off 06 Reserved for display station 05 Reserved for display station 04 Printer requires initialization 03 Printer offline 02 Printer in error mode 01 Print buffer not available Group 3—operation check errors (does not apply to work station control expansion C): 05 I/O controller not processing key-strokes 02 Time-out on cycle steal data 01 Serdes time-out Group 3—operation checks (work station control expansion C only): 80 Storage data register (SDR) parity check 40 Micro-operation register (MOR) parity check 20 Y register parity check 10 X register parity check 08 Invalid control storage address/SAR parity check 04 3-second time-out/SAR parity check 02 Not used 01 Not used *Note:* If all the indicators in this group are on (hex FF), see TUBSENS5.

Figure 2-260 (Part 31.2 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E (cont.)			*Hex* *Meaning*
			Group 4—printer errors:
			80 SCS command not valid
			40 SCS parameter not valid
			20 Reserved
			10 Reserved
			08 Reserved
			04 Reserved
			02 End of forms
			01 Unprintable character check
			Group 5—remote attachment error:
			98 Undefined remote hardware error
			73 Remote cluster feature write error
			72 Remote cluster feature overrun
			70 Remote cluster feature hardware error
			69 SDLC request not valid or protocol violation
			68 Permanent SDLC hardware error
			67 SDLC data overrun
			66 Abnormal termination of SDLC
			65 SDLC time-out condition
			64 Request-on-line received
			63 Undefined SDLC detected error
			59 ACTLU/BIND type or parameter not valid
			58 SNA path error
			57 SNA RH usage error
			56 SNA state error
			55 Change direction sent to a printer
			54 Undefined remote error
			53 Abnormal termination of SNA
			52 Component permanent malfunction/ power off
			51 SNA function not supported
			07 Wrong station responded

Figure 2-260 (Part 31.3 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0F	TUBSENS5	1	Sense byte 5:
			Hex *Meaning*
			F0 Remote error (see TUBSENS4 for additional information)
			81 Unexpected cover open
			69 Data stream exception, class 4
			68 Data stream exception, class 3
			67 Data stream exception, class 2
			66 Data stream exception, class 1
			58 End of ribbon
			47 Paper jam
			41 Forms check
			33 Print check
			32 Print check
			31 Print check
			12 Machine check
			11 Machine check

Figure 2-260 (Part 31.4 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	TUBTCB@	2	Task control block address for data buffer address translation registers
Error recovery block (ERB):			
12	TUBCHAIN	2	Terminal unit block chain field
14	TUBDEVID	1	Terminal unit block device ID for error recovery procedure: *Hex* *Meaning* E5 5219 Printer E3 5224/5225 Printer E2 3262 Printer E1 5256 Printer E0 5211 Printer C0 Display station
15	TUBQHDR	1	Queue header displacement for device or logical queue header number
16	TUBERPCT	1	Error recovery procedure control byte: *Hex* *Meaning* F0 Mask to set off zone bits to check function 80 The error recovery block is in use, awaiting main storage action 40 Control storage router operation complete 20 Main storage error recovery block operation has been completed 10 Ready response was a second error 08 Reserved 07 Get error MIC number 06 Perform error recovery 05 Issue message 04 Wait for not-ready to ready or message response

Figure 2-260 (Part 31.5 of 43) Format of a Terminal Unit Block for Display Station and Printer (TUB)

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Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
16 (cont.)			*Hex* *Meaning* 03 Device readied—erase previously sent message 02 Reserved 01 Reserved 00 Function not valid (do not use) 0F Error in process if any bit on
17	TUBERBFG	1	Error recovery block flag byte: *Hex* *Meaning* 80 Place work station ID in the message 40 Place 4-byte error code in the text message 20 No response required for informational message 10 Do not attempt to log this error 08 Terminal unit block posted complete with error (command processor only) 04 This error recovery block is in retry mode 03 Resources unavailable 02 Hardware error 01 Programming error 00 Unused
18	TUBERAID	1	Error aid flag byte: *Hex* *Meaning* 01 I/O error 00 Normal value
19	TUBMIC	2	Error recovery procedure message ID code

Figure 2-260 (Part 33 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1B	TUBOPTS	1	Error recovery procedure message options: *Hex* *Meaning* F0 Option D was selected 80 Option 0 was selected 40 Option 1 was selected 20 Option 2 was selected 10 Option 3 was selected 08 Option 0 is allowed 04 Option 1 is allowed 02 Option 2 is allowed 01 Option 3 is allowed
1C	TUBSIOCT	2	Start I/O count
1E	TUBERRCT	1	Error retry count
1F	TUBWSID	2	Logical ID of the work station
21	TUBWSWA	2	Sector address of work station work area
	or TUBPCFG@		Sector address of printer configuration record
23	TUBTCB	2	Terminal unit block owner task control block address/printer owner queue header (address of allocation queue element)
The following 11 bytes are printer information only:			
25	TUBPEXT@	2	Pointer to RWS printer extension
27	TUBPRESV	1	Reserved
28	TUBPFMNO	4	Forms number
2C	TUBPFMLN	1	Forms length (lines/page)
2D	TUBPCRLN	1	Current line

Figure 2-260 (Part 34 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2E	TUBPMXPP	1	Maximum print positions (horizontal)
2F	TUBDPRST	1	Printer status byte: *Hex* *Meaning* 80 Post user on error message 40 Printer past ready 20 This printer TUB has an addition 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
For a printer TUB with an addition the following fields exist:			
30	TUBPSUBC	2	Controlling subconsole logical ID
32	TUBPGTUB	2	Pointer to EXTN TUB (printers)
34	TUBPATR1	1	Printer attribute byte 1: *Hex* *Meaning* 80 IGC capable printer 40 EXTN processing on for this printer 20 Reserved 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
35	TUBPLPI	1	Lines per inch: *Bits* *Meaning* 0–3 Last value sent 4–7 Default value

Figure 2-260 (Part 35 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
36	TUBPERES	10	Reserved
The following 59 bytes contain display station information only:			
25	TUBAID	1	Aid byte (see Figure 3-5)
26	TUBCPAID	1	Aid byte (inquiry, system request)
27	TUBRESV1	1	Reserved area
28	TUBUSER	8	Operator ID
30	TUBOPSTS	1	Operator status
31	TUBJCB@	2	Address of job control block
33	TUBTUB	2	Terminal unit block chain for system request and inquiry
35	TUBATTR1	1	Attribute byte 1: *Hex* *Meaning* 80 System console 40 Alternate console 20 On—command terminal Off—data terminal 10 Terminal signed on 08 Test request mode 04 Job initiation not allowed 02 Work station work area formatted with LIO display 01 Console/display station mode forced by I/O error

Figure 2-260 (Part 36 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
36	TUBATTR2	1	Terminal mode and display:
			Hex *Meaning*
			80 Terminal in standby mode
			70 Terminal in data mode escape
			40 On—terminal in work station mode Off—terminal in console mode
			30 Off—terminal in initial mode
			20 Terminal in command mode
			10 Terminal in data mode
			08 Menu display active
			04 Status display active
			02 SYSIN/SYSLOG display active
			01 Message display active
37	TUBATTR3	1	Invite indicators:
			Hex *Meaning*
			80 Invite scheduled to terminal unit block
			40 Implicit invite to terminal unit block
			20 Terminal unit block invited through PRUF
			10 Auto RUF invite
			08 Save for bit 0 status
			04 Save for bit 1 status
			02 Save for bit 2 status
			01 Save for bit 3 status
38	TUBATTR4	1	Inquiry/system request and miscellaneous:
			Hex *Meaning*
			80 Terminal unit block on horizontal queue
			40 Inquiry 1 terminal unit block
			20 Inquiry 2 terminal unit block
			10 Inquiry menu is pending

Figure 2-260 (Part 37 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
38 (cont.)			*Hex* *Meaning*
			08 Restore screen-inquiry or system request
			04 Restore screen-message or SYSLOG
			02 SYSIN/SYSLOG display has been saved
			01 IDELETE function is active
39	TUBATTR5	1	Release indicators:
			Hex *Meaning*
			80 Restore-Y on OCL statement
			40 Restore-N on OCL statement
			20 Last operation to the terminal unit block was a put
			10 Release stop invite worked
			08 Release stop invite failed
			04 Terminal unit block has been released
			02 Single request terminal has released requestor
			01 Call terminator prior to release
3A	TUBATTR6	1	Attribute byte 6:
			Hex *Meaning*
			80 User display is up
			40 User display saved
			20 SYSLIST display up
			10 Broadcast failure
			08 Multiple request terminal procedure with data entered
			04 Save/restore interlock
			02 Help function pending
			01 Keyboard unlocked
3B	TUBCTSAV	2	Save area for TUBCOUNT field

Figure 2-260 (Part 38 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3D	TUBAPRNT	2	ID of associated printer
3F	TUBMSGCT	1	Message count: *Hex* *Meaning* 80 Level 0 inquiry message has been rerouted 40 Level 1 inquiry message has been rerouted
40	TUBASGNL	2	Assigned buffer length
42	TUBASGN@	2	Assigned buffer address
44	TUBATTR7	1	Attribute byte 7: *Hex* *Meaning* 80 System request is pending 40 Permanent I/O error on this terminal unit block 20 Inquiry disabled on this terminal unit block 10 Command reject on this terminal unit block 08 Terminal unit block in ready mode 04 Logical I/O error 02 Logical I/O in progress 01 Ready function in progress
45	TUBATTR8	1	Attribute 8: *Hex* *Meaning* 80 Sound alarm and turn on light 40 Turn off message light 20 Alarm has been sent 10 Modified data tag 08 Reserved for work station input/ output control handler

Figure 2-260 (Part 39 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
45 (cont.)			*Hex* *Meaning* 04 Reserved for work station input/ output control handler 02 Reserved for work station input/ output control handler 01 Reserved for work station input/ output control handler
46	TUBHELPM	2	Help key MIC area
	or		
	TUBGCHAR	2	EXTN character on aid request
48	TUBATTR9	1	Attribute byte 9: *Hex* *Meaning* 80 Badge security 40 960-character display screen 20 Display page 2 of menu on 960-character display screen 10 Multiple requestor terminal security switch 08 Reject in ready function 04 Error during save (status or console SYSLOG) 02 Error during save (system request or inquiry) 01 Ready task is pending
49	TUBRFSS	2	Sector address of command reject file
4B	TUBRFN	1	Number of sectors in reject file
4C	TUBRFCSS	1	Reject file current sector
4D	TUBRFDSP	1	Reject file relative displacement

Figure 2-260 (Part 40 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4E	TUBCMSK1	1	First command key mask byte: *Hex* *Meaning* 80 Enable command key 8 40 Enable command key 7 20 Enable command key 6 10 Enable command key 5 08 Enable command key 4 04 Enable command key 3 02 Enable command key 2 01 Enable command key 1
4F	TUBCMSK2	1	Second command key mask byte: *Hex* *Meaning* 80 Enable command key 12 40 Enable command key 11 20 Enable command key 10 10 Enable command key 9 08 Enable command key 24 04 Enable command key 23 02 Enable command key 22 01 Enable command key 21
50	TUBCMSK3	1	Third command key mask byte: *Hex* *Meaning* 80 Enable command key 20 40 Enable command key 19 20 Enable command key 18 10 Enable command key 17 08 Enable command key 16 04 Enable command key 15 02 Enable command key 14 01 Enable command key 13

Figure 2-260 (Part 41 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
51	TUBFMSK	1	Function key mask: *Hex* *Meaning* 80 Enable print key 40 Enable roll up key 20 Enable roll down key 10 Enable clear key 08 Enable help key 04 Enable record backspace key 02 Reserved 01 Reserved
52	TUBDEXT@	2	Extension pointer for RWS display stations
54	TUBATTRA	1	Attribute byte 10: *Hex* *Meaning* 80 Clear aids 40 Lock control 20 OFF OCL statement received 10 HOLD parameter for OFF command (on) 08 Subconsole display station 04 Enter has been pressed at the subconsole 02 Subconsole currently assigned NOSUB 01 Perform read modified
55	TUBMSGID	1	Next reply ID to use at subconsole
56	TUBDMATX	2	Address of subconsole matrix

Figure 2-260 (Part 42 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
58	TUBATTRB	1	Attribute byte 11: *Hex* *Meaning* 80 IGC capable display 40 IGC capable keyboard 20 This session in IGC mode 10 EXTN processing on 08 Reserved 04 Reserved 02 Reserved 01 Reserved
59	TUBDGTUB	2	Display station pointer to EXTN TUB
5B	TUBATTRC	1	Attribute byte 12: *Hex* *Meaning* 80 0 option taken on invalid EXTN character 40 0 option on an undefined EXTN character 20 0 option on a RAM full error 18 2 option on an undefined EXTN character 10 2 option taken on a RAM full error 08 2 option on an invalid EXTN character 04 High-level help aid in progress 02 1 option taken on above error 01 Set off WSQS interlock for load RAM error
5C	TUBRSVD	4	Reserved

Figure 2-260 (Part 43 of 43). Format of a Terminal Unit Block for Display Station and Printer (TUB)

Termination Exit Block (TEB)

A 39-byte termination exit block (TEB) contains control information regarding an asynchronous error exit upon a request for abnormal task termination.

How to Find

Field TCBEXIT in the task control block (TCB) contains the address of the TEB.

Format

Figure 2-261 shows the format of a termination exit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	TEBEXADD	4	SSSNR of communications transient
05	TEBXLATE	1	Translation value
06	TEBREADD	2	Return address to communications
08	TEBMICNO	2	MIC number
0A	TEBXR1	2	Save area for XR1
0C	TEBXR2	2	Save area for XR2
0E	TEBARR	2	Save area for ARR
10	TEBIAR	2	Save area for IAR
12	TEBPMR	1	Save area for PMR
13	TEBPSR	1	Save area for PSR
14	TEBSTATU	1	TEB status byte: *Hex* *Meaning* 80 TEB active 40 Release interlocks

Figure 2-261 (Part 1 of 3). Format of a Termination Exit Block (TEB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
14 (cont.)			*Hex* *Meaning* 20 Error on dump—partial dump 10 No dump was taken for error 08 Refresh-yes specified on the retex 04 Asynchronous error transient can handle 2K page fail 02 Asynchronous error transient active 01 Reserved
15	TEBSTAT5	1	TCB status byte 5: *Hex* *Meaning* 80 Task has been in termination 40 2 option cancel pending 20 3 option cancel pending 10 Task is in abnormal termination 08 2 option-flush procedure 04 2 option-continue procedure 02 Take asynchronous exit on error only 01 Reserved
16	TEBSTAT9	1	Reserved
17	TEBLOCKS	1	System interlocks: *Hex* *Meaning* 80 Interlock for dedication 40 Interlock for scheduler 20 Interlock for VTOC 10 Interlock for format 5 08 Interlock for procedure name 04 Interlock for history file 02 Reserved 01 Reserved

Figure 2-261 (Part 2 of 3). Format of a Termination Exit Block (TEB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Remote work station TEB work area (label TEBWORKS):			
18	RWTEBFLG	1	Flag byte: *Hex* *Meaning* 80 Remote work station locked TUB chain 40 SDLC 2K page failure
19	RWTEBLST	1	Line status (open lines): *Hex* *Meaning* 08 Line 4 is open 04 Line 3 is open 02 Line 2 is open 01 Line 1 is open
1A	RWTEBSLP	2	Disk track used by SYSLOG to push the remote work station task
1C		4	Not used
20	TEBEXTRA	8	Reserved

Figure 2-261 (Part 3 of 3). Format of a Termination Exit Block (TEB)

Timer Queue Element (TQE)

There are four 8-byte permanent timer queue elements (TQE) in the fixed nucleus for system use:

- Dispatcher
- Assign system queue space failure
- Midnight
- Statistical logging

Also, there is one user TQE in each TCB at offset TCBTQE. Each TQE contains two primary fields: a 2-byte forward chain pointer (TQEFLNK) that contains the address of the next TQE on the queue (end of queue is designated by hex 0000), and a time of expiration field (TQETOX). The queue is always in ascending order by the TQETOX field.

How to Find

The active TQEs are on the timer TQE queue, QHDTIMER, of the system queue headers (nucleus location hex 013C).

Format

Figure 2-262 shows the format of a timer queue element.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TQEFLG1	1	TQE flag byte: *Hex* *Meaning* 80 Indicates multiple wait 40 Indicates user wait 20 Reserved 10 Indicates real timing 08 Indicates decimal 04 Indicates binary 02 Indicates timer units 01 Indicates time of day

Figure 2-262 (Part 1 of 2). Format of a Timer Queue Element (TQE)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	TQECC	1	TQE completion code/type field: *Hex* *Meaning* 80 Indicates the TQE is active 40 Indicates the TQE is complete 30 Reserved 04 Indicates statistical data log TQE (last valid TQE type value) 03 Indicates midnight TQE 02 Indicates assign failure TQE 01 Indicates dispatcher TQE 00 Indicates user TQE (in TCB) 0F Type mask
02	TQETOX	4	Time of expiration (always in timer units)
06	TQEFLNK	2	Chain to next timer queue element

Figure 2-262 (Part 2 of 2). Format of a Timer Queue Element (TQE)

Timer Request Block (TRB)

The 14-byte timer request block (TRB) is a parameter list that contains the time of day and the system date. It is referenced through the $SIT, #RIT, and $TOD modules. XR2 points to the TRB when it is called.

Format

Figure 2-263 shows the format of a TRB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	$TRBFLG1	1	Flag byte 1: *Hex* *Meaning* 80 Indicates multiple wait 40 Indicates user wait 20 Reserved 10 Indicates real timing 08 Indicates decimal 04 Indicates binary 02 Indicates timer units 01 Indicates time of day
01	$TRBFLG2	1	Flag byte 2 (reserved)
02	$TRBTIME	6	Time field
08	$TRBDATE	6	Date field

Figure 2-263. Format of a Timer Request Block (TRB)

Trace Buffer

The trace buffer is a 256-byte (minimum size) area in the main storage variable nucleus. It serves as a wrap around trace table containing 16-byte entries for the following system events:

- Main control storage SVC requests
- Dispatcher task switches
- Swap requests
- Main storage processor transient scheduler requests
- Main storage loader requests
- BSC and BSC MRJE interrupts
- SDLC and SNA requests
- Work station utility functions
- Remote work station functions

The trace area is moved during MSIPL if the user specifies a larger buffer. See *Appendix G. Troubleshooting Aids* for the contents of the 16-byte entries for the various requests.

Trace Indicators Parameter List

This 66-byte area, including SVC table information, is used to select events to be traced (SVC X'1A'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	TRPDFLAG	1	Trace flag: *Hex* *Meaning* 80 Get operation 40 Put operation 20 Set log to disk values 10 Start log to disk 08 Stop log to disk 04 Reserved 02 Reserved 01 Reserved
01	TRPDPUT	1	Put indicator: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Reserved 10 Trace disk I/O 08 Trace control storage SVCs 04 Trace dispatcher 02 Trace swapper 01 Trace main storage transient and loader IDs
02	TRPDLOGS	3	Sector address of trace file
05	TRPDLOGZ	2	Size of trace file
07	TRPDIOB@	2	IOB address for trace file

Figure 2-264 (Part 1 of 2). Format of a Trace Indicators Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	TRPDRSVD	7	Reserved
10	TRPDISVC	32	Start of immediate SVCs
30	TRPDDSVC	18	Start of delayed SVCs: *Hex* *Meaning* FF Parameter list end 80 SVC not traceable 40 SVC option active 00 SVC option not active

Figure 2-264 (Part 2 of 2). Format of a Trace Indicators Parameter List

Transient Table—Control Storage

The control storage transient table is located in control storage at location hex 2080. Transients are loaded by issuing an SVC (RB=X'50') to the control storage transient loader, followed by a 1-byte inline parameter. The inline parameter byte contains the ID of the transient to be loaded. The control storage transient loader locates the module ID in the control storage transient table. It loads and executes the transient from the specified sector address.

Figure 2-265 lists the control storage transients and their module ID.

Module ID of Transient	Transient Name	Description
0000	xxxx	Transient call by sequential sector number (xxxx = variable depending on module and the address stack)
0001	$NULX	Main storage relocating loader directory processor
0002	$NUAB	Abnormal task termination
0003	$NULC	Inline parameter 2=00: Control storage loader (inline parameter 2 is 0 for loader function)
	or	
	$NULC	Inline parameter 2=01: Assign from back of free area (inline parameter 2 is 1 for assign from back function)
0004	$IOERPX/ $16ERPX	Diskette error recovery procedures
0005	$IPS	Pseudo control storage IPL
0006	$HC2	Main storage processor procedure check error handler number 2
0007	$ALT3	Alternate sector assignment number 3
0008	$NUWE	Work station error recovery
0009	$NUTIX1	Interval timer number 1
000A	$NUTIX	Interval timer master
000B	$NUTE	5211 line printer error recovery procedure transient
000C	$NUBE	5256 matrix printer error recovery procedure transient
000D	$NUCL	Control processor logging transient
000E	$TR1	Set trace indicators
000F	$NUBL	BSCA logging transient
0010	$NUSL	SDLC logging transient

Figure 2-265 (Part 1 of 2). Control Storage Transient and Module ID

Module ID of Transient	Transient Name	Description
0011	$NUGL/ $NUGL1	I/O counter logging transient
0012	$ADINT	Alter/display initialize recovery
0013	$FDERP	Disk IOS (FDIOS) error recovery
0034	$CONMT	Concurrent maintenance
0015	$NUPD	Printer and display station error router
0016	$MRE	1255 error transient
0017	$NUIOE	I/O error transient
0018	$NUWL	Remote work station logging transient
0019	$ACDUMP	Address compare dump specification transient
001A	$NUSMF	System measurement facility transient
001B	$NUNE	3262 line printer error recovery procedure transient
001C	$MRALD	1255 controller load transient
001D	$NUGETPX	Get pages for nonswappable tasks transients
001E	$NUME	5224/5225 printer error recovery procedure transient
001F	$NUUL	Autocall logging transient
0020	$NUXL	X .21 logging transient
0021	$NUKE	5219 Printer error recovery procedure transient

Figure 2-265 (Part 2 of 2). Control Storage Transient and Module ID

Transient Table—Main Storage Transfer Control Table

The main storage transfer control table contains entries for each main storage system transient that can be called by an explicit RIB. Each table entry is 4 bytes long and its RIB corresponds to its position in the main storage transfer control table. The fourth byte (X'10') indicates whether a transient is resident or not.

RIB	*4-byte Entry*			
01	S	S	S	n
02	S	S	S	n
03	S	S	S	n
04	@	@	P	n
1C	@	@	P	n
1D	S	S	S	n
1E	@	@	P	n
1F	@	@	P	n

Where:

SSS = Sector address of transient on disk

@@ = Address of resident routine

n = Indicates if resident or not

10—resident
20—privileged transient

P = Indicates translation to set on

80—disable dispatching

Note: Normally this value will be 0.

How to Find

The main storage transfer control table is located in control storage at location hex 1144.

Format

Figure 2-266 shows the format of the main storage transfer table and their associated RIB values.

Requested Function	RIB	Module Name
No-op	X'00'	#MANO
Find	X'01'	#MASFN
Open	X'02'	#DMOP
Close	X'03'	#DMCL
End of job	X'04'	#CTEIF
SYSLOG	X'05'	#CLXS
SYSLIST	X'06'	#CLST

Figure 2-266 (Part 1 of 4). Main Storage Transfer Table and Their Associated RIB Values

Requested Function	RIB	Module Name
SYSIN	X'07'	#CLSN
Source get	X'08'	#MASGT
Message retrieve	X'09'	#MGRET
Library open/close	X'0A'	#MACOM
VTOC read/write (disk)	X'0B'	#CSVF
Allocate	X'0C'	#CAML
Deallocate	X'0D'	#CAD1
Special allocate	X'0E'	#CAS1
Retrieve system information	X'0F'	#SVINF
VTOC read/write (diskette)	X'10'	#CSVI
Snap dump	X'11'	#SVDMP
RPG II halt	X'12'	$$SYRP
Data management controller	X'13'	#DDDM
Printer alignment	X'14'	#DPAL
Command processor router	X'15'	#CPRT
Limits open	X'16'	#DDLM
User WSDM request	X'17'	#DWDM/#ICDM**
System WSDM request	X'18'	#DWDM/#ICDM**
User library find request	X'19'	#MAFLB
AFA access transient	X'1A'	#CSAF
Spool intercept request	X'1B'	#SPINT

**For SSP-ICF only

Figure 2-266 (Part 2 of 4). Main Storage Transfer Table and Their Associated RIB Values

Requested Function	RIB	Module Name
Spool allocate request	X'1C'	#SPALC
Command processor I/O error	X'1D'	#SVERP
Task—task communications	X'1E'	#SVTTC
Command processor task—task	X'1F'	#CPTC
Set exit	X'20'	#CTEEX
Work station data management transients (X'21'—X'26')	X'21'	#WDDB (#WDDU***)
	X'22'	#SVNRY
	X'23'	#WDDG (#WDRG*)
	X'24'	#WDAF
	X'25'	#WDDO
	X'26'	#WDDA/#WDDR (#WDRA/#WDRR*) (#WDIGC***)
Offline multivolume data management	X'27'	#DOLK
Work station data management transients (X'28'—X'2A')	X'28'	#WDDH
	X'29'	#WDDQ
	X'2A'	#WDCP
Security	X'2B'	#PRA2
Command OCL interface	X'2C'	#CPIN
I/O error transient	X'2D'	#SVIOE
EDF extend transient	X'2E'	#DDEX
EDF update transient	X'2F'	#DDUP
Checkpoint transient	X'30'	
Spool message transient	X'31'	#SPMIC
SSP-ICF	X'32'	#ICDA
SSP-ICF	X'33'	#ICDB
SSP-ICF	X'34'	#ICDC
Task work area extension	X'35'	#SVTX
Sort transient	X'36'	
Extended trace	X'37'	#FEXRS
Work station data management transient	X'38'	#WDDL
Reserved	X'39'	
Reserved	X'3A'	
Extended print	X'3B'	#GAPR

*These modules apply if remote work station support is active.
***For Ideographic character feature (IGC) only.

Figure 2-266 (Part 3 of 4). Main Storage Transfer Table and Their Associated RIB Values

Requested Function	RIB	Module Name
SMF communications data collection (MLCA only)	X'3C'	$SMFMC
SSP-ICF	X'3D'	#ICDD
Work station data management transients (X'3E'—X'40')	X'3E' X'3F' X'40'	#WDDU #WDDT #WEGE
Remote disk data management TTC transient call	X'41'	#SIDX
Work station data management high level help transient	X'42'	#WDHH
Spool queue management	X'43'	#SPQMG

Figure 2-266 (Part 4 of 4). Main Storage Transfer Table and Their Associated RIB Values

Translated Session Unit Block (XSUB)

This 37-byte area is that portion of the session unit block (SUB) needed by the various SSP-ICF subsystems to perform their functions. On a post from SSP-ICF data management or a program start post (successful or unsuccessful), SSP-ICF control moves this part of the session unit block from system queue space to an area in the subsystems address space.

How to Find

On entry to the subsystem after one of the above three posts, register 2 contains the address of the leftmost byte of the translated session unit block.

Format

Figure 2-267 shows the format of the translated session unit block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	XSBCOMP1	1	Completion code 1

Figure 2-267 (Part 1 of 5). Format of the Translated Session Unit Block (XSUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	XSBCOMP2	1	Completion code 2
02	XSBCMOD	1	Operation modifier: *Hex* *Meaning* 30 Session EOX modifier 28 Session pass thru modifier 24 Session FMH modifier 22 Session EOC modifier or session EOF modifier 21 Session FAIL modifier 20 Session execution I/O operation code
03	XSBCMND	1	Operation code: *Hex* *Meaning* FF Assign failure in SSP-ICF system queue space F0 Abnormal end of session E0 Normal end of session 80 Negative response 40 Cancel operation 20 Acquire operation 10 Release operation 08 Request change of direction 04 Evoke operation 02 Put operation 01 Get operation
04	XSBDATA@	2	Record area address
06	XSBOUTL or XSBEFFL	2 2	Output length Effective input length
08	XSBASGNL	2	Allocated or assigned buffer length in subsystem queue space

Figure 2-267 (Part 2 of 5). Format of the Translated Session Unit Block (XSUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0A	XSBSSB@	2	Address of OCL session block
	or		
	XSBLOC@	2	Address of LOC during special acquire operation
0C	XSBXSCR@	2	Extended subsystems configuration record address
0E	XSBBUB@	2	Address of associated BSC unit block (BUB)
	or		
	XSBSNUB@	2	Address of associated SNA unit block (SNUB)
	or		
	XSBTSUB@	2	Address of target session unit block (SUB)—intra
	or		
	XSBIMSCB	2	Information management system (IMS) physical terminal (PTERM) assigned for this session
	or		
	XSBSPUB@	2	Address of associated SPUB
	or		
	XSB7SBQ@	2	Address of session queue element
	or		
	XSBFLUB@	2	Address of associated finance logical unit block (FLUB)
10	XSBBFFLG	1	Buffer flag byte: *Hex* *Meaning* 80 Buffer preallocated 40 Data can be on disk 20 Data is on disk 10 On—negative response operation valid Off—negative response operation invalid 08 SNA upline facility pass through user or intra user 04 Common queue space is allocated 02 Subsystem queue space is allocated 01 Definite response mode. This prevents ICFDM from performing read-ahead-get operations

Figure 2-267 (Part 3 of 5). Format of the Translated Session Unit Block (XSUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
11	XSBXFACT	2	Length of pad in front of buffer (XSBXFACT minus 1, is the pad for input; XSBXFACT is the pad for output)
13	XSBXPRM@	2	Address of operator parameter list in CQS
15	XSBSRES1	1	Reserved for subsystem use (contains CICS or CCP multipoint session address)
	or		
	XSBSTATE	1	Intra session status: *Hex* *Meaning* 80 Session in send state 40 Session between chains 20 The last operation was a put that failed because the session was in receive state or the last operation was a get on which no data and change direction was received 10 Negative response was seen 08 End of step abnormal was seen 04 End of session operation was seen 02 This is first operation on session
16	XSBSRES2	1	TCB address of the owning task (CCP only)
	or		
	XSBATTR1	1	Intra session attributes: *Hex* *Meaning* 80 Session is batch—yes
17	XSBSRES3	1	TCB address of the owning task (CCP only)
	or		
	XSBXCHN@	2	Address of next translated session unit block
18	XSBRES4	1	Reserved for subsystem use
19	XSBASGN@	2	Allocated or assigned buffer address in subsystem queue space

Figure 2-267 (Part 4 of 5). Format of the Translated Session Unit Block (XSUB)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1B	XSBSUB@	2	Address of associated session unit block
1D	XSBDSK@	3	SSS address of disk area
20	XSBRECL	2	Maximum record length
22	XSBXPRL	2	Length of associated parameter list in common queue space
24	XSBBFLG2	1	Buffer flag byte 2: *Hex* *Meaning* 80 FAIL operation valid 40 Operation is with invite

Figure 2-267 (Part 5 of 5). Format of the Translated Session Unit Block (XSUB)

Unit Definition Table (UDT)

The unit definition table (UDT) is a 512-byte area consisting of a variable amount of 8-byte entries that describe the devices configured on System/34.

Note: See *System/34 Device Identification* in *Appendix I: Hardware Diagnostic Information* for a description of device IDs.

How to Find

The disk address of the UDT is contained in the last entry of the control storage library directory. See *Library—Control Storage.*

Format

Figure 2-268 shows the format of a unit definition table entry.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	UDTDVCD	1	Device identification: *Hex* *Meaning* E5 5219 Printer E3 5224/5225 Printer E2 3262 Printer E1 5256 Printer E0 5211 Printer D1 Diskette (level 2 attachment card for 33/53FD and 72MD) D0 Diskette (level 1 attachment card) C0 Work station (does not apply to work station control expansion C) C1 Work station (work station control expansion C only) CA Work station attachment controller 1 A1 62PC disk A0 62EH disk 84 MLCA autocall 83 SDLC (MLCA only) 82 BSC (MLCA only) 81 SDLC (first or second communications adapter only) 80 BSC (first or second communications adapter only) 52 1255 magnetic character reader 10 MLCA controller or attachment controller 2 (see device address to determine user of controller) 04 Reserved 02 Main storage processor 01 Control processor 00 UDT end indicator

Figure 2-268 (Part 1 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
01	UDTDDVAD	1	Device address: *Hex* *Meaning* E0 Line printer D0 Diskette 1, Diskette 2D, or Diskette autoloader C0 Local work station attachment B0 62EH disk drive B A0 62EH disk drive A or 62PC disk 88 MLCA communication line 84 MLCA communication line 82 MLCA communication line 81 MLCA communication line Address of communication line from controller (10, 20, 40, 80) Address of MLCA controller from CSP (80) 80 Communications (first or second communications adapter or MLCA controller) 60 Reserved 50 Unit record device 20 Communications (first or second communications adapter only) 04 Reserved 02 Main storage processor 01 Control processor *Note:* A device address of hex 80 is also used in control blocks of the IBM SSP to identify those devices that are remotely attached to System/34.
02	UDTDUNIT	1	Unit address: Local work station cable address or communications line number (hex 01, 02, 03, or 04) or drive A (X'00'), drive B (X'01'), drive C (X'02'), or drive D (X'03') of the 62PC disk

Figure 2-268 (Part 2 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
03	UDTDRSV1	1	Reserved
04	UDTDCNFG	4	Configuration data (Following is a description of these 4 bytes by device ID): 5224/5225 Printer (E3): *Byte* *Description* 1 *Hex* *Meaning* 80 5225 models 11, 12 00 5225 models 1, 2, 3, 4 2 Not used 3 *Hex* *Meaning* 80 System printer 4 Not used 3262 Printer (E2): *Byte* *Description* 1 Not used 2 *Hex* *Meaning* 80 Not used 40 Not used 20 Not used 10 650 lines per minute 08 48 character standard belt 04 64 character standard belt 02 96 character standard belt 01 64 character optional belt

Figure 2-268 (Part 3 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			3 *Hex* *Meaning* 80 System printer 40 Alternate printer 20 Not used 10 Not used 08 96 character Katakana belt 04 128 character Katakana belt 02 52 character Austria/Germany belt 01 188 character multinational belt 4 Not used 5256 Printer (E1): *Byte* *Description* 1 Not used 2 Not used 3 Hex 80—system printer 4 Not used 5211 Printer (E0): *Byte* *Description* 1 Not used 2 *Hex* *Meaning* 80 160 lines per minute 40 300 lines per minute 20 Not used 10 Not used (must be zero) 08 48 character standard belt 04 64 character standard belt 02 96 character standard belt 01 Not used (must be zero)

Figure 2-268 (Part 4 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			3 *Hex* *Meaning* 80 System printer 40 Alternate printer 20 Not used 10 Not used 08 96 character Katakana belt 04 128 character Katakana belt 02 52 character Austria/Germany belt 01 188 multinational belt 4 *Hex* *Meaning* 4B 300 lines per minute 4A 160 lines per minute 5 Hex 01—number of extra SSP bytes Diskette (D0, D1): *Byte* *Description* 1 *Hex* *Meaning* 80 33FD 40 53FD 20 72MD 2 *Hex* *Meaning* 53 Model 2 attachment 52 Model 1 attachment 3 Hex 01—number of extra SSP bytes 4 Not used

Figure 2-268 (Part 5 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			Work station controller (CA):
			Byte *Description*
			1 *Hex* *Meaning*
			80 Feature 2990 or 4905 installed
			23 Japan (English)
			22 Katakana
			21 United Kingdom
			20 Sweden
			1F Spanish speaking
			1E Spain
			1D Portugal
			1C Norway
			1B Italy
			1A France (azerty)
			19 France (qwerty)
			18 International or RPQ
			17 Finland
			16 Denmark
			15 Canada-French
			14 Brazil
			13 Belgian
			12 Austria/Germany
			10 USA-EBCDIC
			2 Hex 01—feature storage A (4900)
			Hex 02—feature storage B (4901)
			3 *Hex* *Meaning*
			0F ROS 3

Figure 2-268 (Part 6 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			4 Hex 02—number of extra SSP bytes
			System console (C0,C1):
			Byte *Description*
			1 *Hex* *Meaning*
			80 System console
			40 Alternate console
			20 1920 character display screen
			10 960 character display screen
			2 *Hex* *Meaning*
			80 Nonideographic display
			40 Ideographic display
			20 Nonideographic keyboard
			10 Ideographic keyboard
			08 512 RAM character region
			04 Not used
			02 Not used
			01 64 RAM character region
			3 Not used
			4 Not used
			62PC (A1):
			Byte *Description*
			1 Hex 01—65 MB
			2–3 Hex 0167—CE cylinder ID—65 MB
			4 Not used

Figure 2-268 (Part 7 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			62EH (A0): *Byte* *Description* 1 *Hex* *Meaning* 80 9 MB 40 13 MB 2–3 *Hex* *Meaning* 012E CE cylinder ID–13 MB 00C9 CE cylinder ID–9 MB 4 Not used MLCA Autocall Unit (84): *Byte* *Description* 1 *Hex* *Meaning* 80 Separation character trap 40 End-of-number character trap 2 Reserved 3 *Hex* *Meaning* 80 NRZI disabled 40 Reserved 20 Reserved 10 Autocall unit and autocall UDT=1 4 *Hex* *Meaning* 40 Assocciated communication line is on port 4 30 Associated communication line is on port 3 20 Associated communication line is on port 2 10 Associated communication line is on port 1

Figure 2-268 (Part 8 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			MLCA Communication Line (82-BSC, 83-SDLC): *Byte* *Description* 1 *Hex* *Meaning* 80 Japanese modem 40 On–internal clock feature Off–modem clocking 20 On–IBM modem with wrap capability Off–Non-IBM modem or IBM modem without wrap 10 Answer tone (World Trade only) 08 Switched network backup 04 Multipoint 02 Switched line 01 Point-to-point nonswitched line 2 80 X.21 feature installed on this line 3 *Hex* *Meaning* 80 On–Non-NRZI Off–NRZI encoding 40 On–half rate Off–full rate 20 Analog wideband (if byte 3 bit 4 equals 1, then bit 2 equals 56K bps DDSA) 10 Autocall 08 DDSA 04 External modem (EIA/CCITT interface) 02 IBM 1200 bps integrated modem 01 IBM 4800 bps integrated modem

Figure 2-268 (Part 9 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)		4	*Bit* *Meaning*

Bit	*Meaning*
0–3	Hex A0—4800 bps integrated modem is in physical location A Hex B0—4800 bps integrated modem is in physical location B
4–7	0x—port where autocall associated with this line is installed (1, 2, 3, or 4)

Communications (80):

Byte	*Description*
1	*Hex* *Meaning*

Hex	*Meaning*
80	Japanese modem
40	Internal clock feature
20	IBM modem with wrap capability
10	Answer tone (World Trade only)
08	Switched network backup
04	Multipoint station
02	Switched line
01	Point-to-point nonswitched line

Byte	*Description*
2	Timer count
3	*Hex* *Meaning*

Hex	*Meaning*
80	NRZI jumper
40	On—half rate Off—full rate
20	Not used
10	World Trade
08	DDSA
04	External modem (EIA/CCITT interface)
02	IBM 1200 BPS integrated modem
01	IBM 2400 BPS integrated modem

Byte	*Description*
4	Not used

Figure 2-268 (Part 10 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			1255 MICR (52):

Byte	*Description*
1	*Hex* *Meaning*

Hex	*Meaning*
80	On—34K 1255 controller memory Off—6K 1255 controller memory
40	Not used
20	Not used
10	12 pocket sort
08	Dash symbol transmit on
04	On—6 pocket alternate sort Off—6 pocket standard sort
02	Not used
01	Not used

Byte	*Description*
2–4	Not used

Work station controller (10):

Byte	*Description*
1	Hex 08—32K words
2	Hex 28—Taiwan feature installed
3	Hex 01—Number of extra SSP bytes
4	Not used

MLCA controller (10):

Byte	*Description*
1	Hex 04—16K words
2	Not used
3	Not used
4	Not used

Figure 2-268 (Part 11 of 12). Format of the Unit Definition Table (UDT)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04 (cont.)			Main storage processor (02):
			Byte *Description*
			1 *Hex* *Meaning*
			80 256K bytes 40 128K bytes 30 96K bytes 20 64K bytes 18 48K bytes 10 32K bytes
			2 Not used
			3 Not used
			4 Not used
			CPU (01):
			Byte *Description*
			1 Hex 04 = 16K words
			2 Not used
			3 Not used
			4 Not used

Figure 2-268 (Part 12 of 12). Format of the Unit Definition Table (UDT)

Volume Label—Disk

The disk volume label is the first record of the first sector in the system file area (#SYSWORK) of disk drive A. It contains owner identification information and SSP information about the disk.

How to Find

The volume label can be found by referring to field D2FDSTRT of control storage direct area 2. It contains the disk address of the volume label. Also, bytes 2 and 3 of the last control storage library directory end entry contain the sector address of the volume label.

Format

Figure 2-269 shows the format of the volume label.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	VLFDSTRT and VLFDID	4	Pointer to leftmost byte of volume label Label ID: Volume label=VOL1
04	VLFDVLID	6	Volume identifier
0A	VLFDACES	1	Accessibility (set to blanks)
0B	VLFDVTOC	5	VTOC pointer: (00SSS) sector address of VTOC on disk
10	VLFDRSV1	21	Reserved
25	VLFDOWNR	14	Owner identification and blanks
33	VLFDRSV2	28	Reserved
4F	VLFDLSTV	1	Label standard version (set to blanks)
50	VLFDPADD	176	Padding (set to binary 0s)

Note: Fields VLFDVLID and VLFDOWNR are filled in by reload and are the volume label and owner ID from the reload diskette.

Figure 2-269. Format of the Disk Volume Label (VOL1)

Volume Label—Diskette

The 123-byte diskette volume label identifies the volume, owner, security, and sequence of the physical records on the tracks of the specified volume.

How to Find

The volume label (VOL1) is located on cylinder 0, head 0, sector 7 of each diskette.

Format

Figure 2-270 shows the format of the diskette volume label.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	VLIDSTRT and VLIDID	3	Start of volume label Volume label identifier ('VOL')
03	VLIDIDNO	1	Volume label number byte (C'1'=mask for volume label number)
04	VLIDVLID	6	Volume identification field
0A	VLIDACES	1	Accessibility indicator—not supported (must be blank—X'40')
0B	VLIDRSV1	13	Reserved
18	VLIDSYSC	13	Operating system code
25	VLIDOWNR	14	Owner identification field
33	VLIDRSV2	20	Reserved

Figure 2-270 (Part 1 of 2). Format of a Diskette Volume Label (VOL1)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
47	VLIDSIND	1	Surface indicator: *Character Meaning* b̸ 1 surface, FM recording 2 2 surfaces, FM recording M 2 surfaces, MFM recording
48	VLIDEXAR	1	Extent arrangement indicator
49	VLIDSRAC	1	Special requirements indicator
4A	VLIDRSV3	1	Reserved
4B	VLIDPRLN	1	Physical record length indicator: *Character Meaning* b̸ 128-byte sectors 1 256-byte sectors 2 512-byte sectors 3 1024-byte sectors
4C	VLIDPRSC	2	Physical record sequence code
4E	VLIDRSV4	1	Reserved
4F	VLIDSTRD	1	Label standard version (C'W'=mask for label standard version)
50	VLIDRSV5	48	Padding (binary 0s)

Figure 2-270 (Part 2 of 2). Format of a Diskette Volume Label (VOL1)

(VTOC) Disk Volume Table of Contents

The disk VTOC is an area in the system file area (#SYSWORK) on disk drive A that describes the location, size, and other characteristics of each data file on the disk. The disk VTOC consists of three logical areas: the disk format 5 area, the system format 1 area, and the user format 1 area. The contents and size of the system and user format 1 are the same (see Figure 2-119).

Sectors X'0000' through X'0004' disk format 5 (Figure 2-122)
Sectors X'0005' through X'0009' system format 1s (Figure 2-119)
Sectors X'000A' through n (maximum of 4 tracks) user format 1s (Figure 2-119)

How to Find

The disk VTOC can be found by referring to field SCAFVTOC in the system communication area, field CONFVTOC in the configuration record or hex 0E of the volume label. These fields contain the 2-byte disk address of the disk VTOC. To find the system VTOC format 1s, add 5 to the address. To find the user VTOC format 1s, add 10 to the address of the disk VTOC.

VTOC Read/Write Parameter List (Disk)

This 17-byte area is required for the read/write routine (RIB=X'0B'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	VTFDFNCT	1	Function byte: *Hex* *Meaning* 80 Write request 40 Real data buffer address 20 Format 1 existence test 08 Verify date 04 Read next-same label 02 Read next 01 Read specific 00 Format 1 sector/displacement request
01	VTFDRTRN	1	Return code: *Hex* *Meaning* 40 Good completion 41 Parameter list not valid 44 Request not met
02	VTFDIOAR	2	I/O area address
04	VTFDFMT1	2	Sector displacement of format 1
06	VTFDLABL	8	8-byte file label
0E	VTFDDATE	3	3-byte date field

Figure 2-271. Format of a VTOC Read/Write Parameter List (Disk)

VTOC Read/Write Parameter List (Diskette)

This 19-byte area is required for the read/write routine (RIB=X'10'). When a routine is requested, XR2 contains the address of the associated parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
00	VTIDFNCT	1	Function byte:	
			Hex	*Meaning*
			FF	Prepare diskette
			F0	Orient diskette
			0F	Convert format 1s
			80	Write
			40	Real data address
			20	Format 1 existence test
			08	Date verify
			04	Read next-same label
			02	Read next
			01	Read specific
			00	Not used
01	VTIDRTRN	1	Return code:	
			Hex	*Meaning*
			40	Normal completion
			41	Request or parameter list not valid
			44	Request not met
			45	Slot empty
			46	Non standard header 1
02	VTIDSLOT	1	Autoloader slot number (1—23)	
	or			
	VTIDIOAR	2	Address of user I/O area	
03	VTIDINDR	1	Indicator byte for prepare:	
			Hex	*Meaning*
			80	Return on empty slot
			40	Auto skip to next slot
			20	Return on nonstandard header 1

Figure 2-272 (Part 1 of 2). Format of a VTOC Read/Write Parameter List (Diskette)

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	VTIDSSFL	4	Sector address displacement of format 1
08	VTIDLABL	8	File label
10	VTIDDATF	3	Date

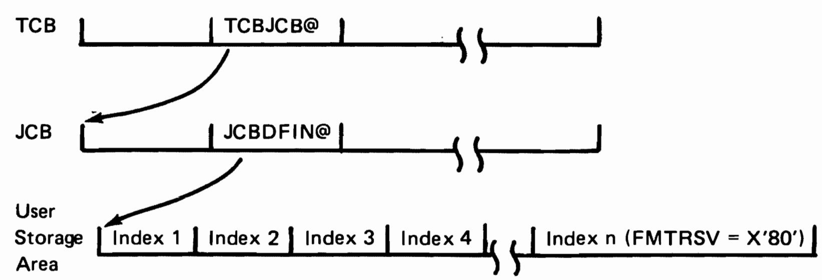
Figure 2-272 (Part 2 of 2). Format of a VTOC Read/Write Parameter List (Diskette)

Work Station Data Management

System/34 supports two types of work stations: command capable work stations that are capable of requesting and initializing jobs, and data work stations that are acquired by currently executing jobs. Work station type is designated at system configuration time. All communications with the work stations or system console are through work station data management (WSDM).

WSDM via the screen format generator routine (SFGR) builds the display screen formats for using the display screen as an input/output device. These formats are placed in the library as format load members.

A 16-byte index is created for each display screen format in the format load member. The indexes are loaded in contiguous order in the user storage area. Field JCBDFIN@ in the JCB points to the first index in the user area, and field JCBDNFTF, also in the JCB, specifies the number of indexes in the index area. Each index is identified by a format name in the first 8 bytes. The last index in the chain is flagged by a hex 80 in field FMTRSV.



The SFGR routine builds a field descriptor table (FDT) for each format it generates for a PUT operation. WSDM places the FDT and text in the WSQS area, or in the user storage area if the FDT and text are larger than the size configured for the WSQS area. (Fields

FMT#FS and FMT#DS in the user index, added together, are greater than the WSQS size specified in field SCADWSQS in the system communication area.) See terminal unit block field TUBECM. If bit 1 (X'40') is on (1), the data is in the WSQS area. If bit 1 is off (0) and this is a PUT operation, the data is located in the user storage area.

FDT in WSQS

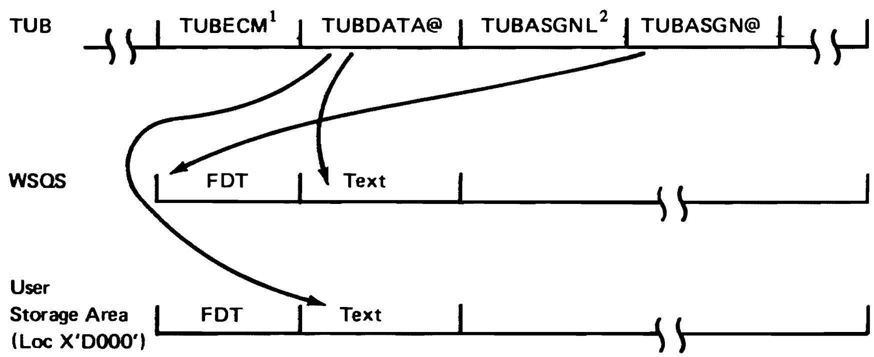
If the FDT and text are in the WSQS area, terminal unit block field TUBASGN@ points to the WSQS address of the first assigned byte of the FDT before the operation is issued. Field TUBDATA points to the text portion.

Note: The WSQS area is freed immediately after a PUT operation is completed. If this is the case, the first 4 bytes of the area will contain pointer information, rather than a meaningful format name in the first 8 bytes. However, the remaining format and text are valid providing they have not been overlaid by an operation from another work station.

FDT in User Storage Area

If the FDT and text is placed in the user storage area because of WSQS storage size, field TUBDATA@ in the terminal unit block contains the text address. The FDT, location D000, precedes the text portion.

Note: If the FDT and text are in the user storage area, the program has already been pushed to disk.



[1]TUBECM: X'40' = 1—Real (data in WSQS)
= 0—Translated (data in user storage area)
[2]TUBASGNL: Length of the WSQS assigned area

Figure 2-273 shows the contents of the format index, and Figure 2-274 shows the format of the 25-byte field descriptor table.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Displacement into format index for user request			
00	FMTNME	8	Format name
08	FMTS@	3	Sector address of format during execution in main storage or relative sector of display screen format from start of format load member on disk
0B	FMT#FS	1	Number of FDT sectors
0C	FMT#DS	1	Number of data stream sectors (in addition to value in FMT#FS)
0D	FMTTDL	2	Input data length of format
0F	FMTRSV	1	Flag byte (hex 80—last index entry)
Displacement into format index for system request			
00	FMTSSS	3	Disk address of FDT and text
03	FMTFDL	1	Length in sectors of FDT
04	FMTTXL	1	Length in sectors of text
05	FMTINL	2	Input length of screen

Figure 2-273. Contents of a Format Index Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
Field descriptor table: 'S' specification entry			
00	FDTSFLAG	1	'S' specification flag byte 0: *Hex* *Meaning* 80 Blink display indicator 40 Blink cursor indicator 20 Sound audible alarm indicator 10 Reset keyboard indicator 08 Variable start line number 04 Master modified data tag (MDT) on 02 Erase nonbypass field indicator 01 Put override indicator
01	FDTBDI	1	Indicator for blink display
02	FDTBCI	1	Indicator for blink cursor
03	FDTSAAI	1	Indicator for sound alarm
04	FDTRKI	1	Indicator for reset keyboard
05	FDTSFLG1	1	Flag byte 1: *Hex* *Meaning* 80 Suppress invite indicator 40 Key mask exist indicator (If on, 4 bytes of mask data follow the S specification entry) 20 Retain function mask 10 Retain current command key mask
06	FDTSFLG2	1	Flag byte 2 (reserved)
07	FDTERNBI	1	Indicator for erase nonbypass
08	FDTPUTOI	1	Indicator for put override

Figure 2-274 (Part 1 of 3). Format of a Field Descriptor Table Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
09	FDTSII	1	Indicator for suppress invite
0A	FDTSTOFS	2	Backward displacement from end of last FDT sector to beginning of data stream
0C	Reserved	4	
			Note: If FDTSFLG1 = hex 40, four bytes of mask data follow the 'S' specification.
Field descriptor table: 'D' specification entry			
00	FDTHD	2	Hexadecimal displacement into data stream
02	FDTEL	2	Field length
04	FDTFLAG	1	Flag byte 1: *Hex* *Meaning* 80 Maximum 'D' specification entry (max 16, min 6) 40 Execution time output field 20 MIC used switch 10 Position cursor indicator 08 High intensity indicator 04 Bypass indicator 02 Nondisplay indicator 01 Output field indicator

Figure 2-274 (Part 2 of 3). Format of a Field Descriptor Table Entry

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
05	FDTFLG2	1	Flag byte 2: *Hex* *Meaning* 80 Blink field indicator 40 Reverse image indicator 20 Underscore field indicator 10 Column mark—yes 08 Signed numeric field 04 Right adjust blank fill signed numeric field 02 Variable start line switch or extension to field descriptor table exists 01 Hex displacement replaced switch
06	FDTFLG3	1	Flag byte 3 (hex 80—do full EXTN scanning on field)
07	FDTFLG4	1	Flag byte 4

The following fields are dependent upon the corresponding flags in FDTFLAG and FDTFLG2:

06	FDTBF@	2	Work station buffer address
08	FDTPCI	1	Position cursor indicator
09	FDTHII	1	High intensity indicator
0A	FDTBPI	1	Bypass indicator
0B	FDTNDI	1	Nondisplay indicator
0C	FDTOPI	1	Output field indicator
0D	FDTBFI	1	Blink field indicator
0E	FDTRII	1	Reverse image indicator
0F	FDTUFI	1	Underscore indicator

Figure 2-274 (Part 3 of 3). Format of a Field Descriptor Table Entry

Work Station Parameter List

This 23-byte area is required as input for system request to work station data management (RIB=X'18'). Work station DTF field $WSUPRM points to the user requested work station parameter list.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WDRTC	2	External return code: High byte: *Hex* *Meaning* 30 Outstanding invites and at least one op-end 10 Outstanding invites 00 No outstanding invites Low byte: *Hex* *Meaning* 84 Permanent I/O error on put-no-wait 80 Permanent I/O error occurred 52 A 2 option was taken to an undefined IGC code, IGC file has not been allocated, or IGC file has not been restored 51 A 2 option was taken to an invalid IGC code 50 A 2 option was taken to an IGC RAM full 48 Printer not available on print operation—already allocated 46 Print issued from unlocked keyboard 45 Invalid IGC during print op 44 Stop invite failed—data available 40 Work station offline

Figure 2-275 (Part 1 of 6). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00 (cont.)			*Hex* *Meaning* 38 Acquire failed—nonwaitable 34 Input rejected—buffer too small 32 Acquire failed—security 28 Release of single request terminal requestor—reject 24 Work station released itself 18 Acquire failed temporarily 14 Input rejected—keyboard disabled 11 Accept rejected—no invites 08 Acquire ok to owned terminal 06 Stop requested with data available 02 Stop system requested by system operator 01 Accept successful to requestor 00 Operation successful *Notes:* 1. The high byte only applies following a status inquiry operation. Following a status inquiry operation, the low byte is 00 or 02 depending on whether stop system is in effect. 2. See Figure 2-66 for SSP-ICF major and minor return codes.
02	WDOPM	1	External op-code modifier: *Hex* *Meaning* 80 System request 40 Override request or Function management header[1] 20 Roll request or Pass through modifier[1] 10 Unformatted request [1]Only applies to SSP-ICF operations

Figure 2-275 (Part 2 of 6). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
02 (cont.)			*Hex* *Meaning* 08 Print request 06 Write error operation 04 Save request 02 Restore request 01 Put for read under format where operator is not allowed to key data
03	WDOPC	1	External op-code: *Hex* *Meaning* FF SSP-ICF system queue space assign failure[1] F8 Abnormal end of job[1] F0 Abnormal end of step[1] E8 Normal end of job[1] E0 Normal end of step[1] 99 Special acquire request[1] 88 Evoke end of transaction[1] 85 Evoke invite[1] 81 Evoke get[1] 80 Clear the screen or Evoke[1] 45 Erase then invite input or Request change direction invite[1] 42 Put end of chain[1] 41 Erase then get data or Request change direction get[1] 40 Erase input fields 32 Put fail response[1] 25 Reset then invite input or Negative response invite[1] [1]Only applies to SSP-ICF operations

Figure 2-275 (Part 3 of 6). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
03 (cont.)			*Hex*	*Meaning*
			22	Put end of file or chain[1]
			21	Reset then get data or Negative response get[1]
			20	Reset keyboard or Negative response[1]
			1A	Put end of transaction[1]
			17	Stop invite, put, then invite or PFM invite[1]
			16	Stop invite, put-no-wait
			15	Cancel invite[1]
			13	Stop invite, put then get or PFM get[1]
			12	Stop invite then put or Put function management header[1]
			11	Cancel get[1]
			10	Stop invite request or Cancel[1]
			0C	Get terminal attributes
			0B	Set timer
			0A	Release terminal request
			09	Acquire terminal request
			08	Accept input
			07	Put then invite input
			06	Put-no-wait operaton
			05	Invite input operation
			04	No-wait request

[1] Only applies to SSP-ICF operations

Figure 2-275 (Part 4 of 6). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
03 (cont.)			*Hex*	*Meaning*
			03	Put then get operation
			02	Output operation
			01	Input operation

Note: If both WDOPM and WDOPC are 00, the operation is a status inquiry operation.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
04	WDOUTL or WDEFFL	2	Output length Effective input length	
06	WDRECA	2	Record area address	
08	WDTUB	2	Terminal unit block address	
0A	WD960	2	Address of line suppression mask	
0C	WDAID	1	AID byte on input operations	
0D	WDIOPC or WDSRCT	1	Internal operation code Save/restore count:	
			Hex	*Meaning*
			0A	Console work station mode save area
			09	Console mode save area
			08	System console save area
			03	Save area 3—inquiry 2
			02	Save area 2—inquiry 1
			01	Save area 1—message/SYSLOG

Figure 2-275 (Part 5 of 6). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0E	WDRUPD	1	Roll flags: *Hex* *Meaning* 80 Roll up 40 Roll down 20 Clear vacated line(s)
0F	WD#LNE	1	Number of lines to roll
10	WDSLNE	1	Start line number for roll
11	WDELNE	1	End line number for roll
12	WDVSLN	1	Variable start line number
13	WDIND@	2	Address of override indicators
15	WDFMTN	2	Format index entry address

Figure 2-275 (Part 6 of 6). Format of a Work Station Parameter List

Work Station Specification Block

A work station specification block (WSB) contains information about a work station file. A 24-byte WSB is built and maintained by the scheduler for each work station file, and is chained to a specific job control block (JCB).

How to Find

Field JCBDWSBF in the JCB points to the first entry in the WSB chain.
Field WSBDFRCH in the WSB points to the next WSB in the chain.

Format

Figure 2-276 shows the format of a WSB.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	WSBDRES1	8	Reserved
08	WSBDTUB@	2	Terminal unit block address
0A	WSBDSYID	2	Symbolic ID
0C	WSBDFRCH	2	Forward chain pointer
0E	WSBDFLG1	1	Flag byte 1: *Hex* *Meaning* 80 Required work station 40 Requester work station 20 Restore—yes specified 10 Restore—no specified If bits 2 and 3 are off no restore parameter was specified 08 Print-no specified (WSBDPRNT does not contain a valid printer ID) 04 Work station acquired by initiator 02 EXTN off specified
0F	WSBOPRNT	2	ID of printer used as copy device
11	WSBDDVID	2	Device ID specified as unit parameter
13	WSBDRES2	5	Reserved

Figure 2-276. Format of a Work Station Specification Block

Writer Descriptor Block

One 24-byte writer descriptor block will exist for each local or remote printer on the system.

How to Find

SPBFWDB@ in the spool file buffer points to the first writer descriptor block.

Format

Figure 2-277 shows the format of a writer descriptor block.

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
00	WDBCHAIN	2	Forward chain pointer	
02	WDBPRTID	2	Printer ID	
04	WDBATCB@	2	Address of associated TCB or the reason why the writer is not attached:	
			Hex	*Meaning*
			00	Writer attach not attempted since previously terminating
			01-07	#SVAT attach failure codes
	WDBNOJCB		7E	JCB could not be assigned
	WDBNOTUB		7F	TUB not found
	WDBWSTOP		80	Writer is stopped
	WDBQHELD		81	Queue is held
	WDBQMPTY		82	Queue is empty
	QDBSSTOP		83	System is stopped
06	WDBPSFD@	2	Associated print file SFD address	

Figure 2-277 (Part 1 of 3). Format of a Writer Descriptor Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description	
08	WDBSTATS	1	Writer status:	
			Hex	*Meaning*
	WDBSTART		80	Writer is started
	WDBIWAIT		40	Writer waiting on intercept
	WDBMESSG		20	Spool writer message outstanding
	WDBFIRST		10	First time since IPL switch
	WDBRSTRT		08	Writer restarted
	WDBSTOPJ		04	Writer stop pending at end of job
	WDBSTOPP		02	Writer stop pending at end of page
09	WDBATTRB	1	Writer attributes:	
			Hex	*Meaning*
	WDBRSDNT		80	Resident
	WDBPRIOR		40	Priority
	WDBSEPCF		30	Number of separator pages configured (0–3)
	WDBSEPAG		03	Number of separator pages used (0–3)
0A	WDBATTID	1	Attach ID:	
	WDBATTAL		C'A'	Spool allocate
	WDBATTIC		C'C'	Intercept close
	WDBATTGP		C'G'	Change command
	WDBATTIP		C'I'	IPL
	WDBATTLP		C'L'	Release command
	WDBATTSP		C'S'	Start command
	WDBATTTP		C'T'	Restart command
	WDBATTUA		C'U'	$UASF
	WDBATTVO		C'V'	Vary on command
0B	WDBPRSGS	3	SSS of print file primary segment used by the writer	
0E	WDBCPAGE	2	Current page number of output	

Figure 2-277 (Part 2 of 3). Format of a Writer Descriptor Block

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
10	WDBFORMS	4	Forms number for printed output
14	WDBRPAGE	2	Restart page number
16		2	Reserved
18	WDBLNGTH		Length of WDB

Figure 2-277 (Part 3 of 3). Format of a Writer Descriptor Block

This section includes data areas associated with the System/34 I/O controllers. Included is a storage map for each device. Fields of interest are formatted in detail as they appear in the I/O controller. Figure 3-2 and Figure 3-3 show the contents of work station I/O controller storage. Figure 3-19 shows the 5211 printer I/O controller storage. Figure 3-20 shows the 3262 printer I/O controller storage, and Figures 3-23 and 3-35 show the 1255 Magnetic Character Reader I/O controller storage. For a description of the control blocks associated with the I/O controllers, refer to *Section 2. Data Areas*. See *Appendix A. Diagnostic Aids,* for the dump procedure and the alter/display options available for the I/O controller.

INTERFACE

The System/34 I/O controllers support input/output operations for the line printers and the work stations (display station and work station attached printer).

Display Station

Program control of the keyboard/display units is accomplished through an SVC with an associated I/O block (IOB). The IOB contains parameters that define the operation to be performed and data buffer characteristics, such as location and size. When a delayed SVC is issued, an ACE (action control element) is created that is queued to a common keyboard/display queue. The ACE is not used directly by the work station I/O control handler (WSIOCH) code but is used to post the operation specified in the IOB complete. The IOB, for display stations, must be the first 18 bytes of the TUB (terminal unit block), followed by a 10-byte ERB (error request block) also in the TUB, and a 2-byte I/O counter. Six additional bytes located in the TUB are used for buffer management. A terminal unit block (TUB) exists for each display station configured on the system. The TUBs are in real addressable main storage and are chained together for scanning by the WSIOCH routine. TUBs for locally attached work stations are created at MSIPL. TUBs for remote work stations are created when they are needed. The TUB relationship chain is shown in Figure 3-1.

The common interface to the I/O controllers is the WSIOCH (work station I/O control handler).

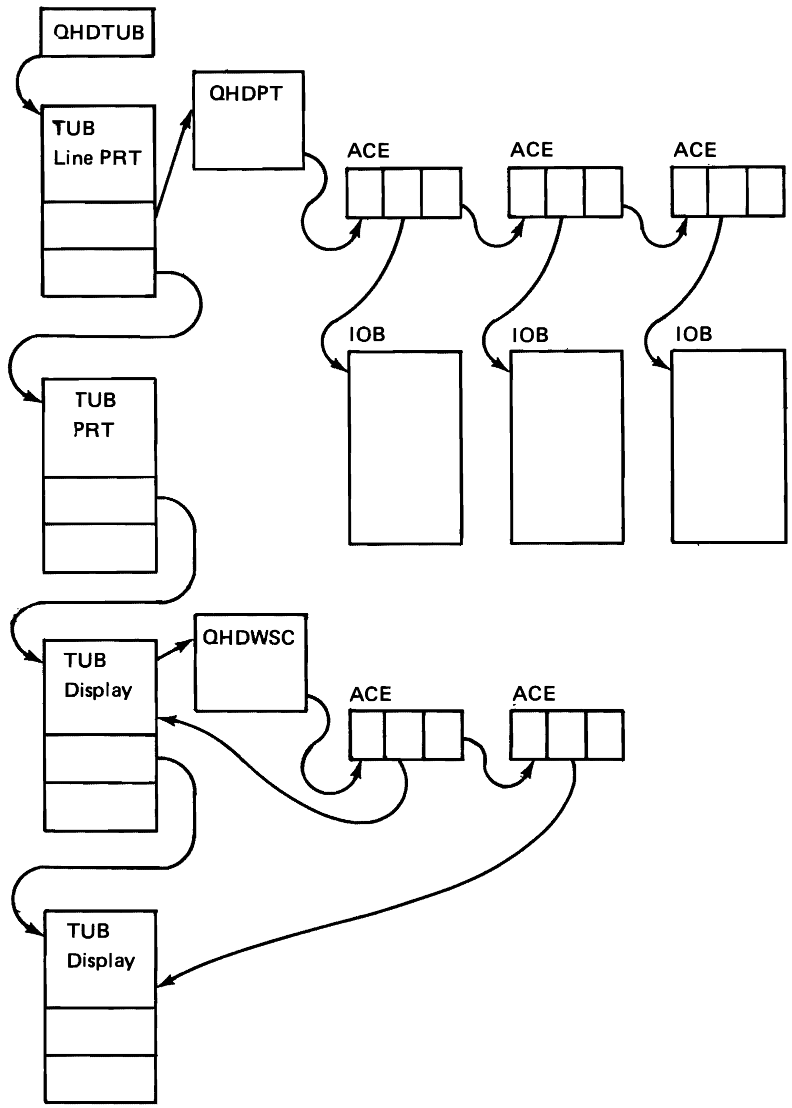


Figure 3-1. Terminal Unit Block (TUB) Relationship to the IOB

Printer (Natively Attached Printer and Work Station Attached Printer)

Printer operation is specified by an input/output block (IOB) located in real main storage. Each IOB represents an operation to the printer or work station control unit. These IOBs may be queued together by issuing multiple SVCs, or executed one at a time by issuing the SVC with wait. A terminal unit block (TUB) must exist for each printer configured on the system. Remote printer TUBs are not created until they are needed by the system. The TUBs are in *real addressable main storage* and are chained together for scanning by the WSIOCH routine. The TUB for the natively attached printer must be the first TUB on the queue (Figure 3-1) as the natively attached printer IOCH code (a part of WSIOCH) does not lock the TUB queue prior to using it. The first 30 bytes of the TUB are used by printers for maintaining device status and parameters, and used as the communication mechanism for error recovery procedures. The bytes used to initialize the IOB are in these first 30 bytes. See *Input/Output Blocks* and *Terminal Unit Block* in Section 2 for the format of the IOB and TUB.

Work Station Storage

Note: See Figure 3-3 for work station control expansion C storage.

Loc.	Size (Dec)	Description
0000	04	Branch to initialize
0004	12	Branch to interrupt routine
0010	16	Work station control field and reserved area
0020	04	Alter/display command and byte count
0024	01	Invite priority counter
0025	12	Miscellaneous internal parameter bytes
0031	2	Terminal mode set queue
0033	18	Miscellaneous internal parameter bytes
0045	1	Master poll
0046	10	Miscellaneous internal parameter bytes
0050	16	Save area for registers (interrupt level)

Figure 3-2 (Part 1 of 4). Work Station I/O Controller Storage

Loc.	Size (Dec)	Description
0060	16	Interrupt level transmit block
0070	16	Main level transmit block
0080	128	Keystroke function indicators
0100	256	Scan code to EBCDIC table
0200	128	Keystroke function indicators
0300	64	Station parameter list 0
0340	64	Station parameter list 1
0380	64	Station parameter list 2
03C0	64	Station parameter list 3
0400	64	Station parameter list 4
0440	64	Station parameter list 5
0480	64	Station parameter list 6
04C0	64	Station parameter list 7
0500	228	Trace routine
05E4	1692	Branch table
0C80	96	Work space and temporary storage
0CE0	32	SCCKPBUF area (FLDFN and CKDIG)
0D00	128	Work space and temporary storage
0D80	128	Extended branch table
0E00	256	Trace stack (190 bytes used)
0F00	170	Direct area

Figure 3-2 (Part 2 of 4). Work Station I/O Controller Storage

Loc.	Size (Dec)	Description
0FAB	85	Buffer area
1000	512	Attribute table for station 0
1200	512	Attribute table for station 1
1400	512	Attribute table for station 2
1600	512	Attribute table for station 3
1800	512	Attribute table for station 4
1A00	512	Attribute table for station 5
1C00	512	Attribute table for station 6
1E00	512	Attribute table for station 7
1FFF		End of base work station controller (control parameter)
The following are the locations of the 16 work station buffer areas:		
B000	512	Attribute table for station 8
B200	512	Attribute table for station 9
B400	512	Attribute table for station 10
B600	512	Attribute table for station 11
B800	512	Attribute table for station 12
BA00	512	Attribute table for station 13
BC00	512	Attribute table for station 14
BE00	512	Attribute table for station 15
C000	64	Station parameter list 8
C040	64	Station parameter list 9

Figure 3-2 (Part 3 of 4). Work Station I/O Controller Storage

Loc.	Size (Dec)	Description
C080	64	Station parameter list 10
C0C0	64	Station parameter list 11
C100	64	Station parameter list 12
C140	64	Station parameter list 13
C180	64	Station parameter list 14
C1C0	64	Station parameter list 15

Figure 3-2 (Part 4 of 4). Work Station I/O Controller Storage

Station State	Station State Table Locations		Field Format Table Locations	
Table Number	Word Address	Byte Address	Word Address	Byte Address
1	7E00	FC00	78BF	F17E
2	7DC0	FB80	773E	EE7C
3	7D80	FB00	75BD	EB7A
4	7D40	FA80	743C	E878
5	7D00	FA00	72BB	E576
6	7CC0	F980	713A	E274
7	7C80	F900	6FB9	DF72
8	7C40	F880	6E38	DC70
9	7C00	F800	6CB7	D96E
10	7BC0	F780	6B36	D66C
11	7B80	F700	69B5	D36A
12	7B40	F680	6834	D068
13	7B00	F600	66B3	CD66
14	7AC0	F580	6532	CA64
15	7A80	F500	63B1	C762
16	7A40	F480	6230	C460

Note: For printers, each field format table is divided into two parts to be used as two print buffers. For the address of the second print buffer, add hex 0106 to the byte address of the field format table.

Figure 3-3. Work Station Control Expansion C Storage

Keyboard Function Table

The keyboard function table defines the allowable function for each work station keyboard key. Each key is identified by a 1-byte entry in the function table that informs the work station controller of its allowed function. A key used with the Shift key is considered a different key from the same key used without the Shift key. The keyboard function table is at location hex 0080 in the I/O controller. Figure 3-4 shows the 1-byte format of each key.

Bit	Meaning
0 = On—	Function key
Off—	Data key
1 =	Allowable command key
2 =	Signed numeric (lowercase)
3 =	Signed numeric (uppercase)
4 =	Numeric only (lowercase)
5 =	Numeric only (uppercase)
6 =	Alpha only (lowercase)
7 =	Alpha only (uppercase)

Figure 3-4. Format of a Keyboard Function Table Entry

AID Codes

The following attention identifier (AID) codes (Figure 3-5) are generated by the System/34 work station controller.

Key	AID	Key	AID	Key	AID
CMND1	31	CMND15	B3	ROLL UP	F5
CMND2	32	CMND16	B4	PRINT	F6
CMND3	33	CMND17	B5	REC BKSPCE	F8
CMND4	34	CMND18	B6	RESOURCE	
CMND5	35	CMND19	B7	AVAIL	
CMND6	36	CMND20	B8	INTERRUPT	FA
CMND7	37	CMND21	B9	HELP (Note)	FB
CMND8	38	CMND22	BA	EXTN ENTER	FC
CMND9	39	CMND23	BB	ERROR	FF
CMND10	3A	CMND24	BC	Printer Aids:	
CMND11	3B	CLEAR	BD		
CMND12	3C	SYS REQ/ENTER	F0	CANCEL	D1
TEST REQ	3D	ENTER/REC ADV	F1	TRANSFER	
CMND13	B1	ATTENTION	F2	COMPLT	D3
CMND14	B2	HELP (Note)	F3	OP COMPL	D4
		ROLL DOWN	F4	ERROR	FF

Note: Help AID code:
F3 = AID code before error is encountered
FB = AID code after error is encountered (operator mode)

Figure 3-5. I/O Controller AID Codes

Station Parameter List

There are eight or 16 (expansion feature B) 64-byte station parameter lists, starting at location hex 0300, built for the work station controller microcode. Each parameter list identifies one of the 16 possible associated work stations that can be attached to the work station controller. Figure 3-6 shows the data contained in each station parameter list and the initialized value for each entry. Figure 3-7 shows the station state table for work station control expansion C.

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
00	DEVICE@	Variable (filled in at MSIPL time)	1	Twinaxial cable address and work station address: Bit 0 = Reserved Bits 1—3 = Twinaxial cable address Bit 4 = Reserved Bits 5—7 = Work station address
01	DEVICEID	Variable (filled in at MSIPL time)	1	Device identification: *Hex* *Meaning* 80 1920 display 40 Reserved 20 Second SPL group 10 Reserved 08 Printer 04 Katakana keyboard 02 Japan/English keyboard 01 Reserved
02	ATRTABH	@ of table for this station	2	Display station attribute table address pointer
	or PRNTBUFH			Printer buffer pointer
04	NXTENTRH	@ of table for this station	2	Pointer to address of next available attribute table entry
06	FAWPTRH	@ of table for this station	2	Field address word pointer (current attribute table entry)
08	STRTFD@H	0000	2	Start of field address
0A	ENDFLD@H	0000	2	End of field address

Figure 3-6 (Part 1 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
0C	BR@EXITH	FFFF	2	Display station branch address
	or PRNTBR@H			Printer branch address
0E	CURS@H	0000	2	Display station current cursor address
	or STATPEND			Printer status pending byte
10	CUR@OLDH	0064	2	Target cursor address for cursor movement
	or TEMPAID		1	Temporary storage for send aid flags
	and AIDCHKS		1	Send aid flags
	or HDERRCNT			Count used to inhibit polling keyboard
12	INSRTCHR	0000	2	Insert cursor address for Home key
14	SCRNSTAT	00	1	Screen status byte: *Hex* *Meaning* 80 Cursor in field 40 Field active flag 20 Last character in field 10 Last character in signed numeric field 08 All bypass fields (at least one input field defined) 04 Attribute table 02 Station is in active mode 01 Power up and mode set

Figure 3-6 (Part 2 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
15	KYBDSTAT	00	1	Display station keyboard status byte: *Hex* *Meaning* 80 Keyboard not locked when System Request key pressed 40 Help mode flag 20 Error message flag 10 Keyboard locked 08 Inhibit reset of error count 04 Wrap flag for last field is attribute table 02 Permanent error detected at station 01 Do not allow the Error Reset key to unlock the keyboard
	or PRINTST1			Printer pending byte 1: *Hex* *Meaning* 80 Transfer complete pending 40 Cancel pending 20 Ready pending 10 Clear pending 04 First time flag 02 Permanent error detected at station 01 Quiesce mode

Figure 3-6 (Part 3 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
16	KYBDMODE	00	1	Keyboard mode byte: *Hex* *Meaning* 80 Command key 40 Insert character mode 20 Save/restore character mode 10 Inquiry/System Request key pressed 08 OK to process on main level 04 Waiting for Field Exit key 02 Waiting for station to go not busy 01 Save new field parameter
	or PRINTST2	00		Printer pending byte 2: *Hex* *Meaning* 80 SCS reported not valid 40 End of forms reported 20 Mechanism not ready reported 10 Unit not available reported 04 Cancel request transmitted
17	HEADIND	00	1	Head indicators: *Hex* *Meaning* 80 Attention required 40 Reserved 20 Shift 10 Katakana light 08 Insert mode 04 Reserved 02 Input inhibited 01 Reserved

Figure 3-6 (Part 4 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
18	CHSTATUS	00	1	Controller to/from host interface status: *Hex* *Meaning* 80 Data stream reject 40 Work station control field error 20 Resources temporarily unavailable 10 Work station controller DBI/DBO parity check 08 Operation check 04 Work station controller storage parity check 02 Reserved 01 Work station controller long time-out
19	CCSTATUS	00	1	Controller to/from twinaxial status: *Hex* *Meaning* 80 Screen format error 40 No response timeout 20 Transmit activity check 10 Activate command failure 08 Receive parity check 04 Receive length check 02 Reserved 01 Even/odd response timeout

Figure 3-6 (Part 5 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
1A	WSCOAXST	00	1	Station twinaxial interface status: *Hex* *Meaning* 80 Station busy 40 Line parity check (device detected) 20 Unit not available (printer) 10 Outstanding status Exception status (bits 4 through 6): 000—no exception status 001—null or attribute error (display station) or activate lost (printer) 010—activate command not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—register value not valid (display station) or reserved (printer) 111—power-on transition 01 Response level switch (not an error)

Figure 3-6 (Part 6 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
1B	AID	00	1	Attention identifier byte
1C	DEVSTBY1	00	1	Device status byte 1 (display station): Scan code (KB/D) if DEVSTBY2=2 Default—work station controller return status If DEVSTBY2=9, then 00=magnetic stripe reader not installed, or magnetic stripe reader feature microcode not installed 80=magnetic stripe reader did not have data
	or PRTSTBY1	00		Printer status byte 1: *Hex* *Meaning* 80 SCS command not valid 40 SCS parameter not valid 20 Reserved 10 Reserved 08 Reserved 04 Printer mechanism not ready 02 End of forms 01 Unprintable character
1D	DEVSTBY2	00	1	Device status byte 2 (display station): Bits 0 through 3: Device code (If 2=Keyboard device) (If 9=Magnetic stripe reader device)

Figure 3-6 (Part 7 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
1D (cont.)				*Hex* *Meaning* 08 Master MDT (modified data tag) bit 04 Reserved 02 Reserved 01 Reserved
	or PRTSTBY2	00		Printer status byte 2: *Hex* *Meaning* 80 Wire check 40 Slow speed check 20 Fast speed check 10 Emitter sequence check 08 No emitters 04 Overrun check 02 Forms stopped check 01 Forms position check
1E	SPLSTAT1	00	1	Station parameter list status byte 1: *Hex* *Meaning* 80 Shift key left 40 Shift key right 20 Reserved 10 Inhibit down shift 08 Shift lock mode flag 04 Shift lock pressed 02 Shift right flag 01 Reserved

Figure 3-6 (Part 8 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initialized Value	Lng in Bytes in Dec	Description
1F	SPLSTAT2	00	1	Station parameter list status byte 2: *Hex* *Meaning* 80 Alphameric shift key pressed 40 Reserved 20 Reserved 10 Quad 3 or 4 keystroke (Katakana) 08 Reserved 04 Reserved 02 Katakana shift key pressed 01 Katakana symbol key pressed
20	ERRCODEH	0000	2	Operator error code
22	POLLSTAT	00	1	Display station poll status: *Hex* *Meaning* 80 Device busy 40 Line parity check 20 Reserved 10 Outstanding status Exception status (bits 4 through 6): 000—no exception status 001—null or attribute error 010—activate command not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—register value not valid 111—power-on transition 01 On—response level 1 Off—response level 2

Figure 3-6 (Part 9 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initialized Value	Lng in Bytes in Dec	Description
22 (cont.)	or PRNTPOL0			Printer poll status byte 0: *Hex* *Meaning* 80 Printer busy 40 Line parity check (device detected) 20 Unit not available (printer) 10 Outstanding status Exception status (bits 4 through 6): 000—no exception status 001—activate lost 010—activate not valid 011—reserved 100—command or device ID not valid 101—input queue or storage overrun 110—reserved 111—power-on transition 01 Response level switch (not an error)
23	POLLSCAN	00	1	Display station scan code returned from polling: This is a 7-bit code generated by the keyboard whenever a keystroke is invoked.

Figure 3-6 (Part 10 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
23 (cont.)	or PRNTPOL1			Printer poll status byte 1:
				Hex *Meaning*
				80 SCS command not valid
				40 SCS parameter not valid
				20 Receive buffers full
				10 Print complete
				08 Print cancel request
				04 Printer mechanism not ready
				02 End of forms
				01 Unprintable character
24	SCCDRTRY	00	1	Scan code for retries
25	RETRYCNT	00	1	Error retry count:
				Bits 0—3=Busy retry count
				Bits 4—7=Error retry count
26	EBCDICBY	00	1	EBCDIC byte
	or PRBSYCNT			Print busy count
	or IOLRCCK			I/O longitudinal redundancy check (LDC)
27	WRCNTCHR	00	1	Write control character:
				Hex *Meaning*
				10 Blink cursor (user selected)
				02 Light attention required
				01 Blinking display (user selected)
28	FLDSEQ	00	1	Input field sequence number
29	SPLNUMB	00	1	Status parameter number

Figure 3-6 (Part 11 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
2A	WRTCMND	00	1	Write command data byte for display:
				Hex *Meaning*
				80 Inhibit cursor
				40 Reserved
				20 Blink cursor
				10 Blink display
				08 Reverse image display
				04 Reset exception status
				02 Disable clicker
				01 Turn on audible alarm
2B	WSCFSTAT	30 (display station)	1	Display station—work station control field status byte in station parameter list:
				Hex *Meaning*
				80 Invite (IOB is expecting a station response)
				40 Quiesce (printer—buffer available status)
				20 Interrupts enabled to work station input/output control handler (WSIOCH)
				10 Printer in session/display online
				08 Reserved
				04 Reserved
				02 Reserved
				01 Data in control storage
	or PRWSCFST	00 (printer)		Work station control field status byte for printer
2C	IPFIELDH	0000	2	First input field position
	or BUFFCB			Printer—buffer control byte
2E	FUNCIDBY	00	1	Display station function ID byte

Figure 3-6 (Part 12 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
2F	EBTABBYH	0000	2	EBCDIC table
31	EXITWKSP or IOBYTCNT	00	1	Work area to save calling routines parameter IOB data byte count
32	CURSRIND	00	1	Cursor control indicator byte 1: *Hex* *Meaning* 80 Field Advance key 40 Field Backspace key 20 New Line key 10 Character Backspace key 08 Duplicate key 04 Field Exit/Field Plus (+) key 02 Field Minus (–) key 01 Insert/Delete key
33	CURIND2	00	1	Cursor control indicator byte 2: *Hex* *Meaning* 80 Shift key1 Make/Shift key2 break 40 Shift key1 Break/Shift key2 break 20 Home Erase Input key 10 Reserved 08 Reserved 04 Reserved 02 Reserved 01 Reserved
34	FILL or IOBUFLNG	00	1	Fill for right adjust routine I/O buffer length
35	NEWPTRH	0000	2	New field address word pointer

Figure 3-6 (Part 13 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	MSIPL Initial-ized Value	Lng in Bytes in Dec	Description
37	NEWEND@H	0000	2	New end field address
39	EVNODCNT	00	1	Even/odd response timeout counter
3A	RESERVED	000000 0000	5	Reserved area
3F	AIDBAKUP	00	1	Location for queued AID byte (represents a pending AID to be sent to the command processor at the next invite): *Hex* *Meaning* 80 Attention aid code 40 System/request/enter 20 Not used 10 Not used 08 Post IOU aid code 04 Help key 02 Not used 01 AID pending

Figure 3-6 (Part 14 of 14). Format of a Work Station Parameter List

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
00	SSCDEV@	1	Twinaxial cable address and work station address: *Bit* *Meaning* 0–3 Cable address 4–7 Work station address
01	SSCCNTL	1	Serial interface control byte: *Bit* *Meaning* 0 Enable receive after transmit 1 Chain to next command 2 Data in control storage 3–7 High bits of byte count
02	SSC#PRSP	1	Number of poll response bytes (zero origin)
03	SSCPLCMD	1	Poll command: *Bit* *Meaning* 0 Must be zero 1 Reset line parity check 2 Acknowledge (unlock) 3 Must be one 4–7 Must be zero

Figure 3-7 (Part 1 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
04	SSCPOLL or SSCPPL0	1	Polling status response byte (display station) or poll response byte 0 (printer): *Hex* *Meaning* 80 Device busy 40 Line parity check 20 Unit not available 10 Outstanding status/exception status (bits 4, 5, and 6) 000 No exception status 001 Null or attribute error (display station) or activate lost (printer) 010 Invalid activate command 011 Load RAM error 100 Invalid command or device ID 101 Input queue or storage overrun 110 Invalid register (display station only) 111 Power on transition 01 Response level (not an error)
05	SSCSCAN	1	Scan code byte 1 (display station) or poll response byte 1 (printer): *Hex* *Meaning* 80 Invalid SCS command 40 Invalid SCS parameter 20 Receive buffers full 10 Print complete 08 Cancel request 04 Printer mechanism not ready (5256 Printer only) 02 End of forms 01 Graphic check

Figure 3-7 (Part 2 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
06	SSCSPR1	1	5255 display station scan code byte 2
07	SSCSPR2	1	Reserved
08	SSCFTR	1	Feature byte: *Hex* *Meaning* 80 Do not poll this device 40 Interrupt level 3 in control 02 5255 display station 01 Printer
09	SSCCFCM	1	WSCF command modifier: *Hex* *Meaning* 62 Read screen 43 Reset operator alert indicators 42 Read input fields 40 Clear printer 33 Set operator alert indicators 27 Output data stream 06 Save screen 02 Save tables
0A	SSCAPG	1	Aid pend and get indicator: *Hex* *Meaning* 80 Aid pending for this device 02 5255 display station 01 Printer

Figure 3-7 (Part 3 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0B	SSCWSCF	1	Device control byte: *Hex* *Meaning* 80 Station invited 40 Quiesce mode (printers only) 20 Interrupts enabled to WSIOCH 10 Printer in session/display on line 01 Data in control storage
0C	SSCBR@	2	Branch address
0E	SSCBXT	2	Base exit return address
10	SSCDSLN	2	Data stream length
12	SSCPRTRY	1	Poll retry count
13	SSCCCS	1	Controller coaxial status: *Hex* *Meaning* 80 Screen format error (display station only) 40 No response time-out 20 Transmit activity check 10 Activate command failure 08 Receive parity check 04 Receive length check 02 Receive buffer overrun 01 Even/odd time-out
14	SSCAID	1	Attention identifier byte

Figure 3-7 (Part 4 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
15	SSCCHS	1	Controller host status: *Hex* *Meaning* 80 Data stream reject (displays only) 40 WSCF error 20 Resources not available 08 Operation check
16	SSCCS	1	Coax status: *Hex* *Meaning* 80 Device busy time-out 40 Line parity check 20 Unit not available 10 Outstanding status (not an error) Exception status (bits 4, 5, and 6) 000—No exception status 001—Null or attribute error (display station) or activate lost (printer) 010—Invalid activate command 011—Load RAM error 100—Invalid command or device ID 101—Input queue or storage overrun 110—Invalid register (display station only) 111—Power on transition 01 Response level (not an error)
17		1	Reserved

Figure 3-7 (Part 5 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18	SSCDSB1	1	Device status byte 1: *Displays* Data stream reject errors: *Hex* *Meaning* 0D Too many field control words 0C Roll parameter error 0B Start of header length does not equal 3 0A Data written past end of screen 09 Format table overflow 08 Input field past end of screen 07 Restore issued to wrong station 06 Invalid start field address 05 Invalid start field length 04 Escape character missing or invalid command code 03 Fields not defined in ascending screen address order 02 Invalid row or column address 01 Premature end of data stream Work station control field errors: *Hex* *Meaning* 04 Byte count for read fields does not match number of field positions 03 Invalid device address 02 Invalid byte count 01 Invalid command modifier

Figure 3-7 (Part 6 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
18 (cont.)			Resources not available errors: *Hex* *Meaning* 09 Save restore error 07 Work station powered off 06 Read issued to unlocked keyboard 05 Operator error mode or system/request mode 04 Printer needs initialization 03 Device offline 02 Station in error mode 01 Print buffers full Screen format errors: *Hex* *Meaning* 03 Check digit error 02 Resequence error 01 Field length error *Printers* Printer status byte 1: *Hex* *Meaning* 80 Invalid SCS command 40 Invalid SCS parameter 04 Print mechanism not ready (5256 Printer only) 02 End of forms 01 Graphic check
19	SSCDSB2	1	Device status byte 2

Figure 3-7 (Part 7 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1A	SSCSS	1	Screen status: *Hex* *Meaning* 80 Cursor if field 40 Field active 20 Last character in field 10 Last character in signed numeric field 0C Only one input field defined 08 At least one input field defined 04 Attribute table exists 02 Station active 01 Station power up and mode set
1B	SSCKS	1	Keyboard status (display station): *Hex* *Meaning* 80 Keyboard not locked when system/request pressed 40 Help mode 20 Operator error mode 10 Keyboard locked 08 Inhibit reset of error count 04 Poll locked 02 Permanent error mode 01 Do not allow reset key to unlock keyboard
	or SSCPPB1		Printer pending byte 1 (printer): *Hex* *Meaning* 80 Reserved 40 Cancel pending 10 Clear pending 08 Inhibit reset of error count 04 First time flag 02 Permanent error mode 01 Quiesce mode

Figure 3-7 (Part 8 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1C	SSTDVID	1	Device ID (display station):
			Hex *Meaning*
			80 1920-character display screen
			40 960-character display screen
			20 Magnetic stripe reader installed
			04 Non-IGC keyboard
			02 Japanese keyboard
	or		
	SSPPPB2		Printer pending byte 2:
			Hex *Meaning*
			80 Invalid SCS reported
			40 End of forms reported
			20 Print mechanism not ready reported
			10 Unit not available reported
			04 Cancel reported
1D	SSTQAID	1	Aid backup (display station):
			Hex *Meaning*
			80 Attention aid
			40 System request/enter aid
			08 Resources available aid
			04 Help aid
			02 EXTN enter aid
			01 Resources available aid pending
	or		
	SSPERC		Printer error retry count

Figure 3-7 (Part 9 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1E	SSTCRL	2	Current record length (display station)
	or		
	SSPPSP	1	Printer status pending count
	and		
	SSPPBC	1	Printer busy count
20	SST#IF	1	Number of input fields (display station)
	or		
	SSPBCB		Printer buffer control byte
21	SSTECNT	1	Inhibit polling counter (display station)
	or		
	SSPB1BC		Printer buffer 1 byte count
22	SSTATR@	2	Start of attribute table (display station)
	or		
	SSPB2BC	1	Printer buffer 2 byte count
	and		
	SSPPPCB	1	Printer poll control byte
24	SSTFAW@	2	Field address word pointer of current entry in attribute table (display station)
	or		
	SSPQAID	1	Not used
	and		
	SSPWARC	1	Write activate retry counter
26	SSTSF@	2	Start of field address (display station)
	or		
	SSPCRC	1	Clear command retry counter (printer)
	and		
	SSPWCDR	1	Write control data retry counter (printer)
28	SSTEF@	2	End of field address (display station)
	or		
	SSPXSRC	1	Exception status retry counter
	and		
	SSPMSTC	1	Mode set timer counter

Figure 3-7 (Part 10 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
2A	SSTCR@	2	Current cursor address
	or		
	SSPPB1@		Printer buffer 1 address
2C	SSTC@R	2	Old cursor address
	or		
	SSPPB2@		Printer buffer 2 address
2E	SSTSAF	2	Send aid flags (display station): *Hex* *Meaning* 80 Insert error 40 Do not check mandatory fill and modulus 10/11 20 Do not check for mandatory enter 10 Do not lock keyboard when posting aid 08 No right adjust numeric 01 High-level aid
	or		
	SSPEOTO		Even/odd time-out counter (printer)
2F	SSTTAID	1	Temporary storage for SNAID
30	SSTIC@	2	Insert cursor address for home key
32	SSTKM	1	Keyboard mode: *Hex* *Meaning* 80 Command key mode 40 Insert mode 20 Save/restore mode 10 System/request mode 04 Waiting for field exit 02 Waiting for station busy 01 Response level switch occurred while busy

Figure 3-7 (Part 11 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
33	SSTSB1	1	Station state table status byte 1: *Hex* *Meaning* 80 Shift key left side 40 Shift key right side 20 Kana symbol shift 10 Inhibit down shift 08 Shift lock mode 04 Shift lock pressed 02 Alphanumeric shift pressed 01 Kana shift
34	SSTSB2	1	Station state table status byte 2: *Hex* *Meaning* 80 Station state table initialization has occurred 40 Overstrike mode 20 Hex mode 10 Keyboard locked in quadrant 2 08 Keyboard locked in quadrant 4 03 Quadrant 3 02 Quadrant 4 01 Quadrant 1 00 Quadrant 2
35	SSTWCC	1	Write control character: *Hex* *Meaning* 10 User selected blinking cursor 02 User selected message waiting 01 User selected blinking display

Figure 3-7 (Part 12 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
36	SSTWCB	1	Write control data byte: *Hex* *Meaning* 80 Inhibit cursor display 20 Blink cursor 10 Display shifts 08 Reverse display image 04 Reset exception status 02 Disable clicker 01 Sound audible alarm
37	SSTHDI	1	Head indicators: *Hex* *Meaning* 80 Message waiting 20 Alphanumeric shift 10 Kana shift 08 Insert mode 04 IGC indicator 02 Input inhibited 01 EXTN indicator
38	SSTERR#	2	Operator error code
3A	SSTSCNR	1	Scan code for retries
3B	SSTEBRC	1	Busy count/error retry count
3C	SSTFSEQ	1	Input field sequence byte
3D	SSTCCI2	1	Cursor control indicator: *Hex* *Meaning* 80 Do not move cursor 40 Home/erase input key 20 Toggle bit for hex key mode

Figure 3-7 (Part 13 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
3E	SSTEBTH	1	Not used
3F	SSTEBTL	1	Not used
40	SSTEOTO	1	Even/odd time-out counter
41	SSTINL1	1	Keystroke limiters byte 1: *Hex* *Meaning* 80 Dup key allowed in this field 40 Monocase field 20 Kana shift 10 Magnetic stripe reader field 08 MDT bit 04 Signed numeric field 02 Numeric only field 01 Alpha only field
42	SSTINL2	1	Keystroke limiters byte 2: *Hex* *Meaning* 80 Mandatory enter field 40 Mandatory fill field 20 Check digit 10 field 10 Check digit 11 field 08 Right adjust zero fill field 04 Right adjust blank fill field 02 Auto enter field 01 Field exit required field
43	SSTINL3	1	Keystroke limiters byte 3: *Hex* *Meaning* 80 Secure magnetic stripe field
44	SSTNXA@	2	Next available word in format table

Figure 3-7 (Part 14 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
46	SSTOSF1	2	Outstanding status save word 1
48	SSTOSF2	1	Outstanding status save byte 2
49	SSTOSF3	1	Outstanding status save byte 3
4A	SSTRST#	1	Station reset count
4B	SSTKF	1	IGC feature byte: *Hex* *Meaning* 80 IGC display 40 IGC keyboard 20 Non-IGC display 10 Non-IGC keyboard 08 EXTN 512 RAM 04 Allow null/attribute exception status
4C	SSTWCB2	1	Save area for write control byte
4D	SSTHDI2	1	Save area for head indicators
4E	SSKDISP	1	5255 display station state: *Hex* *Meaning* 80 Only field 40 Either field 20 Open field 10 2-byte mode 04 Character backspace allowed 02 Cursor under SO or SI 01 Valid display state
4F	SSKSHFT@	2	Shift address to left of cursor
51	SSKNXS@	2	Shift address to right of cursor

Figure 3-7 (Part 15 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
53	SSKKST	6	Non-IGC stack (First byte is the stack size, second byte is the stack pointer, remaining bytes are the stack entries)
59	SSKSST	6	Non-IGC shift stack
5F	SSKGST	7	EXTN stack
66	SSKGWRD	2	Current EXTN word
68	SSKKBDM	1	5255 display station keyboard mode: *Hex* *Meaning* 80 EXTN incomplete state 20 Alt shift pressed 10 EXTN locked state 08 EXTN IL3/IL5 interlock 04 Data keys IL3/IL5 interlock 02 EXTN mode 01 Non-IGC mode
69	SSKKANC	2	Non-IGC character
6B	SSKKIND	1	Non-IGC EBCDIC indicator
6C	SSKSTRS	2	Start of search address
6E	SSKENDS	2	End of search address
70	SSKARGS	2	Search arguments
72	SSK@@	2	EXTN RAM address
74	SSTRT1	2	Return address 1
76	SSTRT2	2	Return address 2
78	RTN#3	2	Return address 3

Figure 3-7 (Part 16 of 17). Format of a Work Station Control Expansion C Station State Table

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
7A	INLK	1	Non-IGC input limiter: *Hex* *Meaning* 80 Non-IGC FCW field designation 40 Non-IGC FCW field designation 20 Cursor in first position of either field 10 Valid non-IGC FCW found 04 Station in operator error mode
7B	PLCNT	1	Poll cycle counter

Figure 3-7 (Part 17 of 17). Format of a Work Station Control Expansion C Station State Table

Work Station Control Field

For each operation performed at a local display station or work station attached printer, the work station input/output control handler (WSIOCH) builds a work station control field (WSCF) that is transferred to the work station controller (WSC). The WSC performs the requested operation and then builds a second WSCF that it transfers back to the WSIOCH. The second WSCF indicates whether the operation requested by the first WSCF was successful or whether it was terminated due to an error condition detected by WSC. WSC signals termination on interrupt level 4. The following is a description of the WSCF received from the host (control processor) and sent to the host, as well as the hardware checks to the host.

From the Host (Control Processor)

Of the following 12-byte work station control field, the first 8 bytes (00 through 07) contain the work station control field status for each respective station parameter list. The work station control field is 20 bytes for the 16 work stations feature. The first 16 bytes (00 through 0F) contain the work station control field status for each respective station parameter list. The content of each byte is generated by the control processor and inserted in the associated station parameter list (field WSCFSTAT) by the work station controller. The remaining 4 bytes are command modifier and associated data for the work station controller to execute on a specified terminal. I/O controller storage location hex 0010 contains the command modifiers sent from the control processor.

Figure 3-8 shows the format of the 12-byte work station control field as received by the work station controller. The work station control field is the same for the 16 work stations feature except for 8 additional status bytes after byte 07.

Byte in Hex	Description
	The bit meanings are the same for each of the 8 work station control field bytes (status bytes 0 through 7). Therefore, refer to byte 0 for an explanation of the bit offsets for the 7 remaining status bytes.
00	Work station control field status byte for station parameter list 0: *Hex* *Meaning* 80 Invite response allowed 40 Quiesce: Display station—not used Printer—printer is placed in an unused state 20 Interrupt enabled to work station input/output control handler (WSIOCH). This bit must be on for device to respond with AIDs. 10 On—printer in session/display on line Off—printer is polled but no actions are taken other than mode set (no error status reported) 08 Reserved 04 Reserved 02 Reserved 01 Data in control storage (printer)
01	Work station control field status byte for station parameter list 1 (see byte 0 for status)
02	Work station control field status byte for station parameter list 2 (see byte 0 for status)
03	Work station control field status byte for station parameter list 3 (see byte 0 for status)
04	Work station control field status byte for station parameter list 4 (see byte 0 for status)
05	Work station control field status byte for station parameter list 5 (see byte 0 for status)
06	Work station control field status byte for station parameter list 6 (see byte 0 for status)
07	Work station control field status byte for station parameter list 7 (see byte 0 for status)

Figure 3-8 (Part 1 of 2). Format of 12- or 20-Byte Work Station Control Field as Received by the Work Station Controller

Byte in Hex	Description

Note: Eight additional status bytes are inserted here for the 16 work stations feature.

08 or 10 Work station input/output control handler command modifier (copied from IOB byte 4)

Hex	*Meaning*
A7	Put with invite operation
62	Read screen input operation
42	Read input fields
40	Printer—clear command (no data stream associated)
27	Output data stream
06	Save screen
02	On—save table Off—read station in print format

09 or 11 Device address:

Bits 0—3=Twinaxial cable address
Bit 4=Reserved
Bits 5—7=Station address

0A or 12 Byte count high

0B or 13 Byte count low

Note: Bytes 0A and 0B must represent the exact number of bytes to be transferred when executing an output or read input field command.

Figure 3-8 (Part 2 of 2). Format of 12- or 20-Byte Work Station Control Field as Received by the Work Station Controller

To the Host (Control Processor)

The following 8 bytes of the work station control field are sent by the work station controller to the WSIOCH. The first 2 bytes (bytes 00—01) are the command modifier and address that identify this work station. (These 2 bytes correspond to bytes 08—09 sent from the host.) Bytes 02 through 07 describe the sense status of this work station. The status information contained in bytes 02 through 07 is the same as that described in the terminal unit block (TUB) sense bytes (0A—0F) for this device.

A hardware check-byte is ORed into byte 02 in the event of a work station hardware malfunction. The contents of the byte are described in Figure 3-10. Figure 3-9 shows the format of the 8-byte work station control field as sent by the work station controller.

Note: Bytes 06 and 07 are defined separately for each work station device being operated on.

Byte in Hex	Description

00 Work station input/output control handler command modifier:

Hex	*Meaning*
A7	Put with invite operation
62	Read screen
42	Read input fields
40	Printer clear command (no data stream associated)
27	Output data stream
06	Save screen
02	Save tables

01 Work station ID:

Bit 0 = Reserved
Bits 1—3 = Twinaxial cable address
Bit 4 = Reserved
Bits 5—7 = Station address

Note: If all bits are on (hex FF) the work station control field is being transferred from the work station controller in response to a cancel invite request.

Figure 3-9 (Part 1 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
02	Controller/host status byte (moved into TUBSENS0); see byte 6 for further description:

Hex	*Meaning*
80	Data stream reject (display station only)
40	Work station control field error
20	Resources temporarily not available
10	Work station controller data bus out/data bus in parity check (does not apply to work station control expansion C)
08	Operation check
04	Work station controller storage parity check (does not apply to work station control expansion C)
02	Not used
01	Work station controller long timeout check (does not apply to work station control expansion C)

Byte in Hex	Description
03	Cable status errors detected by work station controller (moved into TUBSENS1); see byte 6 for further description:

Hex	*Meaning*
80	Screen format error (display station only)
40	No response timeout
20	Transmit activity check
10	Activate command failure
08	Receive parity check
04	Receive length check
02	Receive buffer overrun (work station control expansion C only)
01	Even/odd response timeout

Figure 3-9 (Part 2 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
04	Station cable interface status (device errors; moved into TUBSENS2):

Hex	*Meaning*
80	Device busy timeout
40	Line parity check
20	Unit not available (printer only)
10	Outstanding status (not an error)
08 04 02	Exception status: 000—no exception status 001—printer—activate lost display station—null or attribute error 010—activate command not valid 011—reserved or RAM load exception status (5255 display station) 100—command or device ID not valid 101—input queue or storage overrun 110—register value (display station) or reserved (printer) not valid 111—power-on transition
01	Even/odd response indicator

Byte in Hex	Description
05	AID code (moved into TUBSENS3):

Display station:

Hex	*Meaning*
00	When terminating a command execution request and no errors were detected, or when terminating the invite mode via a cancel invite and no AIDs were detected.
FF	When an error is reported that was detected by the work station controller and did not result in operation check being set. The actual error is indicated in one or more of the work station control field bytes.
04	Not valid storage page, I/O buffer boundary, or data byte transfer count posted by WSIOCH (greater than 4096).
xx	Any of the possible AID codes when terminating the invite mode (xx=AID code: see *AID Codes* in this section).

Figure 3-9 (Part 3 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
05 (cont.)	Work Station Attached Printer: *Hex* *Meaning* FF Device error D4 Operation complete D3 Transfer complete D1 Cancel key pressed 04 Not valid storage page or I/O buffer boundary posted or data byte transfer count posted by WSIOCH (greater than 4096)
06	Display station device status byte 4 (moved into TUBSENS4): If byte 5=hex FB (help key AID in operator mode), byte 6 contains high order two digits of the operator error code. If byte 7=hex 2n (n=irrelevant digit), byte 6 contains invalid scan code. If byte 7=hex 9n (n=irrelevant digit), byte 6 contains hex 00 (magnetic stripe reader device not installed, or magnetic stripe reader feature microcode not installed) or hex 80 (magnetic stripe reader did not have data). If byte 2 contents is one of the following: If byte 2=hex 80, byte 6 contains data stream reject errors: *Hex* *Meaning* 0F Invalid sequence of field format words and field control words (work station control expansion C only) 0E Load display station RAM error (work station control expansion C only) 0D Too many format control words defined 0C Roll parameter error 0B Start of header length not equal to 3 0A Data written past end of screen 09 Format table overflow 08 Input field past end of screen 07 Restore issued to wrong display station 06 Start field address not valid

Figure 3-9 (Part 4 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
06 (cont.)	*Hex* *Meaning* 05 Start field length not valid 04 Escape character missing or command code not valid 03 Record address is less than present value of the address counter 02 Row or column address not valid 01 Premature end of data stream If byte 2=hex 40, byte 6 contains work station control field errors: *Hex* *Meaning* 04 Byte count not equal to that actually transferred 03 Unit address not found 02 Byte count (0 for display station or greater than 256 for printer) not valid 01 Command modifier not valid If byte 2=hex 20, byte 6 contains resources temporarily not available errors: *Hex* *Meaning* 09 Save or restore error 08 Reserved 07 Work station is powered off 06 Read issued to unlocked keyboard error 05 Not ready due to operator error mode or system request mode 04 Printer needs initialization 03 Device offline error 02 Work station in error mode 01 Printer busy during write attempt (print buffer not available) If byte 2=hex 08, byte 6 contains operation check errors: *Hex* *Meaning* 05 I/O controller not processing keystrokes 02 Timeout on cycle steal data 01 Serdes timeout

Figure 3-9 (Part 5 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
06 (cont.)	If byte 3=hex 80, byte 6 contains screen format errors:

Hex	*Meaning*
03	Check digit error
02	Resequence error in format table
01	Field length error not valid

Work station attached printer device status byte 4 (moved into TUBSENS4):

Hex	*Meaning*
80	SCS command not valid
40	SCS parameter not valid
20	Reserved
10	Reserved
08	Reserved
04	Printer mechanism not ready (5256 Printer only)
02	End of forms
01	Unprintable character

07 Display station device status byte 2 (moved into TUBSENS5):

If byte 5=hex FB (help key AID in operator mode), byte 7 contains low order two digits of the operator code.

Or byte 7 contains:

Hex	*Meaning*
98 or 90	Magnetic stripe reader error reported, and master MDT bit hex 08 is: Hex 98—on Hex 90—off
28 or 20	Not valid scan code reported, and the master MDT bit hex 08 is: Hex 28—on (see byte 6 for not valid scan code) Hex 20—off
08	Master modified data tag (MDT): On—whenever any input field on the screen has its MDT on Off—master MDT off

Figure 3-9 (Part 6 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
07 (cont.)	*Note:* The master MDT bit (hex 08) is the logical OR of all field MDT bits. It is valid only when a work station control field is sent to the command processor in response to an invite. If byte 5=hex FB, the status of the MDT bit cannot be determined.

or

5256 printer device status byte 2 (moved into TUBSENS5):

Hex	*Meaning*
80	Wire check
40	Slow speed check
20	Fast speed check
10	Emitter sequence check
08	No emitter check
04	Overrun check
02	Forms stopped check
01	Forms position check

5224/5225 printer device status byte 2 (moved into TUBSENS5):

Hex	*Meaning*
89	Ribbon card check
88	Ribbon jam (5225 only)
87	Timer check (5225 only)
86	Actuator group jumpers check (5225 only)
85	Pedestal check
84	Wire latch card check
83	Dot image generator check
81	High-voltage check
48	Forms speed check (5225 only)
46	Forms emitter check

Figure 3-9 (Part 7 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Byte in Hex	Description
07 (cont.)	5224/5225 printer device status byte 2 (moved into TUBSENS5):

Hex	*Meaning*
45	Forms overcurrent
43	Servo amp card/servo power amp/forms motor check (5225 only)
42	Servo power amp
41	Control/sense card check
39	Undetermined actuator carrier check (5225 only)
38	Actuator carrier speed check (5225 only)
36	Actuator carrier emitter check
35	Actuator carrier overcurrent
34	Servo amp card/servo power amp/actuator carrier motor check (5225 only)
32	Servo power amp
31	Control/sense card check
11	Printer processor check

5219 printer device status byte 2 (moved into TUBSENS5):

Hex	*Meaning*
81	Unexpected cover open
69	Data stream exception, class 4
68	Data stream exception, class 3
67	Data stream exception, class 2
66	Data stream exception, class 1
58	End of ribbon
47	Paper jam
41	Form check
33	Print check
32	Print check
31	Print check
12	Machine check
11	Machine check

Figure 3-9 (Part 8 of 8). Format of Work Station Control Field as Sent by the Work Station Controller

Hardware Check to Host

The following 2 bytes of the work station control field are presented by the work station controller when a hardware check is caused by the work station controller. The first byte, (hardware checks) is placed in byte 2 of the work station control field to the host (control processor). Byte 02, controller halt code, is valid only for an operation check condition. This information is always logged into the work station controller log. Figure 3-10 shows the format of this 2-byte area.

Byte in Hex	Description
01	Hardware checks:

Hex	*Meaning*
80	Controller busy
40	Operation check
20	One (1)
10	CDBO/CDBI parity check
08	Serial transfer parity check
04	Controller memory parity check
02	Not used
01	Long timeout check

Byte in Hex	Description
02	Controller halt codes (valid only for operation check):

Hex	*Meaning*
05	Controller not processing keystrokes
04	Not used
03	Not used
02	Timeout on cycle steal data transfer
01	Serdes timeout

Figure 3-10. Format of 2-Byte Hardware Check to Control Processor Entry

Field Format Table

The field format table contains an entry for each input field defined on the display. The table entries consist of a field address word (FAW), a field length word (FLW), a field format word (FFW), and from zero to two field control words (FCW) for each input field defined. Each entry is 2 bytes long. The following information is a description of each field format entry.

Field Address Word

The field address word (FAW) is generated by the work station controller and is used to determine the starting address of the field on a display. Figure 3-11 shows the format of a FAW.

0 1	2 3	4	5 6 7 8 9 10 11 12 13 14 15
0 0	n n	L	Leading Attribute

Bit description:

00–01 = 00

02–03 = Number of FCWs used to define this field (not used by work station control expansion C)

04 = 0–Field length is less than or equal to 80 characters
1–Field length is greater than 80 characters
(Not used by work station control expansion C)

05–15 = Display location of leading attribute for field

Figure 3-11. Format of a Field Address Word

Field Length Word (Work Station Control Expansion C Only)

The field length word (FLW) is generated by the work station controller and is used to determine the length of the format table entry and the length of the field on a display.

Bit description:

00–04 = Format table entry length in bytes

05–15 = Field length

Field Format Word

The field format word (FFW) entry is taken from the data stream. The FFW is built by the host program for determining characteristics of the field. Figure 3-12 shows the format of a FFW.

0 1	2	3	4	5 6 7	8	9	10	11	12	13 14 15
0 1	bypass	DUP	MDT	Field destination	AE	Fld ext key	MONO	0	Mand ent.	Adjust fill

Bit description:

00–01 = 01

02 = Bypass: 0–This is not a bypass field
1–This is a bypass field

03 = DUP enabled: 0–DUP key not allowed for this field
1–DUP key allowed for this field

04 = Modified data tag: 0–This field has not been modified
1–This field has been modified

05–07 = Field description: 000=Alphameric
001=Alpha only
010=Reserved
011=Numeric only
100=Katakana
101=Reserved
110=Reserved
111=Signed numeric

Note: Must be 000 if IGC FCW is used

08 = Auto enter: 0–No auto enter
1–Auto enter

09 = Field exit key required: 0–Not required
1–Required

Figure 3-12 (Part 1 of 2). Format of a Field Format Word

10 = Monocase: 0—Accept and display lowercase from the keyboard
1—Convert lowercase A—Z to uppercase for display

11 = Reserved

12 = Mandatory enter: 0—Not a mandatory enter field
1—Mandatory enter field

13—15 = Adjust or fill option: 000=No adjust specified
001=Reserved
010=Reserved
011=Reserved
100=Reserved
101=Right adjust or zero fill
110=Right adjust or blank fill
111=Mandatory fill

Figure 3-12 (Part 2 of 2). Format of a Field Format Word

Field Control Word

There are four types of field control words (FCWs): (1) resequencing FCW, which allows fields to be read back from a display in any order desired; (2) check digit FCW, which allows fields to be verified by using a check digit algorithm that exists in the work station controller; (3) magnetic stripe reader FCW, which allows secure MSR data to be entered into a field; and (4) IGC FCW, which is used to define the 2-byte IGC fields. The resequencing FCW, if used, must be the first FCW in the data stream.

Resequencing Field Control Word

If not specified, fields are sent to the host in the sequence in which they appear on the display when the read input fields command is issued. A resequencing FCW is used for each change of a display sequence required. The FCW is also required with the last field in the in-sequence chain. The FCW is used to identify the next group of fields to be returned to the host.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0	0	0	0	0	0	0	Pointer to next field to be read							

Bit description:

00—01 = 10

02—03 = 00

04—07 = Not used

08—15 = Pointer to next field to be read: SOH=First field to be returned
X'FF'=Last field to be returned

Figure 3-13. Format of a Resequencing Field Control Word

Check-Digit Field Control Word

A check-digit field control word checks validity of input fields by the work station controller using a modulus 10 or modulus 11 check digit algorithm. A check-digit FCW must be in the format table to invoke this function.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0	1	1	0	0	0	1	Self Chk operation							

Bit description:

00—01 = 10

02—03 = 11

04—07 = 0001

08—10 = Self-check operation: 000=Reserved
001=Reserved
010=Modulus 11 self-check
011=Reserved
100=Reserved
101=Modulus 10 self-check
110=Reserved
111=Reserved

11—15 = 0000

Figure 3-14. Format of a Check Digit Field Control Word

Magnetic Stripe Reader Field Control Word

A magnetic stripe reader field control word specifies that secure magnetic stripe reader data may be entered in the field.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0	0	0	0	0	1	ignored							1

Bit description:

00–07 = X'81'

08–14 = ignored

15 = 1

IGC Field Control Word

An IGC field control word is used to define any of the 2-character IGC fields.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0	0	0	0	0	1	0	Field Type		0	0	0	0	0	0

Bit description:

00–07 = X'82'

08–09 = 00 IGC only field
01 IGC either field
1x IGC open field

10–15 = 000000

Work Station Controller Trace

The work station controller trace function is located at I/O controller location hex 0E00. The area is 432 bytes long and contains a maximum of 232 entries. Each 2-byte entry consists of a device address and a 1-byte code that is a unique representation of a location in controller storage where a transmit function was attempted with the work station. Hex location 0CDA is the trace stack pointer. The pointer is advanced in ascending order after each entry and is allowed to wrap the trace stack. Therefore, to determine the most recent trace stack entry calculate in descending order from the present stack address. Contact your source of technical support for assistance in determining the malfunctioning area. The label identifiers are listed as an aid for reference. Figure 3-15 is a list of the code bytes and their controller storage label identifier.

Code Byte	Label	Code Byte	Label
01	CXERR200	71	SNAID330
02	CXERR250	76	FLDFN180
08	BR@SS130	78	FLDFN271
11	DAKYS331	79	FLDFN530
13	DAKYS500	81	DUPKY110
14	SCCKP145	83	DUPKY190
15	SCCKP148	84	DUPKY220
16	SCCKP150	86	DUPKY300
17	SCCKP160	88	FDXPL210
18	SCCKP245	90	FDXPL300
20	SCCKP251	91	FDXPL320
22	CSRCM151	93	FDXPL420
25	CSRCM400	95	FDXPL530
27	HELPK130	96	FDXPL620
28	HELPK220	98	INSDL110
31	SHLKK100	A0	INSDL215
33	RSTKY100	A2	INSDL260
35	RSTKY320	A4	HMERS200
36	ENTER120	A5	HMERS050
39	OPERR110	A7	HMERS320
41	OPERR210	A9	HMERS450
43	OPERR271	AA	INIT0110
45	PCMDB	AC	CKDIG000
46	PCMDB500	AD	TSKHD400
47	OPCMP120	AE	TSKHD450
48	OPCMP200	AF	OTCMD800
49	OPCMP322	B1	OTCMD801
57	PRNCL	B2	OTCMD802
58	PSTAT120	B3	OTCMD803
60	SFTMK150	B4	OTCMD804
62	SFTBK120	B5	OTCMD805
70	SNAID110	B6	KYDEK096

Figure 3-15. Work Station Controller Trace; Code Bytes and Microcode Label Identifiers

Work Station Error Recovery

Work station error recovery procedures (WSERP) perform device recovery functions for the work station user in the event of work station hardware malfunctions. WSERP is invoked by work station IOCH, by main storage ERP transients, and the control storage transient scheduler. The principal interface between these routines is the work station terminal unit block (TUB).

Work station error recovery consists of six control storage transients ($NUBE, $NUKE, $NUME, $NUPD, $NUWE2 and $NUWE) and a number of SSP modules that provide the following services, depending on the type of failure which has occurred and the actions of other elements of the work station subsystem:

- Analyzes hardware malfunctions that occur at the work station, and the local work station controller.
- Interfaces with the system console or subconsole in cases that cannot be overcome automatically (for example, intervention-required, device-not-operational). This may eventually lead to a retry of the operation in certain cases.
- Provides information on local work station hardware failure to the system device logging function for deferred use in servicing a malfunctioning or degenerating device.

Figures 3-16 through 3-18.1 are charts of the specific recovery procedures for the work stations relative to the test priority. The first 2 bytes of the error code identify the device; 01=display station, 02=work station attached printer.

Error codes 0170, 0172, 0173, 0198, 0270, 0272, 0273, and 0298 appear in the text of system messages; however, when the error is recorded in the remote work station controller's error history table, the first two digits of the error code are zeros.

Priority	Display Station Errors	Error Code	Recovery Actions
0	Load ATR buffer boundary error, or a value greater than 4096 was specified as the data transfer byte entry in a display station IOB	N/A	M
1	WSC storage parity checks (does not apply to work station control expansion C)	XX	L C
2	WSC long timeout check (does not apply to work station control expansion C)	XX	L C
3	WSC DBO/DBI parity checks (does not apply to work station control expansion C)	XX	L C

Figure 3-16 (Part 1 of 3). Summary of Specific Error Recovery Procedures for Display Stations Relative to Test Priority (Work Station)

Priority	Display Station Errors	Error Code	Recovery Actions
4	Operation check	XX	L C
5	Resources temporarily not available	XX	M
6	WSCF error	XX	M
7	Data stream reject	XX	M
8	Transmit activity check	01	L M
9	No response timeout	00	M
10	Activate command failure	09	L M
11	Receive parity checks	03	L M
12	Busy timeout	91	L M
13	Receive length check	06	L M
14	Receive buffer overrun (work station control expansion C only)	05	L M
15	Exception status:		
	Null or attribute error	23	L M
	Activate not valid	24	L M
	RAM load exception (5255 display station only)	27	L M
	Reserved	25	L M
	Command or ID not valid	20	L M
	Input queue or storage overrun	22	L M
	Register value not valid	21	L M
	Power-on transition	08	L M
16	Even/odd timeout	90	L M

Figure 3-16 (Part 2 of 3). Summary of Specific Error Recovery Procedures for Display Stations Relative to Test Priority (Work Station)

Priority	Display Station Errors	Error Code	Recovery Actions
17	Line parity checks	04	L M
18	Screen format error	XX	M
19	Scan code not valid	11	L
	Magnetic stripe reader error (not valid outstanding status posted)	89	L M
	Feature not installed	86	L M
	Wrong station responded	07	L M
	Remote cluster feature hardware error	70	L M
	Remote cluster feature overrun	72	L M
	Remote cluster feature write error	73	L M
	Undefined remote hardware error	98	L M
20	Undefined sense data	49	L M

Recovery actions:

XX — See $NUWE2 or *IBM System/34 Displayed Messages Guide,* SC21-5159.
L — Log the error.
- Error priorities 1–4 are logged in the local controller log.
- All remaining errors are logged in the appropriate device log.

M — Issue a SYSLOG message to the operator. Messages contain the terminal ID. If the failing device is the system console, turn on the Console Check light.
C — The system is proc checked.

Figure 3-16 (Part 3 of 3). Summary of Specific Error Recovery Procedures for Display Stations Relative to Test Priority (Work Station)

Priority	5256 Printer Errors	Error Code	Recovery Action
0	Load ATR buffer boundary error, a value greater than 4096 was specified as the data transfer byte count in a printer IOB, or cancel key pressed	N/A	M
1	WSC storage parity check (does not apply to work station control expansion C)	XX	L C
2	WSC long timeout check (does not apply to work station control expansion C)	XX	L C
3	WSC DBO/DBI parity checks (does not apply to work station control expansion C)	XX	L C
4	Operation check	XX	L C
5	Resources temporarily not available	XX	M
6	WSCF error	XX	M
7	Transmit activity check	01	L M
8	No response timeout	00	L M
9	Activate command failure	09	L M
10	Receive parity checks	03	L M
11	Busy timeout	91	L M
12	Receive length check	06	L M
13	Receive buffer overrun (work station control expansion C only)	05	L M
14	Exception status:		
	Activate lost	23	L M
	Activate not valid	24	L M
	Reserved	25	L M

Figure 3-17 (Part 1 of 3). Summary of Specific Error Recovery Procedures for 5256 Printers Relative to Test Priority (Work Station)

Priority	5256 Printer Errors	Error Code	Recovery Action
14 (cont.)	Command or ID not valid	20	L M
	Input queue or storage overrun	22	L M
	Reserved	21	L M
	Power-on transition	08	L M
15	Even/odd timeout	90	L M
16	Line parity checks	04	L M
17	Wrong station responded	07	L M
	Remote cluster feature hardware error	70	L M
	Remote cluster feature overrun	72	L M
	Remote cluster feature write error	73	L M
	Undefined remote hardware error	98	L M
18	End of forms	50	M
19	Wire check (permanent)	31	L M
20	Printer mechanism not ready (permanent)	30	L M
21	Forms position check (permanent)	38	L M
22	Forms stopped check (permanent)	37	L M
23	Emitter sequence check (permanent)	34	L M
24	Fast speed check (permanent)	33	L M
25	No emitters (permanent)	35	L M
26	Overrun check (permanent)	36	L M

Figure 3-17 (Part 2 of 3). Summary of Specific Error Recovery Procedures for 5256 Printers Relative to Test Priority (Work Station)

Priority	5256 Printer Errors	Error Code	Recovery Action
27	Slow speed check (permanent)	32	L M
28	Not valid SCS command	28	M
29	Not valid SCS parameter	29	M
30	Graphic (unprintable character) check	26	M
31	Not ready	51	M
32	Wire check (temporary)	41	L
33	Printer mechanism not ready (temporary)	40	L
34	Emitter sequence check (temporary)	44	L
35	Fast speed check (temporary)	43	L
36	No emitters (temporary)	45	L
37	Overrun check (temporary)	46	L
38	Slow speed check (temporary)	42	L
39	Forms position check (temporary)	48	L M
40	Forms stopped check (temporary)	47	L M
41	Undefined sense data	49	L M

Recovery actions:

XX — See $NUWE2 or *IBM System/34 Displayed Messages Guide*, SC21-5159
L — Log the error.
- Error priorities 1—4 are logged in the local controller log.
- All remaining errors are logged in the appropriate device log.

M — Issue a SYSLOG message to the operator. Messages contain the printer ID.
C — The system is proc checked.

Figure 3-17 (Part 3 of 3). Summary of Specific Error Recovery Procedures for 5256 Printers Relative to Test Priority (Work Station)

Priority	5224/5225 Printer Errors	Error Code	Recovery Action
0	Load ATR buffer boundary error, a value greater than 4096 was specified as the data transfer byte count in a printer IOB, or cancel key pressed	N/A	M
1	WSC storage parity check (does not apply to work station control expansion C)	XX	L C
2	WSC long time-out check (does not apply to work station control expansion C)	XX	L C
3	WSC DBO/DBI parity check (does not apply to work station control expansion C)	XX	L C
4	Operation check	XX	L C
5	Resources temporarily not available	XX	M
6	WSCF error	XX	M
7	Transmit activity check	01	L M
8	No response time-out	00	L M
9	Activate command failure	09	L M
10	Receive parity check	03	L M
11	Busy time-out	91	L M
12	Receive length check	06	L M
13	Receive buffer overrun (work station control expansion C only)	05	L M
14	Exception status:		
	Activate lost	23	L M
	Activate not valid	24	L M
	Reserved	25	L M

Figure 3-18 (Part 1 of 4). Summary of Specific Error Recovery Procedures for 5224/5225 Printers Relative to Test Priority (Work Station)

Priority	5224/5225 Printer Errors	Error Code	Recovery Action
14 (cont.)	Command or ID not valid	20	L M
	Input queue or storage overrun	22	L M
	Reserved	21	L M
	Power-on transition	08	L M
15	Even/odd time-out	90	L M
16	Line parity checks	04	L M
17	Wrong station responded	07	L M
	Remote cluster feature hardware error	70	L M
	Remote cluster feature overrun	72	L M
	Remote cluster feature write error	73	L M
	Undefined remote hardware error	98	L M
18	End of forms	50	M
19	Printer processor check	11	L M
	Control/sense card check (permanent)	31	L M
	Control/sense card check (temporary)	31	L
	Servo power amp (permanent)	32	L M
	Servo power amp (temporary)	32	L
	Servo amp card/servo power amp/actuator carrier motor check (permanent) (5225 only)	34	L M
	Servo amp card/servo power amp/actuator carrier motor check (temporary) (5225 only)	34	L

Figure 3-18 (Part 2 of 4). Summary of Specific Error Recovery Procedures for 5224/5225 Printers Relative to Test Priority (Work Station)

Priority	5224/5225 Printer Errors	Error Code	Recovery Action
19 (cont.)	Actuator carrier overcurrent (permanent)	35	L M
	Actuator carrier overcurrent (temporary)	35	L
	Actuator carrier emitter check (permanent)	36	L M
	Actuator carrier emitter check (temporary)	36	L
	Actuator carrier speed check (permanent) (5225 only)	38	L M
	Actuator carrier speed check (temporary) (5225 only)	38	L
	Undetermined actuator carrier check (permanent) (5225 only)	39	L M
	Undetermined actuator carrier check (temporary) (5225 only)	39	L
	Control/sense card check	41	L M
	Servo power amp	42	L M
	Servo amp card/servo power amp/forms motor check (5225 only)	43	L M
	Forms overcurrent	45	L M
	Forms emitter check	46	L M
	Forms speed check (5225 only)	48	L M
	High voltage check	81	L M
	Dot image generator check	83	L M
	Wire latch card check	84	L M
	Pedestal check	85	L M
	Actuator group jumpers check (5225 only)	86	L M
	Timer check (5225 only)	87	L M

Figure 3-18 (Part 3 of 4). Summary of Specific Error Recovery Procedures for 5224/5225 Printers Relative to Test Priority (Work Station)

Priority	5224/5225 Printer Errors	Error Code	Recovery Action
19 (cont.)	Ribbon jam (5225 only)	88	L M
	Ribbon card check	89	L M
20	Not valid SCS command	28	M
21	Not valid SCS parameter	29	M
22	Graphic (unprintable character) check	26	M
23	Not ready	51	M
24	Undefined sense data	49	L M

Recovery actions:

XX — **See $NUWE2 or** *IBM System/34 Displayed Messages Guide,* SC21-5159
L — Log the error.
- Error priorities 1—4 are logged in the local controller log.
- All remaining errors are logged in the appropriate device log.

M — Issue a SYSLOG message to the operator. Messages contain the printer ID.
C — The system is proc checked.

Figure 3-18 (Part 4 of 4). Summary of Specific Error Recovery Procedures for 5224/ 5225 Printers Relative to Test Priority (Work Station)

Priority	5219 Printer Errors	Error Code	Recovery Action
0	Load ATR buffer boundary error, a value greater than 4096 was specified as the data transfer byte count in a printer IOB, or cancel key pressed	N/A	M
1	WSC storage parity check (does not apply to work station control expansion C)	XX	L C
2	WSC long time-out check (does not apply to work station control expansion C)	XX	L C
3	WSC DBO/DBI parity check (does not apply to work station control expansion C)	XX	L C
4	Operation check	XX	L C
5	Resources temporarily not available	XX	M
6	WSCF error	XX	M
7	Transmit activity check	01	L M
8	No response time-out	00	L M
9	Activate command failure	09	L M
10	Receive parity check	03	L M
11	Busy time-out	91	L M
12	Receive length check	06	L M
13	Receive buffer overrun (work station control expansion C only)	05	L M
14	Exception status:		
	Activate lost	23	L M
	Activate not valid	24	L M
	Reserved	25	L M

Figure 3-18.1 (Part 1 of 3). Summary of Specific Error Recovery Procedures for 5219 Printers Relative to Test Priority (Work Station)

Priority	5219 Printer Errors	Error Code	Recovery Action
14 (cont.)	Command or ID not valid	20	L M
	Input queue or storage overrun	22	L M
	Reserved	21	L M
	Power-on transition	08	L M
15	Even/odd time-out	90	L M
16	Line parity checks	04	L M
17	Wrong station responded	07	L M
	Remote cluster feature hardware error	70	L M
	Remote cluster feature overrun	72	L M
	Remote cluster feature write error	73	L M
	Undefined remote hardware error	98	L M
18	End of forms	50	M
19	Machine check	11	L M
	Machine check	12	L M
	Print check	31	L M
	Print check	32	L M
	Print check	33	L M
	Forms check	41	L M
	Paper jam	47	L M
	End of ribbon	58	M
	Data stream exception (permanent)	66	M
	Data stream exception (temporary)	66	

Figure 3-18.1 (Part 2 of 3). Summary of Specific Error Recovery Procedures for 5219 Printers Relative to Test Priority (Work Station)

Priority	5219 Printer Errors	Error Code	Recovery Action
19 (cont.)	Data stream exception (permanent)	67	M
	Data stream exception (temporary)	67	
	Data stream exception (permanent)	68	M
	Data stream exception (temporary)	68	
	Data stream exception (permanent)	69	M
	Data stream exception (temporary)	69	
	Unexpected cover open	81	M
20	Not valid SCS command	28	M
21	Not valid SCS parameter	29	M
22	Graphic (unprintable character) check	26	M
23	Not ready	51	M
24	Undefined sense data	49	L M

Recovery actions:

XX — See $NUWE2 or *IBM System/34 Displayed Messages Guide,* SC21-5159
L — Log the error.
- Error priorities 1—4 are logged in the local controller log.
- All remaining errors are logged in the appropriate device log.

M — Issue a SYSLOG message to the operator. Messages contain the printer ID.
C — The system is proc checked.

Figure 3-18.1 (Part 3 of 3). Summary of Specific Error Recovery Procedures for 5219 Printers Relative to Test Priority (Work Station)

NATIVELY ATTACHED PRINTER I/O

The natively attached printer I/O controller directs line printer attachment operation. An interface logic card interfaces with the system I/O, the I/O controller, and the natively attached printer. The I/O controller and the interface logic are packaged on separate 4-wide by 3-high SLT cards.

The I/O controller addressable storage consists of 4K words, which provides storage for two print data and carriage control character receive buffers, the natively attached printer belt image, and functional microcode. An initial program load function in the I/O controller provides a means of loading functional or diagnostic microcode. I/O immediate commands at the control processor level initiate the I/O controller functions and sense status conditions. Print hammer optioning is passed to the printer over an 8-bit plus parity hammer address bus.

The printer decodes the hammer address into one of 66 hammers for a 5211 Model 1 and one of 132 hammers for a 5211 Model 2 or a 3262. Actual hammer fire timing is controlled by the interface logic by conditioning the fire tier lines. Hammer echo checking is performed at the end of a subscan period on a serial basis. A burst of pulses is sent out on the hammer sample line corresponding to the number of hammers. If a corresponding hammer is on, printer logic control responds on the hammer echo line in sync with the hammer sample pulse. Hammer firing during any print subscan is limited by a hammer fire algorithm.

See *Input/Output Block* (printer IOB) and *Terminal Unit Block* in *Section 2. Data Areas* for the format of a printer IOB and TUB. Figure 3-19 shows the printer I/O controller storage.

5211 Line Printer Storage Map		
0000	I/O Controller Microcode	2368 bytes
0940	Unprintable Character Table	192 bytes
0A00	Translation Table	256 bytes
0B00	Reserved	200 bytes
0BC8	Work areas (9)	180 bytes
0C7C	Print Buffer	132 bytes
0D00	Belt Image	256 bytes
0E00	Data Buffers	512 bytes
1000	I/O Controller Microcode	4096 bytes

Figure 3-19 (Part 1 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0BC8	WKAREA8	7	Work area 8:
C8		1	Character store
C9		1	Printable character code
CA		1	Printable character flag
CB		2	Reserved
CD		2	Print character counter
0BCF	WKAREA9	15	Work area 9:
CF		1	Miscellaneous flags
D0		2	Attachment printer model: DD11=Model 1 DD12=Model 2
D2		3	Microcode date
D5		9	Printer microinstructions
0BDE	WKAREA7	34	Work area 7:
DE		1	First subscan of print line
DF		1	Current subscan at time of error
E0		17	Hammer echo return log area
F1		1	Carriage sync counter
F2		1	Initial value for lights timer
F3		1	Initial value for IOB data counter
F4		2	10 millisecond timer after printer subscan timeout

Figure 3-19 (Part 2 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
F6		1	Minimum number of scans per line
F7		1	Count value for 'power on reset'/contactor—delay to drop 'power on reset'
F8		2	Belt idle timeout (2 minutes)
FA		2	Belt up to speed (2 seconds)
FC		2	Initial value for printer busy counter
FE		1	Initial value for printer busy unit timer
FF		1	Delay between belt retries (units of 8 milliseconds)
0C00	WKAREA0	16	Work area 0:
00		1	Constant (0)
01		1	Maximum bank value (8)
02		2	Horizontal cursor for left margin
04		1	Carriage space timeout (carriage check 2)
05		1	Clamp set time
06		1	Clamp release time
07		1	Carriage space counter
08		1	Carriage operation sync counter
09		1	Space timeout counter
0A		1	Hammer bank
0B		1	Home status save
0C		1	Chain position opposite hammer 1

Figure 3-19 (Part 3 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D		1	Light status
0E		1	IOB data counter
0F		1	General-purpose flags
0C10	WKAREA1	16	Work area 1:
10		9	Hammer log area for subscan 1: Initialized with hex FFs
19		1	Clamp timeout counter
1A		2	Belt timeout counter
1C		1	Forms pulse length counter
1D		1	Power on reset timeout counter
1E		1	Counter for forms jam check
1F		1	Counter to maintain average print rate
0C20	WKAREA2	16	Work area 2:
20		9	Hammer log area for subscan 2: Initialized with hex FFs
29		1	Scan counter for end of print
2A		1	Belt retry counter
2B		2	Printer busy counter
2D		1	Printer busy wait
2E		1	Carriage switch service
2F		1	Belt retry delay

Figure 3-19 (Part 4 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C30	WKAREA3	16	Work area 3:
30		9	Hammer load area for subscan 3: Initialized with hex FFs
39		1	Buffer wrap control flags
3A		1	Save area for registers 0 and 1
3B		1	PCR save area
3C		1	Register save area
3D		1	Lights timer
3E		1	Temporary carriage operation delay counter: Initial value=00
3F		1	Temporary carriage operation delay counter: Initial value=A0
0C40	WKAREA4	16	Work area 4:
40		9	Hammer log area for subscan 4: Initialized with hex FFs
49		1	Global carriage space timer
4A		1	Initialize value: 2D

Figure 3-19 (Part 5 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4B	@W4#STA0	1	Status byte 0: *Hex* *Meaning* 80 Not used 40 Unprintable character 20 Hammer echo checks 10 Printer not ready 08 Belt sync checks 04 Belt speed checks 02 Belt up to speed checks 01 Any hammer on checks
4C	@W4#STA1	1	Status byte 1: *Hex* *Meaning* 80 End of forms 40 Forms jam checks 20 Print unit open 10 Printer busy too often checks 08 Printer busy too long checks 04 Ribbon checks 02 Cable interlock checks 01 Data parity checks
4D	@W4#STA2	1	Status byte 2: *Hex* *Meaning* 80 Printer not powered on 40 Data transfer check 20 Data stream reject 10 Reserved 08 SCS parameter not valid 04 SCS command not valid 02 IOB not valid 01 Printer power checks

Figure 3-19 (Part 6 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
4E	@W4#STA3	1	Status byte 3: *Hex* *Meaning* 80 Printer CE switch on 40 Eight lines per inch mode indicator 20–10 00=160 lines per minute 01=300 lines per minute 08 Fire tier checks 04 Print subscan emitter checks 03 Reserved 02 Carriage speed check (also called carriage check 2) 01 Carriage sync check (also called carriage check 1)
4F	@W4#PTLC	1	Print line counter
0C50	WKAREA5	16	Work area 5:
50		9	Hammer log area for subscan 5: Initialized with hex FFs
59		1	Switch status hold area 1
5A		1	Switch status hold area 2
5B		1	Destination line
5C		1	Destination line save area
5D		1	Power register save area
5E		1	Carriage check 2 counter save area
5F		1	Miscellaneous flags

Figure 3-19 (Part 7 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0C60	WKAREA6	28	Work area 6:
60		1	Error status byte 3, inverted (See terminal unit block TUBSENS3)
61		1	Error status byte 2, inverted (See terminal unit block TUBSENS2)
62		1	Error status byte 1, inverted (See terminal unit block TUBSENS1)
63		1	Error status byte 0, inverted (See terminal unit block TUBSENS0)
64		1	Print line count
65		1	Reserved
66		2	Input SCS buffer start address
68		2	Length of input SCS buffer
6A		2	Input SCS buffer end address
6C		1	Input IOB command
6D		2	Active SCS buffer start address
6F		2	Length of active SCS buffer
71		2	Active SCS buffer end address
73		2	Current address in active SCS buffer
75		2	Buffer address of error recovery procedure backup
77		1	Horizontal cursor save for error recovery procedure
78		1	Current line on printer

Figure 3-19 (Part 8 of 9). 5211 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
79		1	Forms length
7A		1	Character set size
7B		1	Set graphic error action parameter
Following are pointers to the work area buffers:			
0C66	@W6#ISRT		Start of input buffer
0C6A	@W6#ISTP		End of input buffer
0C6D	@W6#ASRT		Start of active buffer
0C71	@W6#ASTP		End of active buffer
0C73	@W6#ANOW		Active buffer current address

Figure 3-19 (Part 9 of 9). 5211 Line Printer I/O Controller Storage

3262 Line Printer Storage Map		
0000	I/O Controller Microcode	1744 bytes
06D0	Work areas (7)	112 bytes
0740	Translation Table	192 bytes
0800	Data Buffers	512 bytes
0A00	I/O Controller Microcode	320 bytes
0B40	Unprintable Character Table	192 bytes
0C00	Print Buffers	320 bytes
0D40	Hammer Logs	82 bytes
0D92	Reserved	238 bytes
0E80	Belt Image	384 bytes
1000	I/O Controller Microcode	4096 bytes

Figure 3-20 (Part 1 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0000		1744	Start of I/O controller microcode
06D0	WKAREA0	16	Work area 0:
D0		1	Carriage space counter
D1		1	Hammer bank
D2		1	Hammer register value
D3		1	Home status save
D4		2	Chain position opposite hammer 1
D6		2	Belt sync check pointer
D8		1	Light status
D9		1	IOB data counter
DA		1	Character store
DB		1	Printable character code
DC		1	Printable character flag
DD		1	Print character counter
DE		1	DAR save
DF		1	DAR save
06E0	WKAREA1	16	Work area 1:
E0		3	Reserved
E3		1	Clamp time-out counter
E4		2	Belt time-out counter

Figure 3-20 (Part 2 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
E6		1	Reserved
E7		1	Power on reset time-out counter
E8		1	Counter for forms jam check
E9		1	Counter to maintain average print rate
EA		1	Interrupt level flags
EB		1	Set chain image command type
EC		4	Carriage timers
06F0	WKAREA2	16	Work area 2:
F0		10	Echo check hammer pointers
FB		1	Echo check address decrement
FC		1	Belt retry counter
FD		1	Carriage switch service
FE		1	End of forms counter
0700	WKAREA3	16	Work area 3:
00		3	Reserved
03		6	Horizontal cursor save for error recovery procedure
09		1	Buffer wrap control flags
0A		1	Reserved
0B		1	PCR save area
0C		1	Reserved

Figure 3-20 (Part 3 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
0D		1	Lights timer
0E		2	Reserved
0710	WKAREA4	8	Work area 4:
10		3	Reserved
13	@W4#STA0	1	Status byte 0: *Hex* *Meaning* 80 Not used 40 Unprintable character 20 Hammer echo check 10 Printer not ready 0C Belt speed check 08 Belt sync check 04 Belt up to speed check 02 Thermal check 1 01 Any hammer on checks
14	@W4#STA1	1	Status byte 1: *Hex* *Meaning* 80 End of forms 40 Forms jam check 20 Print unit (throat) open 10 Thermal check 2 08 Printer busy too long 04 Ribbon check 02 Cable interlock checks 01 Data parity checks

Figure 3-20 (Part 4 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
15	@W4#STA2	1	Status byte 2: *Hex* *Meaning* 80 Printer not powered on 40 Data transfer check 20 Data stream reject 10 Reserved 08 SCS parameter not valid 04 SCS command not valid 02 IOB not valid 01 Carriage pedestal check
16	@W4#STA3	1	Status byte 3: *Hex* *Meaning* 80 Printer CE switch on 40 Eight-lines-per-inch mode indicator 20—10 11=650 lines per minute 08 Fire tier check 04 Printer subscan emitter checks 02—01 11=carriage acceleration check (also called carriage check 4) 10=carriage full speed check (also called carriage check 3) 01=deceleration or carriage sync check (also called carriage check 1) 00-no carriage check
17	@W4#STA4	1	Print line counter
0718	WKAREA5	8	Work area 5:
18		1	Reserved
19		1	Switch status hold area 1
1A		1	Switch status hold area 2

Figure 3-20 (Part 5 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
1B		1	Destination line
1C		1	Destination line save area
1D		1	Power register save area
1E		1	Main level flags
1F		1	Data transfer flags
0720	WKAREA6	32	Work area 6:
20		1	Print line count
21		1	Error status byte 3, inverted (see terminal unit block TUBSENS3)
22		1	Error status byte 2, inverted (see terminal unit block TUBSENS2)
23		1	Error status byte 1, inverted (see terminal unit block TUBSENS1)
24		1	Error status byte 0, inverted (see terminal unit block TUBSENS0)
25		1	Stop key when powering up
26		3	Reserved
29		2	Input SCS buffer start address
2B		2	Length of input SCS buffer
2D		2	Input SCS buffer end address
2F		1	Input IOB command
30		2	Active SCS buffer start address

Figure 3-20 (Part 6 of 7). 3262 Line Printer I/O Controller Storage

Displ of Leftmost Byte in Hex	Label	Lng in Bytes in Dec	Description
32		2	Length of active SCS buffer
34		2	Active SCS buffer end address
36		2	Current address in active SCS buffer
38		2	Buffer address of error recovery procedure backup
3A		1	Print error flag
3B		1	Current line on printer
3C		1	Forms length
3D		2	Character set size
3F		1	Set graphic error action parameter
Following are pointers to the work area buffers:			
0729	@W6ISRT		Start of input buffer
072D	@W6ISTP		End of input buffer
0730	@W6ASRT		Start of active buffer
0734	@W6#ASTP		End of active buffer
0736	@W6#ANOW		Active buffer current address

Figure 3-20 (Part 7 of 7). 3262 Line Printer I/O Controller Storage

5211 Printer Error Recovery Procedures (ERP)

Error recovery on a line-by-line basis is the responsibility of the individual printer or I/O controller within System/34. Any errors that occur on the line printer are reported back to the system level ERP. The status bytes are placed in the terminal unit block (TUB) and the TUB is marked with an error in the ERB control byte. The ERP routine checks the status bytes in the designated priority sequence to determine the cause of the error. Figure 3-21 is a summary chart of the specific recovery procedures for the 5211 line printer relative to the test priority.

Status Bit Test Priority	Status Byte and Bits	Status Bit Name	Recovery Action (Note)	Log Error
1	4-x	Not valid buffer or ATR loading failure (first failing hammer (in hex) if byte 0, bit 2 is on)	6	
2	0-0	Printer controller unit checks	5	L
3	1-6	Cable interlock checks	1	L
4	2-7	Printer power check	1	L
5	0-7	Any hammer on checks	1	L
6	3-0	Printer CE switch on	7	
7	2-0	Printer not powered on	4	
8	3-4	Fire tier checks	1	L
9	0-2	Hammer echo checks	1	L
10	3-6, 7	Carriage checks (all)	2	L
11	1-1	Forms jam checks	2	L
12	3-5	Printer subscan emitter checks	1	L
13	0-4	Belt sync checks	1	L
14	0-6	Belt up to speed checks	1, 6	L

Figure 3-21 (Part 1 of 2). Summary of Specific Error Recovery Procedures Relative to Test Priority (5211 Line Printer)

Status Bit Test Priority	Status Byte and Bits	Status Bit Name	Recovery Action (Note)	Log Error
15	0-5	Belt speed check	1	L
16	0-1	Unprintable character check	1	
17	2-1	Data transfer check	5	L
18	2-6	Not valid IOB	5	
19	2-2	Data stream reject	5	
20	2-5	Not valid SCS command	5	
21	2-4	Not valid SCS parameter	5	
22	1-0	End of forms	3	
23	1-2	Print unit (throat) open	1, 4	
24	1-3	Printer busy too often checks	1	L
25	1-4	Printer busy too long checks	1	L
26	1-5	Ribbon checks	1	L
27	1-7	Data parity checks (also called hammer bus out parity check)	1	L
28	0-3	Printer not ready	4	

Notes:
1. Print check recovery
2. Carriage check recovery
3. End of forms recovery
4. Not ready recovery/CE switch on
5. Program check recovery
6. Soft error recovery

See the *IBM System/34 5340 System Unit Theory Diagrams Manual,* SY31-0458, for recovery action.

Figure 3-21 (Part 2 of 2). Summary of Specific Error Recovery Procedures Relative to Test Priority (5211 Line Printer)

3262 Printer Error Recovery Procedures (ERP)

Error recovery on a line-by-line basis is the responsibility of the individual printer or I/O controller within System/34. Any errors that occur on the line printer are reported back to the system level ERP. The status bytes are placed in the terminal unit block (TUB) and the TUB is marked with an error in the ERB control byte. The ERP routine checks the status bytes in the designated priority sequence to determine the cause of the error. Figure 3-22 is a summary chart of the specific recovery procedures for the 3262 line printer relative to the test priority.

Status Bit Test Priority	Status Byte and Bits	Status Bit Name	Recovery Action (Note)	Log Error
1	4-x	Not valid buffer or ATR loading failure (first failing hammer (in hex) if byte 0, bit 2 is on)	5	
2	0-0	Printer controller unit checks	4	L
3	1-6	Cable interlock checks	1,4	L
4	0-6, 1-3	Thermal check 1 and 2	7	L
5	2-0	Printer not powered on	6	
6	0-7	Any hammer on checks	1	L
7	3-0	Printer CE switch on	4	
8	3-4	Fire tier checks	1	L
9	0-2	Hammer echo checks	1	L
10	2-7	Carriage pedestal check	1	L
11	3-6, 7	Carriage check	2	
12	1-1	Forms jam checks	2	L
13	3-5	Printer subscan emitter checks	1	L
14	0-4, 5	Belt sync checks	1	L

Figure 3-22 (Part 1 of 2). Summary of Specific Error Recovery Procedures Relative to Test Priority (3262 Line Printer)

Status Bit Test Priority	Status Byte and Bits	Status Bit Name	Recovery Action (Note)	Log Error
15	0-4, 5	Belt up to speed checks	1	L
16	0-4, 5	Belt speed check	1	L
17	0-1	Unprintable character check	1	
18	2-1	Data transfer check	5	L
19	2-6	Not valid IOB	5	
20	2-2	Data stream reject	5	
21	2-5	Not valid SCS command	5	
22	2-4	Not valid SCS parameter	5	
23	1-0	End of forms	3	
24	1-2	Print unit (throat) open	1, 4	
25	1-4	Printer busy too long checks	1	L
26	1-5	Ribbon checks	1	L
27	1-7	Data parity checks (also called hammer bus out parity check)	1	L
28	0-3	Printer not ready	4	

Notes:
1. Print check or carriage pedestal check
2. Carriage check recovery
3. End of forms recovery
4. Not ready recovery/CE switch on
5. Program check recovery
6. Power on. Recovery
7. No recovery. Call CE.

See the *IBM System/34 5340 System Unit Theory Diagrams Manual,* SY31-0458, for recovery action.

Figure 3-22 (Part 2 of 2). Summary of Specific Error Recovery Procedures Relative to Test Priority (3262 Line Printer)

1255 MAGNETIC CHARACTER READER I/O

The DTF and IOB generated for the 1255 Magnetic Character Reader are the interface between the user program and MICR. The MICR work area, consisting of the constants, table and work area, and the input and output buffer formats, are located in the attachment controller. For an overview layout of the attachment controller area for SUBR08, see Figures 3-23 and 3-24; for an overview layout of the attachment controller area for SUBR25, see Figure 3-35. For a description of the MICR error history table, system trace area, MICR error counter table and the I/O counter table, see Section 2.

1255 Magnetic Character Reader SUBR08

Address of Leftmost Byte in Hex	Contents
0000	Start/restart routine
0004	Link to interrupt handler, reserved direct area
00C0	Diagnostic counters, Figure 3-24
00E8	Controller register save area
0100	Attachment controller constants, tables and work area, Figure 3-25
0200	System/34 output buffers, Figure 3-32
0300	1255 input buffer, Figure 3-33
0337	Stacker decision compression groups, Figure 3-34
0900	Modulus check code and
	Stacker select code
1000	MICR run code and interrupt handler
17FF	

Direct Area

Dump Area (2304 bytes)

Figure 3-23. Overview of Attachment Controller Storage Organization (SUBR08)

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
00C0	2	Number of documents selected to stacker 0
00C2	2	Number of documents selected to stacker 1
00C4	2	Number of documents selected to stacker 2
00C6	2	Number of documents selected to stacker 3
00C8	2	Number of documents selected to stacker 4
00CA	2	Number of documents selected to stacker 5
00CC	2	Number of documents selected to stacker 6
00CE	2	Number of documents selected to stacker 7
00D0	2	Number of documents selected to stacker 8
00D2	2	Number of documents selected to stacker 9
00D4	2	Number of documents selected to reject stacker
00D6	2	Number of documents selected to stacker A
00D8	8	Not used
00E0	2	Number of end-of-transmission signals received from device
00E2	2	Number of documents readied for transmission
00E4	1	Number of false end-of-transmissions received from device due to noise
00E5	1	Number of documents rejected because the buffers were full
00E6	2	Number of documents auto-rejected by the device

Figure 3-24. Diagnostic Counters (SUBR08)

Address of Leftmost Byte in Hex	Contents
0100	Stacker type table (TAB01), Figure 3-26
0134	Field description table (TAB02), Figure 3-27
0139	Alternate document count condition table (TAB03), Figure 3-28
013C	Unused
013F	Indicate document count condition table (TAB04), Figure 3-29
0150	System specification constants (TAB05), Figure 3-30
0180	Programming and engineering constants
01B1	Programming and engineering work area, Figure 3-31
01FF	End of constants and work area

Figure 3-25. Overview of Attachment Controller Constants, Tables, and Work Area (SUBR08)

TAB01 record type table

1255 Model 1 or 2		1255 Model 3
Entry for stacker 0	Entry for stacker 0	Entry for stacker 0
Entry for stacker 1	Entry for stacker 2	Entry for stacker 1
Entry for stacker 2	Entry for stacker 4	Entry for stacker 2
Entry for stacker 3	Entry for stacker 6	Entry for stacker 3
Entry for stacker 4	Entry for stacker 8	Entry for stacker 4
Entry for stacker R	Entry for stacker R	Entry for stacker 5
		Entry for stacker 6
		Entry for stacker 7
		Entry for stacker 8
		Entry for stacker 9
		Entry for stacker A
		Reserved
		Entry for stacker R

There is one entry in TAB01 for each stacker. The entries are arranged in one of the three sequences shown above, depending on how the stackers of the 1255 are numbered. TAB01 is located at hex 0100 in the attachment controller.

Figure 3-26 (Part 1 of 2). Common Data — Stacker Type Table (TAB01) (SUBR08)

Stacker Number	Code
0	10
1	20
2	30
3	40
4	50
5	60
6	70
7	80
8	90
9	A0
A	C0
R	B0

Length in Bytes	Explanation
1	Stacker *number* in EBCDIC
1	Stacker select *code*
2	Intermediate document count total (used only by the stacker select section)

Each stacker entry (except the reject stacker) in TAB01 is set up as shown above. The reject entry contains only the stacker number and the stacker select code.

Figure 3-26 (Part 2 of 2). Common Data — Stacker Type Table (TAB01) (SUBR08)

Field type table TAB02 (5 bytes)	
	Entry for field 1 (1 byte)
	Entry for field 2 (1 byte)
	Entry for field 3 (1 byte)
	Entry for field 4 (1 byte)
	Entry for field 5 (1 byte)

Length in Bits	Explanation
4	Field-type (see note)
4	Length of field in hex. If field is variable length, this is the maximum field length (maximum length is hexadecimal F).

Note: Field type occupies bits 0 through 3 of the byte and contains one of the following hex values:

4 = Field is not to be read
C = Fixed-length field
E = Variable-length field

TAB02 is located at hex 0134 in the attachment controller.

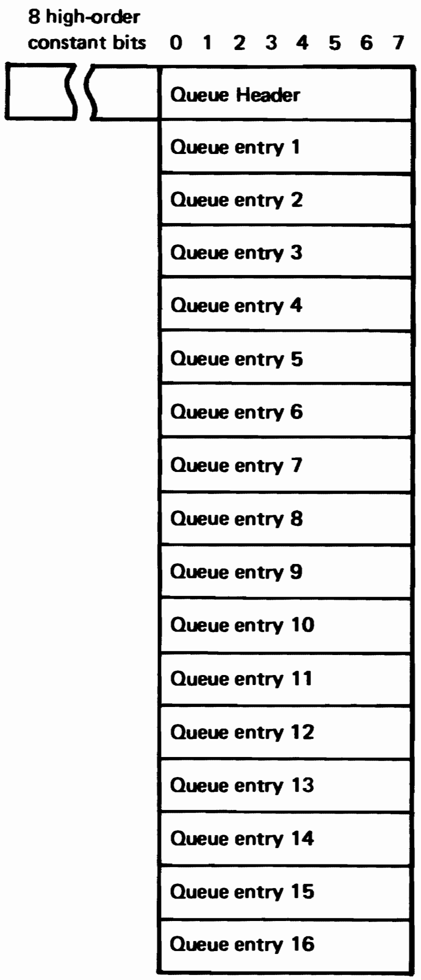
Figure 3-27. Common Data – Field Description Table (TAB02) (SUBR08)

Byte	Explanation
1	Address (low-order byte) of the TAB01 entry of the stacker currently being used (see note)
2–3	Intermediate document count used by the stacker select section

Note: The address of the TAB01 entry is the low-order byte of the address. All TAB01 entries are on the same attachment controller storage page boundary and are loaded with a constant high-order byte.

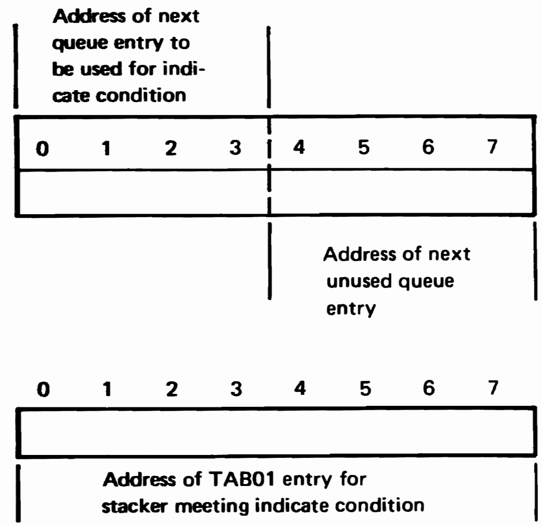
Figure 3-28. Common Data – Alternate Document Count Condition Table (TAB03) (SUBR08)

When the *alternate* action is specified on a document count condition, this table is used to route the document to the proper stacker in the alternate sequence. The intermediate document count is used to determine when the next stacker in the alternate sequence should be used. TAB03 is located at hex 0139 in the attachment controller.



The TAB04 table is used only if the action for the document count condition is specified as *indicate*. TAB04 is located at hex 013F in the attachment controller.

Figure 3-29. Common Data – Indicate Document Count Condition Table (TAB04) (SUBR08)



The address of the next unused queue entry is the 4 low-order bits of the 2-byte address. Since the TAB04 queue entry table is aligned on a 2-byte attachment controller storage boundary, the 8 high-order bits (leftmost byte) are constant and are loaded separately. The composite address formed is of the queue entry to be used when the next indicate condition occurs.

The address of the next indicate condition queue entry is identical in format to the above address. The combined address formed points to the queue entry to be used to stacker select the next control document.

The address of the TAB01 entry has the same format as the similar field in the TAB03 control block. The composite address formed points to the TAB01 entry for a stacker that has met the document count condition.

The TAB04 queue header is initialized to hex 00 to indicate an empty queue. If both halves of the TAB04 queue header are equal, the queue is empty; otherwise, at least one queue entry is waiting to be processed.

Queue overflow can never occur because there are fewer stackers than queue entries.

The document count condition action, control/EOF document field length, modulus check indicator and weighting factor, and the control and end-of-file document definition fields are the same fields that appear on the system specification. The fields marked in hexadecimal are converted from character to binary.

The 6 reserved bytes are present to prevent the control and end-of-file document definition fields from crossing any attachment controller 2-byte storage boundary. TAB05 is located at hex 0150 in the attachment controller.

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
0150	2	Document count condition limit (in hex)
0152	1	Document count condition action
0153	1	Displacement to control/EOF fields
0154	1	Control/EOF document field length (in hex)
0155	1	Modulus check indicator
0156	10	Modulus check weighting factor
0160	6	Reserved
0166	10	Control document definition field
0170	10	End-of-file document definition field
017A	1	Account number end position (rightmost)
017B	1	Account number field length
017C	1	Process control field length
017D	1	Transit routing field mapping indicator
017E	1	Test mode indicator (blank entry = normal run)

Figure 3-30. Common Data – System Specification Constants (TAB05) (SUBR08)

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
01B1	1	Current controller status: *Hex* *Meaning* 80 Sorter is stopped 40 Not used 20 Not used 10 Not used 08 Dumping controller 04 Controller restarted after a dump 02 Device is offline 01 Not used
01B2	1	Interrupt status: *Hex* *Meaning* 80 Controller interrupt has occurred 40 Document is ready to be transmitted to the host 20 End of file condition exists 10 Device is disengaged 08 Parity error occurred when a data byte was read from device 04 Not used 02 Not used 01 Controller parity error
01B3	1	Current controller commands: *Hex* *Meaning* 80 Ready 40 Dump 22 Load stacker select work area 20 Load compression group 12 Read 11 Single document read 00 Wait

Figure 3-31 (Part 1 of 3). Programming and Engineering Work Area (SUBR08)

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
01B4	1	Current device command: *Hex* *Meaning* 80 CPU is stopped 40 Read call 20 I/O disconnect 10 Engage 08 Disengage
01B5	1	Controller main program level status: *Hex* *Meaning* 01 Main level parity error
01B6	1	Address of record input buffer
01B7	1	Address of next record to transmit
01B8	1	Address of next record to format
01B9	1	Field validity indicators of last document read and stacker selected
01BA	1	Document information (1255 sense byte 1) *Hex* *Meaning* 80 Auto-reject 40 Amount field valid 20 Process control field valid 10 Account number field valid 08 Transit routing field valid 04 Serial number field valid 02 Field six valid 01 Field seven valid
01BB	1	TAB01 document total address pointer

Figure 3-31 (Part 2 of 3). Programming and Engineering Work Area (SUBR08)

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
01BC	1	Misread flag
01BD	1	Number documents in flight after a disengage
01BE	1	No buffers available flag
01BF	1	Index to last entry traced. This value plus hex 01C0 is the location of the last entry traced.
01C0	32	Controller trace buffer. Contains commands and sense bytes. Hex FF is inserted in the trace buffer before a command is traced. Sense bytes may follow a command.
01E0	2	Address of compression group area (SUBR08 support)
01E2	2	Address of stacker select work area
01E4	4	Reserved for SUBR25 support
01E8	8	Reserved
01F0	14	Unused
01FE	2	Controller release level (month, year of first customer ship)

Figure 3-31 (Part 3 of 3). Programming and Engineering Work Area (SUBR08)

The 256-byte output buffer area is formatted to four 64-byte buffers, each of which contains a 55-byte formatted document to be sent to the caller.

The data delimiter is used to separate the data from the status byte information when the document is being transmitted to the caller. The document status byte contains values describing the state of the document being sent to the caller. The output buffers start at location hex 0200 in the attachment controller.

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
0200	55	Formatted document to be sent to the caller
0237	1	Data delimiter (constant hex 00)
0238	1	Document status byte 0: *Hex* *Meaning* 80 Reserved 40 Document count limit reached 20 End-of-file 10 Reserved 08 Document auto reject 04 Reserved 02 Misread with reject 01 Misread without reject
0239	7	Not used

Figure 3-32. Caller's Output Buffers (SUBR08)

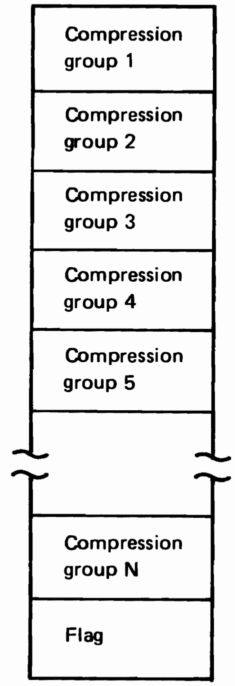
The buffer length is equal to the maximum number of characters that can be received from the 1255 for a single document (45 digits plus 9 delimiters with the dash transmission feature) plus a 1-byte delimiter inserted by the attachment controller. The input buffer is located at hex 0300 in the attachment controller.

Address of Leftmost Byte (Hexadecimal)	Length in Bytes (Decimal)	Description
0300	55	Contains the characters (digits and delimiters) received from the 1255 during the transmission of a document

Figure 3-33. 1255 Input Buffer (SUBR08)

Compression Group Format

Compression is composed of compression groups. One compression group is created for each stacker specification. Compression groups are in the same order as the corresponding stacker specifications. These compressions overlay the array. Compression groups start at location hex 0337 in the attachment controller.



Byte (Hex)	Explanation
0	Length of this compression group in hex
1	Address of the TAB01 entry for this stacker (last byte of the address) or X'FF'
2	User data for this group
3–4	Address of next compression group for GOTO request
5+n	Tests from the specification appear here. There may be from 0 to 5 tests. If a validity or presence check is specified, it will appear first. *Test Mask Values:* 01 = Equal to (E) 02 = Greater than (G) 03 = Not less than (NL) 04 = Less than (L) 05 = Not greater than (NG) 06 = Not equal to (NE)
n+1	End-of-compression group flag equals hex FF

A 1-byte flag equal to hex FE marks the end of compression. If the *alternate* document count condition action is specified, this flag is hex AA.

Figure 3-34 (Part 1 of 2). Compression (SUBR08)

Validity presence check

Byte	Bit	Explanation
0	0–3	Displacement = hex 0 (for branching table)
1	0–4	Mask for field indicators of fields required to be not valid or not present
	5–7	Reserved
2	0–4	Mask for field indicators of fields required to be valid and present
	5–7	Reserved

Field length test

Byte	Bit	Explanation
0	0–3	Displacement = hex 2 (for branching table)
0	4–7	Field number (number of the field on a document—1 through 5)
1	0–3	Required length of the field
1	4–7	Mask indicating which condition will satisfy the test (equal to, greater than, etc.)

Field comparison test

Byte	Bit	Explanation
0	0–3	Displacement = hex 4 (for branching table)
0	4–7	Field number (number of the field on a document—1 through 5)
1	0–3	Field position of the first (leftmost) digit that is compared (rightmost digit of field is 0)
1	4–7	Mask indicating which condition will satisfy the test (equal to, greater than, etc.)
2	0–7	Length of test field
3–m		Test field (comparison characters from the specifications)

Figure 3-34 (Part 2 of 2). Compression (SUBR08)

1255 Magnetic Character Reader SUBR25

Address of Leftmost Byte in Hex	Contents	
0000	Start/restart routine	Dump Area (1024 bytes)
0004	Link to interrupt handler, reserved direct area	
00E8	Controller register save area	
0100	Attachment controller constants and work areas (Figure 3-36)	
0200	256 general registers	
0300	256 control registers (Figure 3-37)	
0400	Op code branch table	
04C0	Device control instruction emulator routines, reader/sorter run code and interrupt handlers	
1800	Physical storage does not exist at this location	
4000	Device control instruction emulator routines, reader/sorter run code (continued)	
4F00	Trace table of input data from reader/sorter	Dump Area (3076 bytes)
5000	Field definition table (Figure 3-38)	
	Buffer control blocks, device controller instruction trace table, buffers, user's program, and data	
AFFF		

Figure 3-35. Overview of Attachment Controller Storage Organization (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0100	1	Program check error code: *Hex* *Meaning* 00 No errors 01 Invalid instruction address or data address 02 Invalid operation code 03 Diagnostic error (caused by the Diagnostic instruction) 04 Branch and Link issued when stack is full 05 Return issued when stack is empty 06 Invalid diagnostic function 07 Invalid I/O function 08 Invalid address on Case Branch 20 No select stacker command issued for a document 21 More than one select stacker command issued for a document 22 Invalid stacker code specified 23 Invalid field number specified on a field operation instruction 24 Invalid length specified on create record instruction
0101	2	DCI instruction address register value at time of program check
0103	1	DCI condition register value at time of program check
0104	1	DCI link stack entry pointer value at time of program check. This value plus hex 0300 is the location of the link stack entry. The link stack entry contains the address of the next sequential instruction following a BAL instruction.
0105	1	Index into the input data trace table. This value plus hex 4F00 is the location of the next input data trace entry. Each input data trace table entry (one byte) is a character code read by the device from a document (see description of input data trace table).
0106	2	Number of documents ready for transmission (valid even when transmission mode is disabled)

Figure 3-36 (Part 1 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0108	2	Number of engages issued to the device since job start
010A	1	Number of documents rejected since job start because the buffers were full
010B	2	Address of document buffer last referenced by the DCI emulator
010D	2	Address of the document buffer last referenced by the document-formatting routine
010F	2	Address of the field indicators last referenced by the DCI emulator
0111	2	Address of the field indicators last referenced by the document-formatting routine
0113	2	Address of the data byte position in the current field being processed by the document-formatting routine
0115	2	Address of the data byte position in the next field being processed by the document-formatting routine
0117	2	The users DCI program starting instruction address
0119	1	Current link stack entry pointer value (low-order byte)
011A	1	Start address of link stack minus 2 (low-order byte)
011B	1	Field definition table flag byte (see Figure 3-38)
011C	1	Field definition table fill character (see Figure 3-38)

Figure 3-36 (Part 2 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
011D	1	Document-formatting routine status indicators: *Hex* *Meaning* 80 Reserved 40 Reserved 20 Data byte read from the device is not a delimiter 10 Special formatting 08 Abnormal delimiter sequence end 04 No buffers are available to move data from the device 02 First data byte read from the device is not a delimiter 01 Document-formatting routine is active processing a document
011E	1	Number of the field being processed by the document-formatting routine. Valid numbers are 0–14. The field number defined here is one less than the field number defined by the user in the DCL program.
011F	1	Stacker code. Valid stacker numbers are hex 00 to hex 0C. A value of hex FF indicates that a stacker has not been selected yet for a document.
0120	1	Misread flag: *Hex* *Meaning* 01 Misread occurred while processing the current document. The misread character from the device is either hex 3F or hex 5C (hex 3F is changed by the microcode to hex 5C).
The following 13 bytes contain the table search DCI instruction save area:		
0121	1	Operand 1 value. This value plus hex 0200 is the location of the search argument.

Figure 3-36 (Part 3 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0122	1	Operand 3 value. This value plus hex 0200 is the location of the address of the last table entry searched.
0123	1	The displacement into a table entry where comparison with search argument is to begin.
0124	1	The length of a table entry.
0125	1	Entry length mask. This value is ANDed with the low order byte of the high and low table entry addresses to determine the address type of each. This is used in a binary search only.
0126	2	High table entry address
0128	2	Not used
012A	2	Address of first entry in table
012C	2	Address of last entry in table
The following 3 bytes contain modulus check DCI instruction save area:		
012E	1	Remainder from modulus table header
012F	1	The number of the general register that contains the data byte to correct.
0130	1	The weighting factor of the data byte to correct (high-order 4 bits).
0131	1	Document status byte: *Hex* *Meaning* 80 Program check occurred while processing this document 40 User requested the device to stop reading documents 20 The document is an end-of-file document 10 Reserved

Figure 3-36 (Part 4 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0131 (cont.)		*Hex* *Meaning* 08 Document was auto-rejected by the device 04 Reserved 02 Misread occurred and document was rejected 01 Misread occurred but document was not rejected
0132	1	Current controller status: *Hex* *Meaning* 80 Sorter is stopped 40 Not used 20 Not used 10 Not used 08 Dumping atom 04 Controller restarted after a dump 02 Device is offline 01 Not used
0133	1	Interrupt status: *Hex* *Meaning* 80 Controller interrupt has occurred 40 Document is ready to be transmitted to the host 20 End-of-file condition exists 10 Device is disengaged 08 Parity error occurred when reading a data byte from device 04 Program check condition exists 02 Not used 01 Controller parity error

Figure 3-36 (Part 5 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0134	1	Current controller commands: *Hex* *Meaning* 80 Ready 40 Dump 26 Load extended storage 24 Load work area 12 Read 11 Single document read 00 Wait
0135	1	Current device command: *Hex* *Meaning* 80 CPU is stopped 40 Read call 20 I/O disconnect 10 Engage 08 Disengage
0136	1	Controller main program level status: *Hex* *Meaning* 01 Main level parity error
0137	1	Document information: *Hex* *Meaning* 80 Auto-reject indicator
0138	1	Number of documents in flight after a disengage
0139	11	Miscellaneous constants
0144	1	High-order zero function parameters (field number—high-order 4 bits; length—low-order 4 bits)

Figure 3-36 (Part 6 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0145	2	Logical record length from buffer control block
0147	1	Not used
0148	48	Controller routine branch table
0178	2	Number of end-of-transmission signals received from device
017A	1	Number of false end-of-transmission signals due to noise
017B	1	Number of documents rejected because of abnormal delimiter sequence
017C	2	Number of documents auto-rejected by the device
017E	2	Not used
0180	2	Number of documents selected to stacker 0
0182	2	Number of documents selected to stacker 1
0184	2	Number of documents selected to stacker 2
0186	2	Number of documents selected to stacker 3
0188	2	Number of documents selected to stacker 4
018A	2	Number of documents selected to stacker 5
018C	2	Number of documents selected to stacker 6
018E	2	Number of documents selected to stacker 7
0190	2	Number of documents selected to stacker 8
0192	2	Number of documents selected to stacker 9
0194	2	Number of documents selected to stacker A
0196	2	Not used

Figure 3-36 (Part 7 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
0198	2	Number of documents selected to reject stacker
019A	6	Not used

The following 33 bytes contain the controller trace buffer for tracing communications events between the controller and host. Controller commands and sense bytes are traced:

01BF	1	Index to last entry traced. This value plus hex 01C0 is the location of the last entry traced.
01C0	32	Controller trace buffer. Contains commands and sense bytes. Hex FF is inserted in the trace buffer before a command is traced. Sense bytes may follow a command.

The following 16 bytes contain the load command address table. The load command modifier is an index into this table:

01E0	4	Reserved for SUBR08 support
01E4	2	Address of general registers and control registers (SUBR25 support)
01E6	2	Start address of user storage (SUBR25 support)
01EB	8	Reserved
01F0	14	Unused
01FE	2	Controller release level (month, year of first customer ship)

Figure 3-36 (Part 8 of 8). Attachment Controller Constants and Work Areas (SUBR25)

Address in Hex	Description
0300–031F	Reserved
0320–0321	DCI instruction address register
0322	DCI condition register: *Hex* *Meaning* 80 Condition code 0 40 Condition code 1 20 Condition code 2 10 Condition code 3
0323	Reserved
0324	Mode flags: *Hex* *Meaning* 80 Test mode 40 Trace mode 20 Diagnostic mode 10 Transmission mode 0F Reserved
0325	Trace mode indicators: *Hex* *Meaning* 80 Full trace 40 Branch trace
0326–0327	Reserved
0328–032F	Link register stack (4 2-byte registers)
0330–033F	Reserved
0340–0341	Trace table start address
0342–0343	Trace table end address (+1)

Figure 3-37 (Part 1 of 3). Control Registers (SUBR25)

Address in Hex	Description
0344–0345	Next available trace table entry address
0346–0347	Address of current input buffer control block
0348–0349	Address of current processing buffer control block
034A–034B	Address of current output buffer control block
034C	Unit address (hex 52)
034D	Configuration information: *Hex* *Meaning* 80 On–34K controller storage Off–6K controller storage 40 Reserved 20 Reserved 10 12 pocket device 08 Dash symbol feature 04 6 pocket device: On–Alternate sorter Off–Standard sorter 02 Reserved 01 Reserved
034E	Feature presence indicator: *Hex* *Meaning* 80 Field editing feature enabled 40 Modulus check feature enabled 20 Reserved 10 Reader/sorter feature enabled 08 Table search feature enabled 04 Zoned arithmetic feature enabled 02 Reserved 01 Reserved
034F	Reserved
0350–037F	Reserved

Figure 3-37 (Part 2 of 3). Control Registers (SUBR25)

Address in Hex	Description
0380–0381	Field definition table address
0382	Buffer available count
0383	Buffer threshold count
0384	Reserved
0385	Address of created record buffer control block
0386	Created record available count
0387–039F	Reserved
03A0–03AF	Stacker codes
03B0–03BF	Stacker names
03C0–03FF	Reserved

Figure 3-37 (Part 3 of 3). Control Registers (SUBR25)

Input Data Trace Table

Each data byte read from the device is stored in the input data trace table. This trace table is 256 bytes long and is located at hex 4F00 to hex 4FFF in controller storage.

Data bytes from the device are stored in the trace table beginning at the highest trace table address moving toward the lowest trace table address. When the trace table is filled, the table is wrapped. The character X is inserted in the trace table when the first data byte from any document is read by the device. Therefore, documents in the trace table are separated by Xs.

To find the next available trace table entry address, add the value hex 4F00 to the one-byte value at location hex 0105.

Field Definition Table

The field definition table controls the formatting of data received from the reader/sorter device into a document buffer. This table is constructed as a result of the user specified parameters in the $DF and $DE Device Control Language (DCL) statements. The field definition table is also accessed by the load field and store field instructions.

Address of Leftmost Byte in Hex	Length	Description
00	1	Flag byte: *Hex* *Meaning* 80 Full formatting 40 Include delimiters 20 Fields are right justified 10 Close delimiter check
01	1	Fill character. The buffers are initialized with this value.
02	1	High-order zero function (bits 0–3 – defined field number; bits 4–7 – defined length of operation; hex 00 – function is not enabled)
03	5	Reserved
08	8	Valid delimiters. Listed in descending order of character code (hex 00 indicates end of delimiters)
10	15	Minimum document length for each field
1F	1	Reserved
20	15	Maximum document length for each field
2F	1	Reserved
30	15	Maximum record length for each field
3F	1	Reserved
40	15	Offset into document buffer for each field
4F	1	Reserved
50	15	Exclusion character for each field
5F	1	Reserved

Figure 3-38 (Part 1 of 2). Field Definition Table (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
60	16	Open delimiter sequence for fields 1–15. Valid for full formatting. Also specifies the standard closing delimiter for each field (opening delimiter for field n+1 is the closing delimiter for field n).
70	1	Reserved
71	15	Alternate close delimiters for fields 1–15. Valid for full formatting and close delimiter checking.

Figure 3-38 (Part 2 of 2). Field Definition Table (SUBR25)

Reader/Sorter Buffer Control Block Management

There are 5 buffer control blocks (BCBs) which are circular-chained (see Figures 3-39 and 3-41). The document formatting, instruction emulator, and data transmission functions process the BCBs on the chain. The addresses of the BCB currently being processed by each function are located in the control register.

The input BCB contains the address of the buffer that is being formatted or ready to be formatted by the document-formatting routine.

The processing BCB contains the address of the buffer that was last accessed by the device controller instruction emulator. After a document has been formatted by the document-formatting routine, the processing BCB address is updated to the value of the input BCB address.

The output BCBs are those BCBs whose buffers are ready to be transmitted to the host processor. The output BCB address in the control register is pointing to the output buffer control block whose buffer is either being transmitted or ready to be transmitted to the host processor.

The buffer management functions control the disengaging of the device so as to prevent overrun and/or loss of data. The feeding of the device is controlled through use of the buffer available and buffer threshold counts located in the control registers. Each time a buffer is processed by the document-formatting function the available count is decremented. Each time the transmission function transmits a reader/sorter document, the available count is incremented. When the available count reaches the threshold value, the device is disengaged. Thus, the threshold count contains the number of documents that may be in flight at the time of a disengage command.

If the available count is zero (no buffers available) and another document is read by the device for document formatting, that document is rejected; data is not processed (this should never occur).

Created records are handled in a similar fashion. The create record buffer available counter is decremented by the create record instruction when a create record BCB is marked ready for transmission. This counter is incremented when the create record is transmitted to the host processor. If the available count is zero, a condition code of 3 is set when the create record instruction is executed.

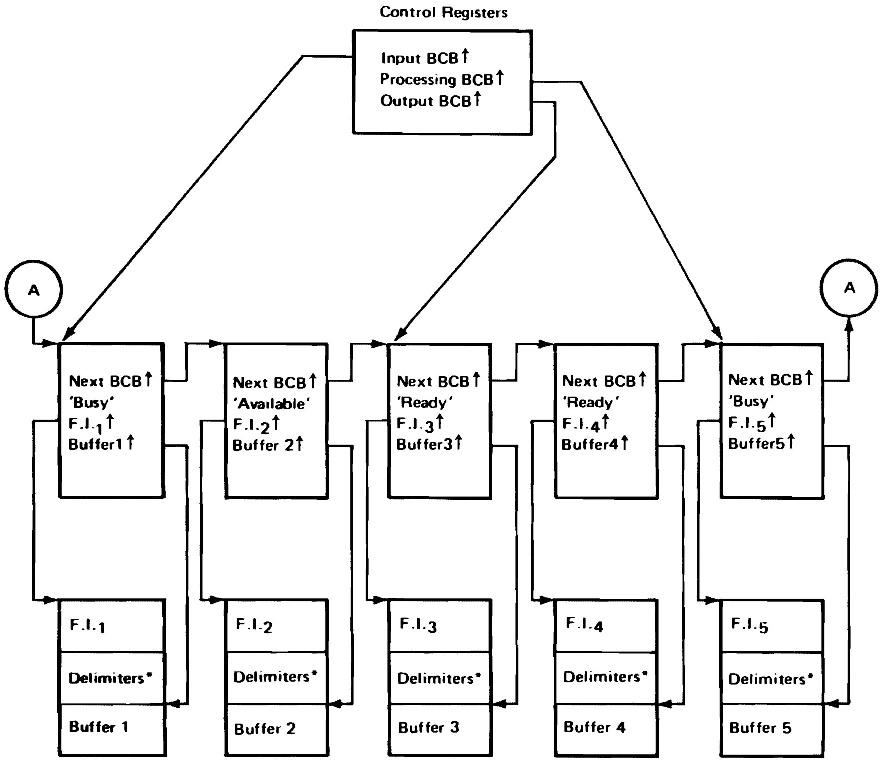
Field Indicators: Displacement hex 0A–0B of a BCB contains the address of the field indicators. Each allowable field has its own set of field indicators: 8 bits per set. Sixteen bytes are reserved for the field indicators (only the first 15 are used). A set of field indicators is defined as follows:

X'80'	On–data is invalid Off–data is valid
X'40'	On–length is invalid Off–length is valid
X'20'	Reserved
X'1F'	Actual field length. The number of bytes read from the device for this field.

Note: Create record BCBs do not have field indicators and include delimiters associated with the created record. Therefore, displacements hex 0A–0B of a created record BCB will be hex 0000.

User Status Byte: Displacement hex 0F from the start of the field indicators is the location of the user status byte. Bit 0 of this byte is defined as the high-order zero result indicator which is set on if the high-order zero function was performed and a misread character was replaced with a zero (hex F0) character in the high-order zero field defined by the user.

Include Delimiters: If the user specified the include delimiter option on the $DE statement of the DCL program, each delimiter read from the device is saved in an area of user storage associated with the field the delimiter is opening. This sixteen byte area of storage is located after the field indicators (see field indicators). If the include delimiter option was not specified, no storage is reserved.



*Not present if include delimiter option not specified by user.

Figure 3-39. Reader/Sorter Buffer Control Block Management Overview (SUBR25)

Create Record Buffer Control Block Management

Create record BCBs exist if the create record BCB address in the control register is a non-zero value. If this BCB's state byte (see Figure 3-41) is ready, then the buffer associated with that BCB will be transmitted to the host processor. The create record BCB address in the control register is then updated to the next create record BCB. Create record BCBs are also circular-chained (see Figure 3-40).

Created records are readied for transmission by the create record instruction. This instruction inserts the length of the record and record address into an available create record BCB. That BCB is then marked ready for transmission.

Created records are transmitted before reader sorter records.

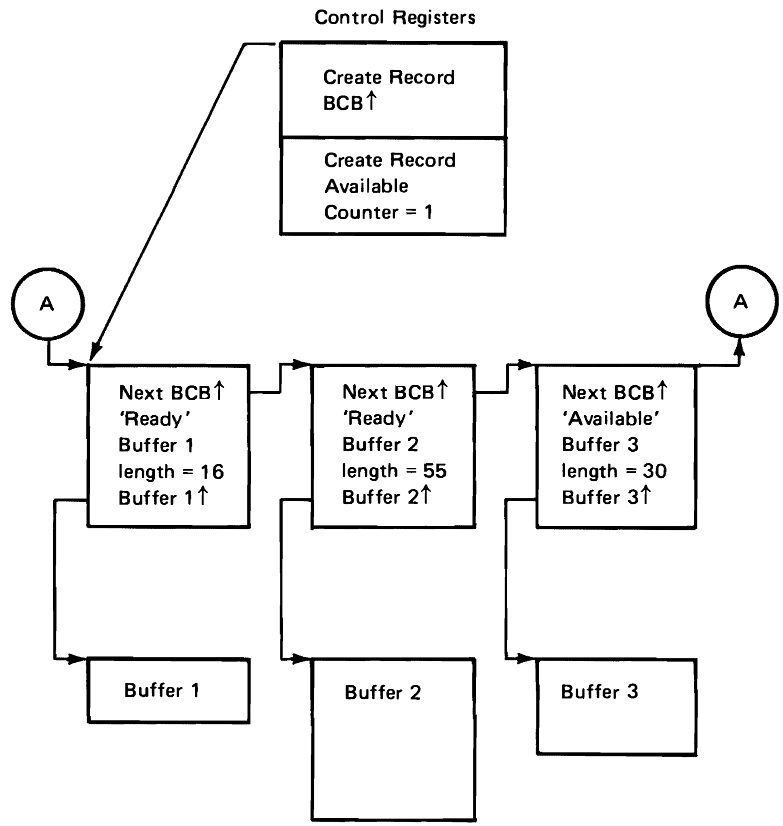


Figure 3-40. Create Record Buffer Control Block Management Overview (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
00	2	Address of next buffer control block
02	1	State byte: *Hex* *Meaning* 80 Buffer is available for input 40 Buffer is busy 20 Buffer is ready to be transmitted to the host
03	3	Reserved
06	1	Length of status bytes
07	1	Length of field indicators and include delimiters
08	2	Length of buffer
0A	2	Address of field indicators and include delimiters
0C	2	Address of buffer
0E	2	Status bytes (this is in the same format as the document status byte defined at location hex 0131).

Figure 3-41 Format of a Buffer Control Block (SUBR25)

Address of Leftmost Byte in Hex	Length	Description
00	1	System reason code: *Hex* *Meaning* 00–3F Program check error code (see location hex 0100 for description of error codes) 40 Normal (blank) C1 Auto-reject (A) C3 Create record (C) C5 End of file (E) D7 Parity error (P) E2 Special symbol error (S)
01	1	Stacker selected by user. Characters 0–9, A, B, b̸ (for create record) and R are valid
02	1–253	Buffer data. Length can be from 1 to 253 bytes (see BCB description to determine number of bytes).

Figure 3-42. Buffer Format (SUBR25)

Device Control Instructions

Function	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Arithmetic					
Invalid	00				
Add Logical	01	G1	D2		
Add Logical Immediate	02	G1	I2		
Add Logical Registers	03	G1	G2		
Subtract Logical	04	G1	D2		
Subtract Logical Immediate	05	G1	I2		
Subtract Logical Registers	06	G1	G2		
Bit Manipulation					
And Immediate	07	G1	I2		
Or Immediate	08	G1	I2		
Test Bits with Mask	09	G1	I2		
Branching					
Branch and Link	0A	A1			
Branch on Condition	0B	M1	A2		
Case Branch	0C	G1	I2		
Return	0D				
Comparison					
Compare Logical	0E	G1	D2		L3
Compare Logical Immediate	0F	G1	I2		
Compare Logical Registers	10	G1	G2	L3	
Control					
Diagnostic	11	G1	I2		
or	11	I1	I2		
Exit	12				
Invalid	13				
Store Control Register	14	C1	G2	L3	
Invalid	15				

Function	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Data Movement					
Load	16	G1	D2		L3
Load Immediate	17	G1	I2		
Load Indexed	18	G1	G2	I3	L4
Move Registers	19	G1	G2	L3	
Store	1A	G1	D2		L3
Store Indexed	1B	G1	G2	I3	L4
Input/Output					
I/O Function	1C	G1	I2		
or	1C	I1	I2		
Field Editing					
Invalidate Field Indicators	1D	I1			
Load Field	1E	G1	I2		
Store Field	1F	G1	I2		
Test Field Length	20	I1	I2		
Test Field Validity	21	I1			
Validate Field Indicators	22	I1			
Modulus Check					
Modulus Check	23	G1	D2		L3
Modulus Check and Correct	24	G1	D2		L3
Table Search					
Table Search	25	G1	D2		G3

Note: Op codes 2C—FF are invalid.

Legend

A1	Instruction address 1	I1	Immediate data 1
A2	Instruction address 2	I2	Immediate data 2
C1	Control register 1	I3	Immediate data 3
D1	Data address 1	LL3	Length (0-origin)/length (0-origin)
D2	Data address 2	L2	Length 2 (1-origin)
G1	General register 1	L3	Length 3 (0-origin)
G2	General register 2	L4	Length 4 (0-origin)
G3	General register 3	M1	Mask 1

Function	Format				
	Op code (hex)				
	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Zoned Arithmetic					
Add Zoned	26	G1	D2		LL3
Add Zoned Register	27	G1	G2	LL3	
Subtract Zoned	28	G1	D2		LL3
Subtract Zoned Register	29	G1	G2	LL3	
Invalid	2A				
Create Record	2B	D1		L2	

Note: Op codes 2C–FF are invalid.

Legend

A1	Instruction address 1	I1	Immediate data 1
A2	Instruction address 2	I2	Immediate data 2
C1	Control register 1	I3	Immediate data 3
D1	Data address 1	LL3	Length (0-origin)/length (0-origin)
D2	Data address 2	L2	Length 2 (1-origin)
G1	General register 1	L3	Length 3 (0-origin)
G2	General register 2	L4	Length 4 (0-origin)
G3	General register 3	M1	Mask 1