CRAY RESEARCH, INC.

CRAY-1® COMPUTER SYSTEMS

COS
TABLE DESCRIPTIONS
INTERNAL REFERENCE
MANUAL

SM-0045

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The information in this manual was previously contained in part 5 of the CRAY-OS Version 1 System Programmer's Manual, publication 2240012, which is now obsolete.

This manual supports COS Version 1.09.

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RECORD OF REVISION

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Each time this manual is revised and reprinted, all changes issued against the previous version in the form of change packets are incorporated into the new version and the new version is assigned an alphabetic level. Between reprints, changes may be issued against the current version in the form of change packets. Each change packet is assigned a numeric designator, starting with 01 for the first change packet of each revision level.

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PREFACE

This publication is part of a set of manuals written for programmers, analysts, and field engineers who are responsible for installing, debugging, and modifying the CRAY-1 Operating System (COS).

This manual contains information for making the transition from the external features of the operating system as described in the CRAY-OS Version 1 Reference Manual to the listings.

Although a general familiarity with the concept of operating systems is assumed, this publication does not presume that the reader knows the principles or techniques of any other specific operating system.

Other publications in this set are:

SM-0040	COS EXEC/STP/CSP Internal Reference Manual
SM-0042	Front-End Protocol Internal Reference Manual
SM-0043	COS Operational Procedures Reference Manual
SM-0044	COS Operational Aids Reference Manual
SM-0046	IOS Software Internal Reference Manual
SM-0049	DGS Internal Reference Manual
SM-0050	COS Simulator (CSIM) Reference Manual

The following two manuals, which are available for use only by Cray Research personnel, complete the set of software maintenance documentation.

SM-0017	FORTRAN (CFT) Internal Reference Manual
SM-0041	COS Product Set Internal Reference Manual

Manuals designated as internal describe the internal design of the software whereas the other manuals in the set define procedures and external features of tools needed for installing and maintaining CRI software.

The reader is assumed to be familiar with the contents of the CRAY-OS Version 1 Reference Manual (SR-0011) and to be experienced in coding in the CRAY-1 Assembly Language (CAL) as described in the CAL Version 1 Reference Manual, CRI publication SR-0000.

CONTENTS

FIGURES

SYSTEM TABLE DESCRIPTIONS 1

1.1 INTRODUCTION

The tables summarized below are described in subsequent sections in alphabetical order according to their unique 2-character prefixes. Pages are also numbered according to the table prefixes. Tables may be manipulated by use of the table management macros described in the COS Operational Aids Reference Manual, publication SM-0044.

Prefix	Table name and common mnemonic	Residence
AC	Job Accounting Table (JAC)	User
AU	Active User Table (AUT)	STP
BA	Binary Audit Table (BAT)	User
BG	Begin Code Execution Table (BGN)	User
BP	Buffer Pool Table	High range of Memory
CB	Channel Buffer Table (CBT)	EXEC
CC	Chain Control	STP
CH	Channel Table (CHT)	EXEC
CI	Chain Item	STP
CS	Class Structure Definition (CSD)	STP
CX	Channel Extension Table (CXT)	EXEC
DA	Dataset Allocation Table (DAT)	STP
DC	Dataset Catalog (DSC)	Disk
DD	Dataset Definition List (DDL)	User
DE	Device Error Table (DET)	STP
DN	Dataset Name Table (DNT)	JTA/STP
DP	Dataset Parameter Area (DSP)	User/STP/JTA
DR	Device Reservation Table (DRT)	STP
DT	Device Channel Table (DCT)	STP
DV	Device Label (DVL)	Disk
EQ	Equipment Table (EQT)	STP
IB	Interactive Buffer Table (IBT)	STP

Prefix	Table name and common mnemonic	Residence
JC	Job Communication Block (JCB)	User
JT	Job Table Area (JTA)	Below User
JX	Job Exectuion Table (JXT)	STP
LC	Link Configuration Table (LCT)	STP
LG	Log Tables (LGI, LGR, LGUQ)	STP
LS	Link Interface Stream Table (LST)	STP
LT	Link Interface Table (LIT)	STP
LX	Link Interface Extension Table (LXT)	STP
MP	Memory Pool Table	STP
MS	Memory Segment Table (MST)	STP
PD	Permanent Dataset Table (PDS)	STP
PI	Permanent Dataset Information (PDI)	STP
PM	Permanent Dataset Definition (PDD)	User
PR	Procedure File Stack Table	JTA
PT	Pool Table	STP
PU	Physical Unit Table (PUT)	EXEC
QC	Queue Control Table (QCT)	STP and EXEC
QD	Queued Dataset Table (QDT)	STP
RJ	Rolled Job Index Table (RJI)	STP
RQ	Request Table (RQT)	STP
SB	System Billing Unit Table (SBU)	STP
SC	Subsystem Control Table (SCT)	STP and EXEC
SD	System Dataset Table (SDT)	STP
ST	System Task Table (STT)	EXEC
TB	Task Breakpoint Table (TBPT)	EXEC

1.AC JOB ACCOUNTING TABLE - JAC

The Job Accounting Table, illustrated in figure 1.AC-1, defines the format of data returned to the user by the F$ACT call.

	0 8 16 24 32 40 48 54 63
0	JN |////////
1	TSX
2	TSW
3	TSD
4	IOB
5	IOR
6	USR
7	USR1 |////////
8	XMI
9	DMI
10	TID
11	TL
12	//
13	//
14	//
15	SIT1
16	SIT2
17	SIT3
18	SIT4
19	SIT5
20	ACN
21	ACN1
22	PWD
23	PWD1
24	MXM | MIM | OPC
25	PFA | PFS | CLC
26	TFS | MRD |//////////////////////
27	BRF | BSF | TERM
28	JCN |////////

Figure 1.AC-1. Job Accounting Table (JAC)

	0	8	16	24	32	40	48	54	63
29	TSB								
30	TWJ								
31	TSBU								

Figure 1.AC-1. Job Accounting Table (JAC) (continued)

Field	Word	Bits	Description
ACJN	0	0-55	Job name
ACTSX	1	0-63	CPU time in cycles
ACTSW	2	0-63	Wait time for CPU
ACTSD	3	0-63	I/O wait time
ACIOB	4	0-63	Disk blocks moved
ACIOR	5	0-63	User I/O request
ACUSR	6	0-63	Characters 1-8 of user number
ACUSR1	7	0-55	Characters 9-15 of user number
ACXMI	8	0-63	Memory integral for execution time
ACDMI	9	0-63	Memory integral for I/O wait time
ACTID	10	0-63	Terminal ID
ACTL	11	0-63	Job time limit
	12-14	0-63	Reserved
ACSIT1 - ACSIT5	15-19	0-63	Reserved for site use
ACACN	20	0-63	Account number, characters 1-8
ACACN1	21	0-63	Account number, characters 9-15
ACPWD	22	0-63	Password, characters 1-8
ACPWD1	23	0-63	Password, characters 9-15

Field	Word	Bits	Description
ACMXM	24	0-23	Maximum amount of memory used
ACMIM	24	24-47	Minimum amount of memory used
ACOPC	24	48-63	Number of open calls
ACPFA	25	0-23	Permanent file space accessed
ACPFS	25	24-47	Permanent file space saved
ACCLC	25	48-63	Number of close calls
ACTFS	26	0-23	Temporary file space used
ACMRD	26	24-47	Number of memory-resident datasets
ACBRF	27	0-23	Number of blocks from the front end
ACBSF	27	24-47	Number of blocks sent to the front end
ACTERM	27	48-63	Termination status
ACJCN	28	0-55	Job class
ACPRI	28	56-63	Job priority
ACTSB	29	0-63	Time submitted
ACTWJ	30	0-63	Time waiting for a JXT
ACTSBU	31	0-63	Total system billing units used

1.AP ANY PACKET TABLE - APT

This table can reside in either STP or EXEC. It is used to hold data passed to and from an IOP Subsystem. The format of any one packet is dependent on its source and destination IDs. The general form of an APT required by the IOP Subsystem driver is as follows:

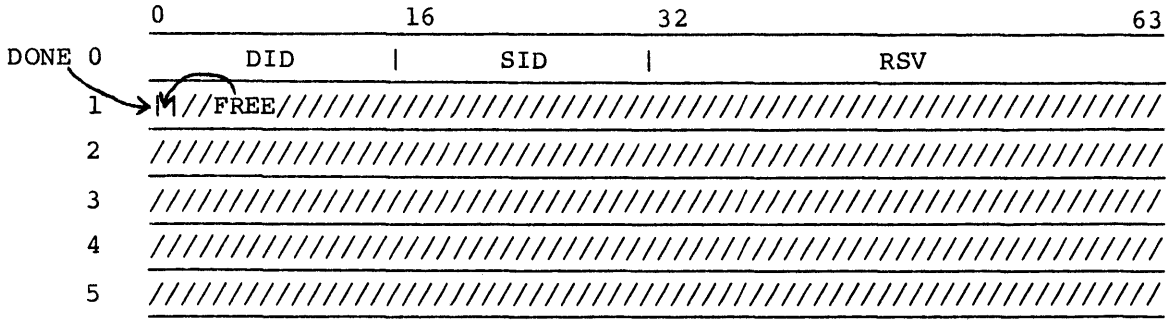


Figure 1.AP-1. General form of packet table (APT)

Field	Word	Bits	Description
APDID	0	0-15	Destination ID
APSID	0	16-31	Source ID
APRSV	0	32-63	Reserved for driver use
APDONE	1	0	Output complete flag
APFREE	1	1	Free packet after output flag

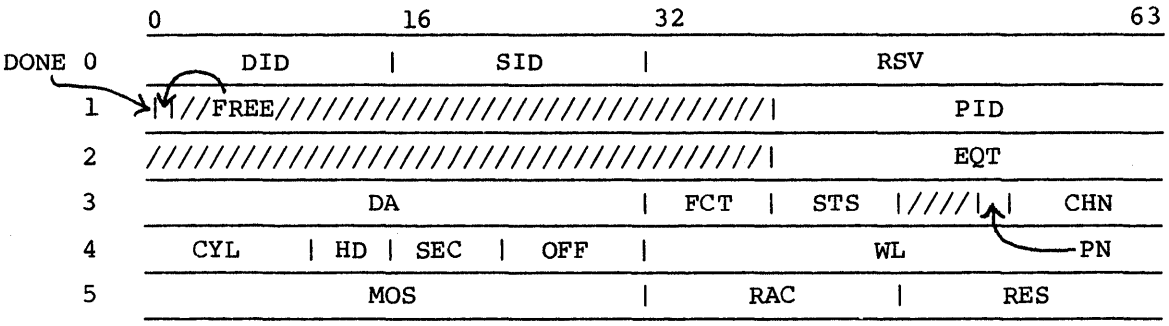


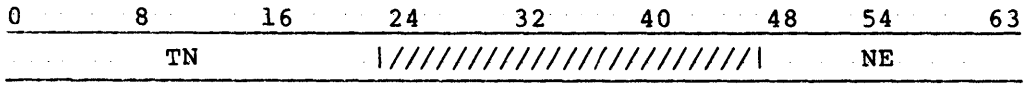
Figure 1.AP-2. Disk Request Packet (A-Packet)

Field	Word	Bits	Description
APDID	0	0-15	Destination ID
APSID	0	16-31	Source ID
APRSV	0	32-63	Reserved for driver use
APDONE	1	0	Output complete flag
APFREE	1	1	Free packet after output flag
APPID	1	40-63	Packet ID (EXEC relative)
APEQT	2	40-63	EQT table address (STP relative)
APDA	3	0-31	Data buffer address
APFCT	3	32-39	Function code
APSTS	3	40-47	Status
APPN	3	53-54	Processor Numbler
APCHN	3	55-63	Channel Numbler
APCYL	4	0-10	Cylinder address
APHD	4	11-15	Head address
APSEC	4	16-22	Sector address
APOFF	4	23-31	Word offset
APWL	4	32-63	Transfer word length
APMOS	5	0-31	MOS address
APRAC	5	32-47	Sector read ahead count
APRES	5	48-63	Reserved for I/O Processor

1.AU ACTIVE USER TABLE - AUT

The Active User Table is an STP-resident table used during interactive communication. An entry is made in the AUT when the user logs on. The entry is released when user processing is finished and the user logs off.

HEADER



TABLE

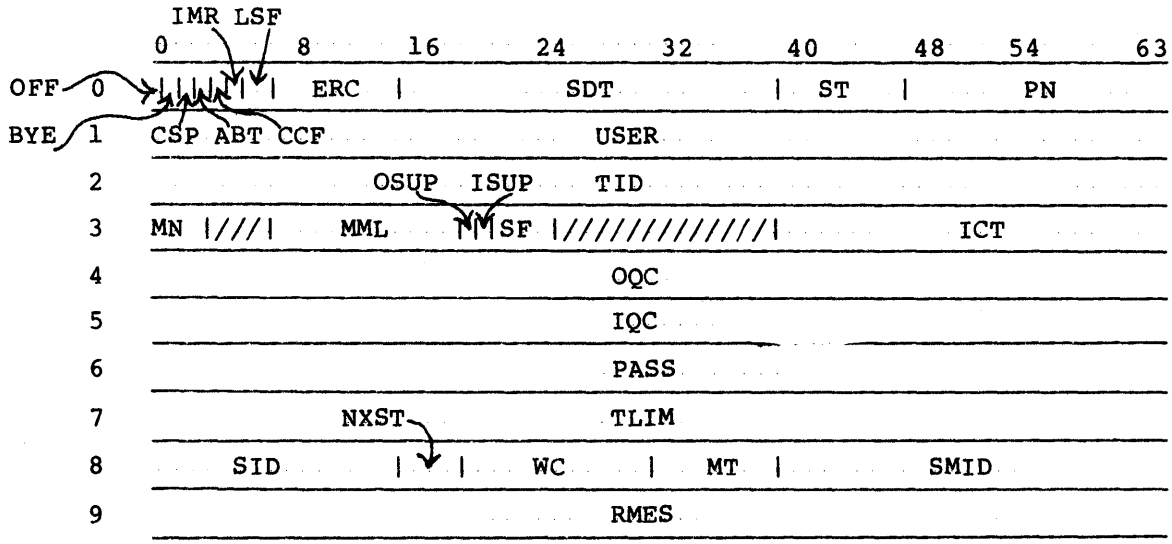


Figure 1.AU-1. Active User Table (AUT)

Field	Word	Bits	Description
AUTN	0	0-23	Table name
AUNE	0	48-63	Number of active entries
AUOFF	0	0	Logged off terminal flag
AUBYE	0	1	Job terminated while logged off
AUCSP	0	2	CSP loaded
AUABT	0	3	Abort flag
AUCCF	0	4	Concentrator relogged flag
AUIMR	0	5	Message received flag

Field	Word	Bits	Description
AULSF	0	6-7	Logoff special function field
AUERC	0	8-15	Error code
AUSDT	0	16-39	SDT for job
AUST	0	40-47	Terminal status
AUPN	0	48-63	Process number
AUUSER	1	0-63	User name
AUTID	2	0-63	Terminal ID
AUMN	3	0-3	Message number
AUMML	3	8-19	Maximum message length
AUOSUP	3	20	Output suspended flag (cleared by SCP)
AUISUP	3	21	Input suspended flag (cleared by SCP)
AUSF	3	22-25	Special function field
AUICT	3	40-63	Interactive console entry pointer
AUOQC	4	0-63	Output queue control word
AUNOM	4	0-15	Number of output messages
AUOMQT	4	32-47	Output message queue tail
AUOMQH	4	48-63	Output message queue head
AUIQC	5	0-63	Input queue control word
AUNIM	5	0-15	Number of input messages
AUIMQT	5	32-47	Input message queue tail
AUIMQH	5	48-63	Input message queue head
AUPASS	6	0-63	Password
AUTLIM	7	0-63	Time of last input message
AUSID	8	0-15	Front-end ID
AUNXST	8	16-19	Next state
AUWC	8	20-31	Word count
AUMT	8	32-39	Sent message type

Field	Word	Bits	Description
AUSMID	8	40-63	Sent message ID
AURMES	9	0-63	Received message
AURPN	9	0-11	Received process number
AURMN	9	12-15	Received message number
AURST	9	16-19	Received status
AUREC	9	20-23	Received error code
AURMT	9	24-31	Received message type
AURSF	9	32-35	Received special function
AURMOD	9	36	Received mode
AURCHN	9	37	Received chain flag
AURWC	9	52-63	Received word count

1.BA BINARY AUDIT TABLE - BAT

When the binary output parameter is specified on the AUDIT control statement, the Permanent Dataset Manager creates a 36-word BAT record for each permanent dataset meeting control statement requirements and having a user number that matches the user number for the job.

	0 8 16 24 32 40 48 56 63
0	PDN1
1	PDN2
2	ED
3	ID
4	SZ
5	RT
6	ACC
7	CRT
8	CRD
9	CRH
10	TDM
11	TDD
12	TDH
13	ACT
14	ACD
15	ACH
16	LDV
17	MFT
18	MFD
19	MFH

Figure 1.BA-1. Binary Audit Table (BAT)

Field	Word	Bits	Description
BAPDN1	0	0-63	Permanent Dataset Name; characters 1-8 left justified with blank fill
BAPDN2	1	0-63	Permanent Dataset Name; characters 9-15 left justified with blank fill
BAED	2	0-63	Edition number; 1-4095 represented in binary
BAID	3	0-63	User ID, left justified with blank fill
BASZ	4	0-63	Dataset size (in words) represented in binary
BART	5	0-63	Retention period; 1-4095 represented in binary
BAACC	6	0-63	Number of accesses represented in binary
BACRT	7	0-63	Creation time in cycles
BACRD	8	0-63	Creation date as mm/dd/yy
BACRH	9	0-63	Creation time as hh:mm:ss
BATDM	10	0-63	Time of last dump in cycles
BATDD	11	0-63	Date of last dump as mm/dd/yy
BATDH	12	0-63	Time of last dump as hh:mm:ss
BAACT	13	0-63	Time of last access in cycles
BAACD	14	0-63	Date of last access as mm/dd/yy
BAACH	15	0-63	Time of last access as hh:mm:ss
BALDV	16	0-63	Logical device name
BAMFT	17	0-63	Time of last modification in cycles
BAMFD	18	0-63	Date of last modification as mm/dd/yy
BAMFH	19	0-63	Time of last modification as hh:mm:ss

1.BG BEGIN CODE EXECUTION TABLE - BGN

The BGN table specifies necessary parameters to begin the execution of code that has been loaded into the user area by CSP.

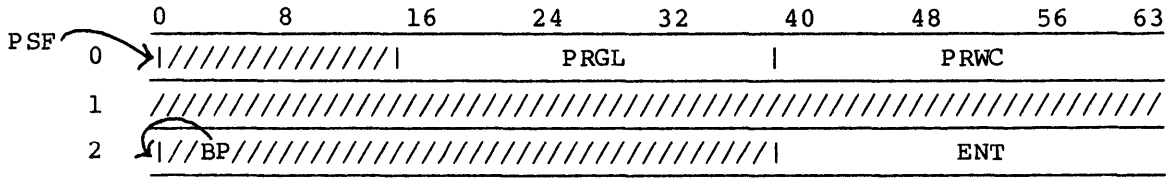


Figure 1.BG-1. Begin Code Execution Table (BGN)

Field	Word	Bits	Description
BGPSF	0	0	Preset value flag
BGPRGL	0	16-39	Total program length including blank common
BGPRWC	0	40-63	Program word count
BGBP	2	0	Breakpoint flag
BGENT	2	40-63	Program entry point address

1.BP BUFFER POOL TABLE - BPT

The Buffer Pool Table is resident in the high range of memory and is used for buffer pool management in connection with interactive communication.

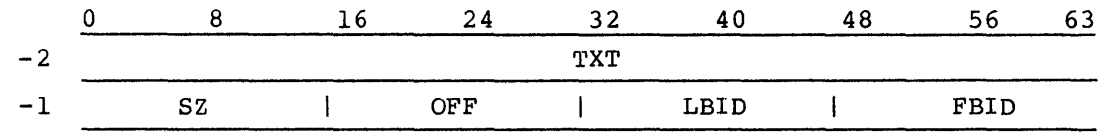


Figure 1.BP-1. Buffer Pool Table (BPT)

Field	Word	Bits	Description
BPTXT	-2	0-63	Beginning of text
BPSZ	-1	0-15	Message size
BPOFF	-1	16-31	Offset to unmoved portion of message
BPLBID	-1	32-47	Buffer ID for continuation of message
BPFBID	-1	48-63	Next message buffer ID

1.CB CHANNEL BUFFER TABLE - CBT

This EXEC-resident table is used for working storage by the disk driver. There is one entry for each disk channel. The three forms of the CBT entries are illustrated in figures 1.CB-1 through 1.CB-3.

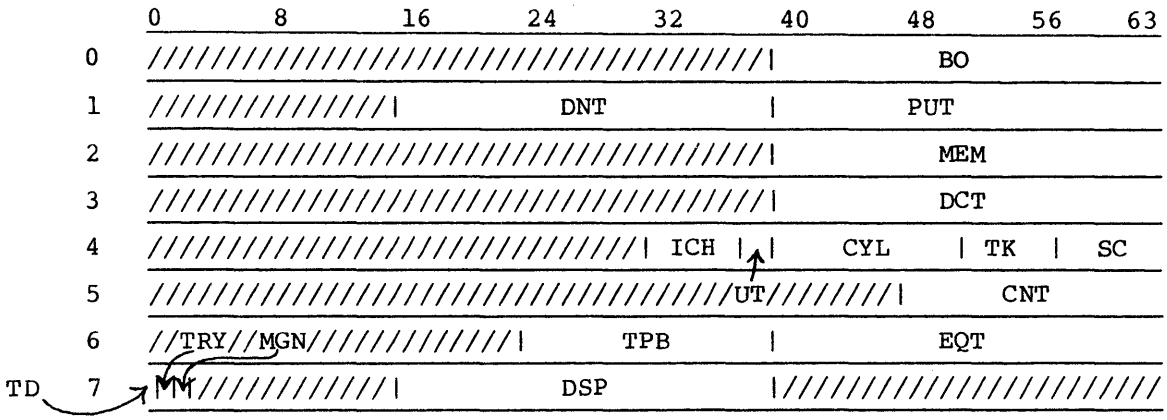


Figure 1.CB-1. Disk I/O form of Channel Buffer Table (CBT)

Field	Word	Bits	Description
CBBO	0	40-63	Subroutine return address;
CBDNT	1	16-39	DNT address;
CBPUT	1	40-63	Active physical unit table; first form
CBMEM	2	40-63	Current transfer address;
CBDCT	3	40-63	DCT address relative to EXEC; first form
CBICH	4	32-37	Input channel number
CBUT	4	38-39	Unit number
CBCYL	4	40-51	Cylinder
CBTK	4	52-57	Track
CBSC	4	58-63	Sector

Field	Word	Bits	Description
CBCNT	5	48-63	Sector count
CBTPB	6	24-39	Task parameter block address
CBEQT	6	40-63	Equipment Table address relative to EXEC
CBTD	7	0	Transfer direction; : 1 = write.
CBTRY	7	1	Retry flag;
CBMGN	7	2	Clear margin flag;
CBDSP	7	16-39	DSP address

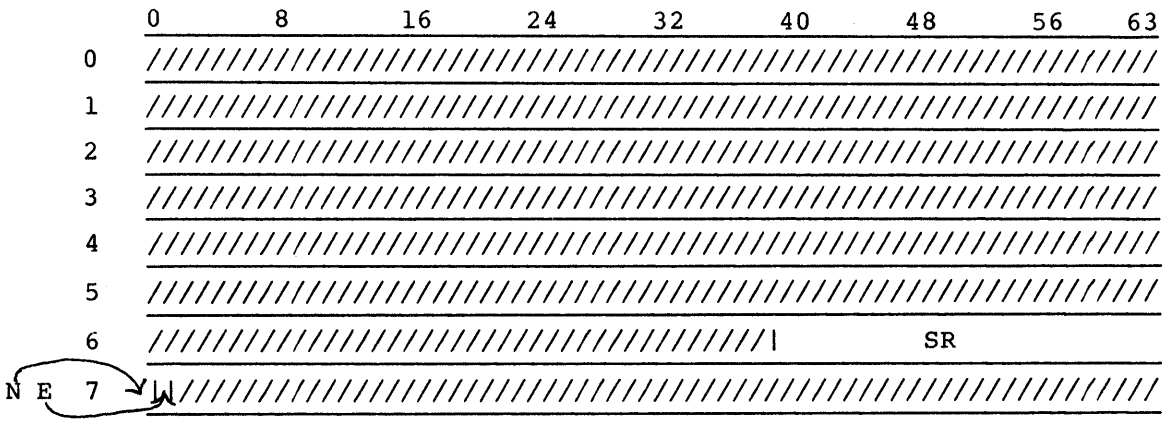


Figure 1.CB-2. Normal and error pseudo channel form of Channel Buffer Table (CBT)

Field	Word	Bits	Description
CBSR	6	40-63	Status register
CBN	7	0	Normal pseudo channel;
CBE	7	1	Error pseudo channel;

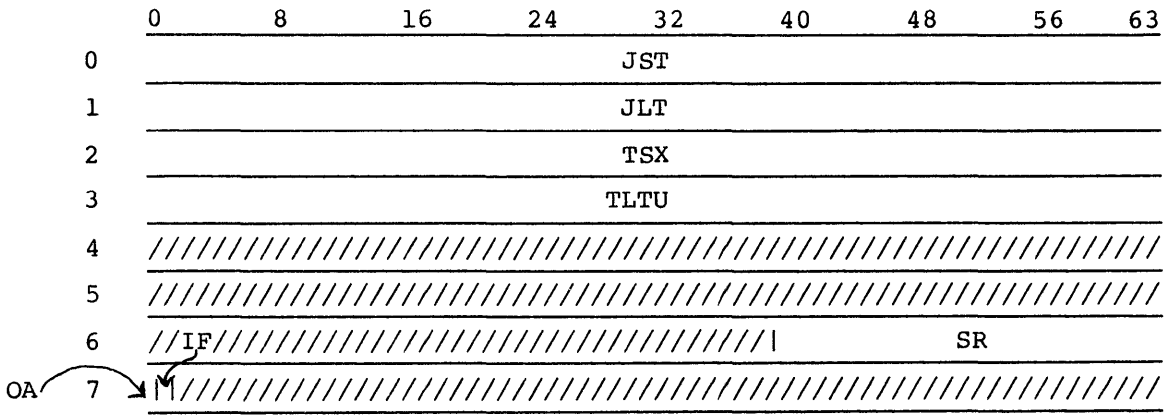


Figure 1.CB-3. Real-time pseudo channel form of Channel Buffer Table (CBT)

Field	Word	Bits	Description
CBJST	0	0-63	Job starting time in cycles;
CBJLT	1	0-63	Job time limit in cycles;
CBTSX	2	0-63	User execution time at start of interval;
CBTLTU	3	0-63	Time of last total time update;
CBSR	6	40-63	Status register
CBOA	7	0	Output active (redefinition for I/O Subsystem communication channel)
CBIF	7	1	Initialization flag

1.CC CHAIN CONTROL WORD - CC

Intertask communication requires chain control words in the format defined in figure 1.CC-1.

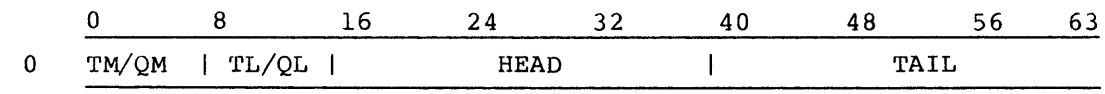


Figure 1.CC-1. Chain Control Word

Field	Word	Bits	Description
CCTM	0	0-7	Maximum number of items to be queued to a particular task
CCQM	0	0-7	Maximum number of items to be queued from one task to another
CCTL	0	8-15	Number of items queued to a particular task
CCQL	0	8-15	Number of items to be queued from one task to another
CCHEAD	0	16-39	Address of first item on the chain
CCTAIL	0	40-63	Address of last item on the chain

1.CH CHANNEL TABLE - CHT

The Channel Table resides in EXEC memory and contains information for use by the interrupt handlers. There is one entry for each channel, physical or pseudo. Refer to figure 1.CH-1.

HEADER

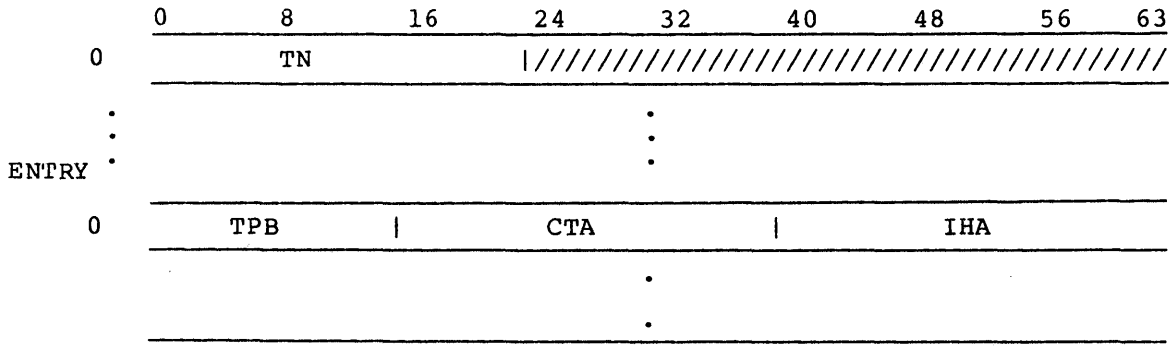


Figure 1.CH-1. Channel Table (CHT)

HEADER

Field	Word	Bits	Description
CHTN	0	0-23	Table name; "CHT" in ASCII

ENTRY

Field	Word	Bits	Description
CHTPB	0	0-15	Address of task parameter word
CHCTA	0	16-39	Control table address
CHIHA	0	40-63	Interrupt handler address

1.CI CHAIN ITEM - CI

Any item queued using the STP common routines CHAIN and UNCHAIN must reserve the first two words of the item to be used by the common routines as shown in figure 1.CI-1.

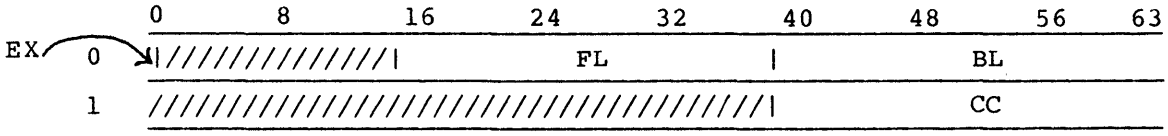


Figure 1.CI-1. Chain Item

Field	Word	Bits	Description
CIEX	0	0	This bit, if set, indicates that the item is in execution.
CIFL	0	16-39	Forward link; address of next item on the chain
CIBL	0	40-63	Backward link; address of the preceding item on the chain
CICC	1	40-63	Address of the chain control word for this item

1.CS CLASS STRUCTURE DEFINITION - CSD

The job class structure definition is contained in the CSD.

The CSD header, which contains general information about the structure, precedes the class maps. One CSD class map exists for each class defined in the structure. Class maps appear in descending rank order.

The variable length characteristic expressions follow the class maps, and each class contains a pointer to its expression. The CSD class expressions are variable length.

HEADER

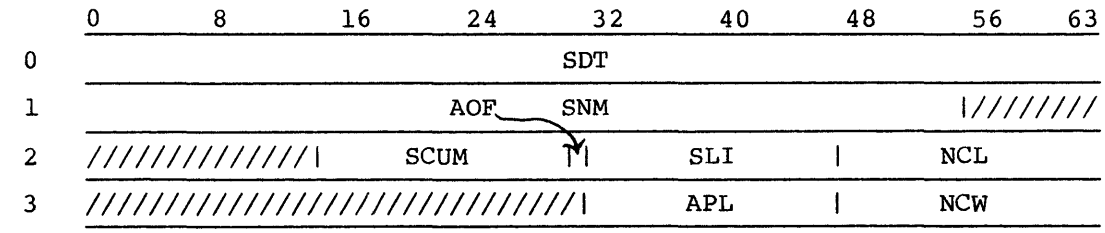


Figure 1.CS-1. Class Structure Definition (CSD) header

Field	Word	Bits	Description
CSSDT	0	0-63	Date/time of last rollout
CSSNM	1	0-55	Class structure name
CSSCUM	2	15-30	Structure cumulative JXTs reserved
CSAOF	2	31	If 1, all classes off
CSSLI	2	32-47	LIMIT default
CSSNCL	2	48-63	Number of classes defined in structure
CSAPL	3	32-47	Number of pool JXTs allocated
CSSNCW	3	48-63	Number of classes waiting for JXTs

CLASS MAP

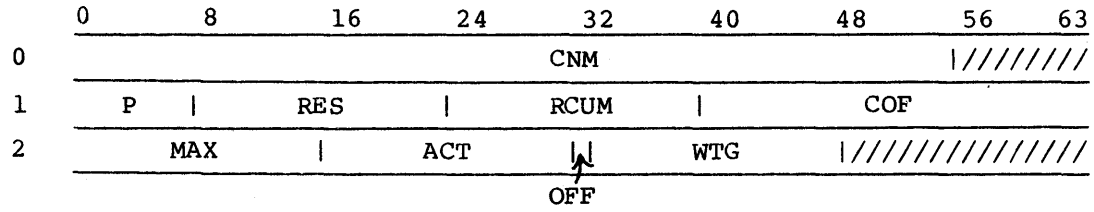


Figure 1.CS-2. CSD map

Field	Word	Bits	Description
CSCNM	0	0-55	Class name
CSP	1	0-7	Class assigned priority shifted left four bits; ignored if CSP=377_8
CSRES	1	8-23	JXTs reserved by class
CSRCUM	1	24-39	JXTs reserved by all classes of a higher rank
CSCOF	1	40-63	Class offset
CSMAX	2	0-15	Class maximum
CSACT	2	16-31	Actual number of JXTs allocated to this class
CSOFF	2	32	If 1, the class is off; if 0, the class is on
CSWTG	2	33-48	Number of jobs waiting for JXTs

CLASS EXPRESSIONS

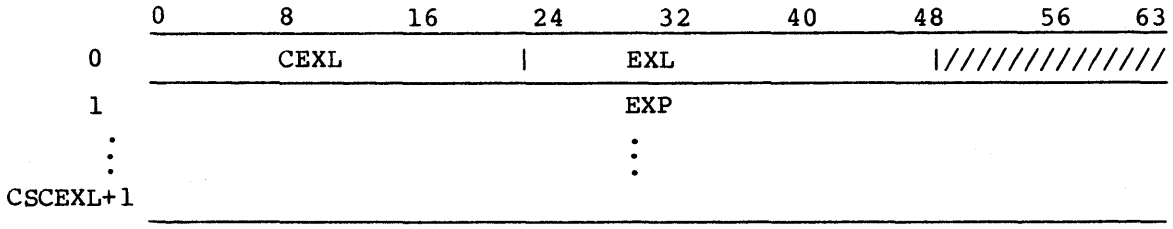


Figure 1.CS-3. CSD expressions

Field	Word	Bits	Description
CSCEXL	0	0-23	Length in words of cracked expression
CSEXL	0	24-49	Length in words of printable expression
CSEXP	1 to CSCEXL+1	0-63	Cracked class expression

LAST WORD

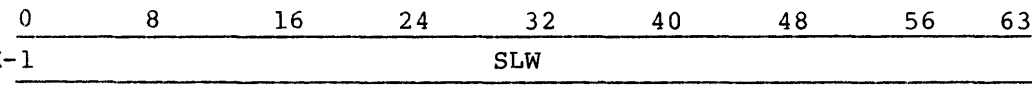


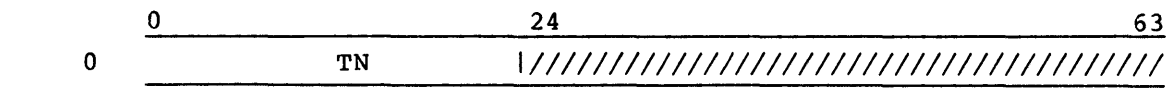
Figure 1.CS-4. CSD last word

Field	Word	Bits	Description
CSSLW	I@CSDMAX-1	0-63	Date/time of last rollout

1.CX CHANNEL EXTENSION TABLE - CXT

This table is EXEC-resident and is used to interface the front-end driver to the IOP driver.

HEADER



ENTRY

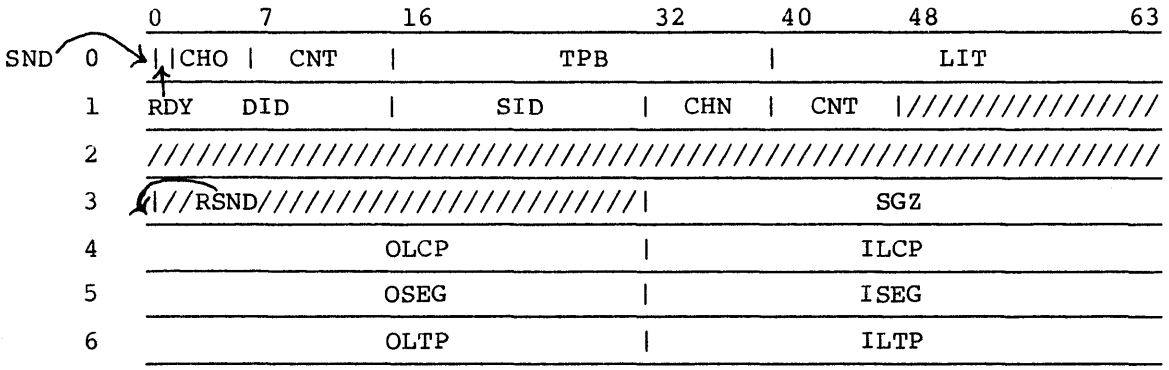


Figure 1.CX-1. Channel Extension Table format (CXT)

HEADER

Field	Word	Bits	Description
CXTN	0	0-23	Table name

ENTRY

Field	Word	Bits	Description
CCXSND	0	0	Send received from IOP flag
CXRDY	0	1	Address ready to send flag

Field	Word	Bits	Description
CXCHO	0	2-6	Channel ordinal
CXCNT	0	7-15	Message number of last address request
CXTPB	0	16-39	Task parameter block address
CXLIT	0	40-63	LIT address (EXEC-resident)
CXDID	1	0-15	Destination ID
CXSID	1	16-31	Source ID
CXCHN	1	32-39	Message channel ordinal
CXCNT	1	40-47	Message count (0-256)
CXRSND	3	0	Resent address request flag
CXSGZ	3	32-63	Segment size
CXOLCP	4	0-31	Output LCP address (EXEC relative)
CXILCP	4	32-63	Input LCP address (EXEC relative)
CXOSEG	5	0-31	Output segment address (EXEC relative)
CXISEG	5	32-63	Input segment address (EXEC relative)
CXOLTP	6	0-31	Output LTP address (EXEC relative)
CXILTP	6	32-63	Input LTP address (EXEC relative)

1.DA DATASET ALLOCATION TABLE - DAT

A DAT exists for each active dataset in the system. A DAT defines the mass storage logical location of a dataset. It specifies the logical devices and the portions of each device.

The DAT header contains general dataset information.

The DAT partition header contains general information concerning a particular partition of the DAT. A partition represents a portion of a dataset resident on a single logical device. If the dataset is a permanent dataset, the DAT may be used by multiple users.

Each allocation index in a partition is a bit number in the respective Device Reservation Table (DRT).

The DAT is composed of as many 16-word DAT pages as necessary to represent the mass storage occupied by the dataset. Word 0 of a page contains a 24-bit address of the continuation of the DAT if more pages are necessary. Additional DAT pages continue from the point at which the last DAT left off.

Figure 1.DA-1 illustrates the DAT.

SPACE HEADER

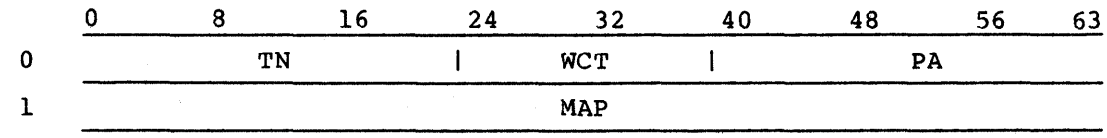
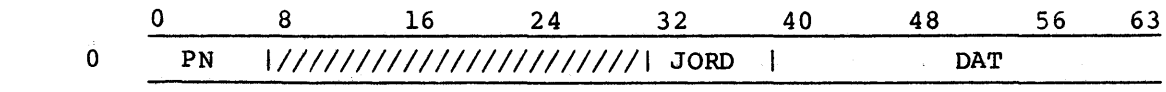


Figure 1.DA-1. DAT space header

Field	Word	Bits	Description
DATN	0	0-23	DAT Table name
DAWCT	0	24-39	DAT space map length in words
DAPA	0	40-63	Number of DAT pages available
DAMAP	1	0-63	Beginning of DAT page map

PAGE HEADER



ENTRY HEADER

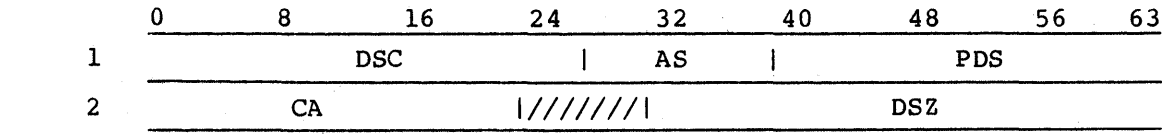


Figure 1.DA-2. DAT page header/entry header

Field	Word	Bits	Description
DAPN	0	0-7	Page number
DAJORD	0	32-39	JXT ordinal; set to 0 if the DAT is in STP, set to the JXT ordinal if the DAT is in the JTA.
DADAT	0	40-63	Next page address; set to 0 if no continuation page exists. If the field is greater than 0, the DAT resides in STP and the field contains the STP-relative DAT address. If the field is less than 0, then the DAT resides in the JTA and the DAT address is equal to the JTA address minus the value of the field DADAT.
DADSC	1	0-27	DSC pointer (only if permanent dataset)
DAAS	1	28-39	Allocation style (contiguous AUs per AI)
DAPDS	1	40-63	Permanent dataset table entry address (only if permanent dataset)
DACA	2	0-23	Pointer to parcel for next AI
DADSZ	2	32-63	Dataset size in words

DAT PARTITION HEADER

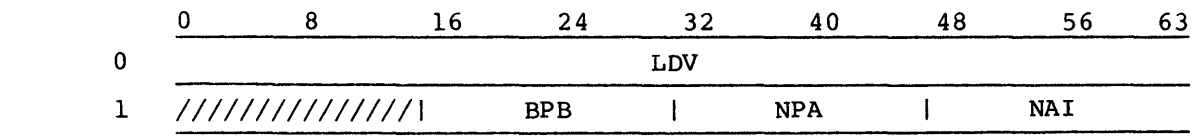


Figure 1.DA-3. DAT partition header

Field	Word	Bits	Description
DALDV	0	0-63	Logical device name
DAAI	0	0-15	Allocation index
DABPB	1	16-31	Blocks per bit
DANPA	1	32-47	Next partition address (relative word address)
DANAI	1	48-63	Number of AIs in partition

1.DC DATASET CATALOG - DSC

The DSC is a disk resident table. It is divided into 512-word pages with each page consisting of a block control word, a 7-word header, and eight 63-word entries.

There are two types of pages, hash pages and overflow pages. The PDN is hashed to determine the hash page number to be put into the DSC entry. If that hash page is full, the entry is placed in the sequential overflow page area.

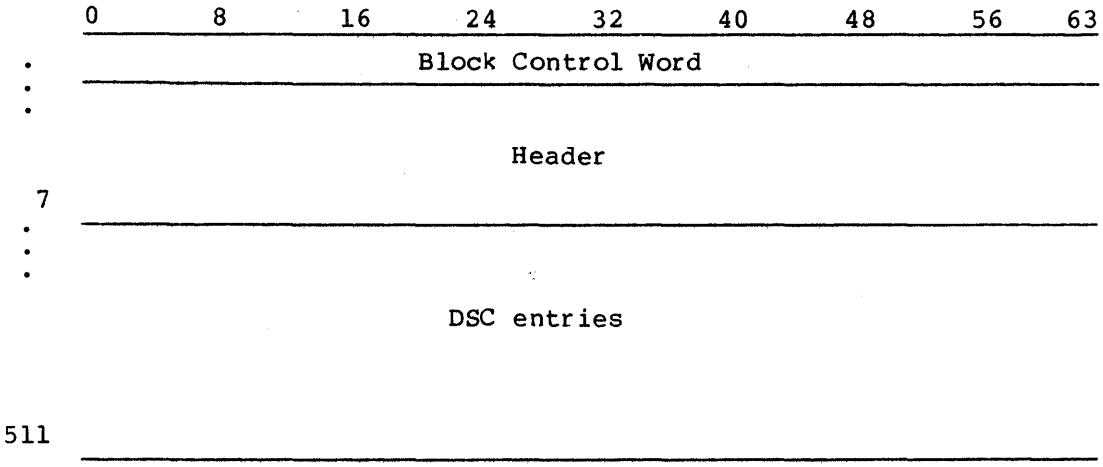


Figure 1.DC-1. Dataset Catalog (DSC) page

DSC PAGE HEADER

Each DSC page has a header as shown in figure 1.DC-2.

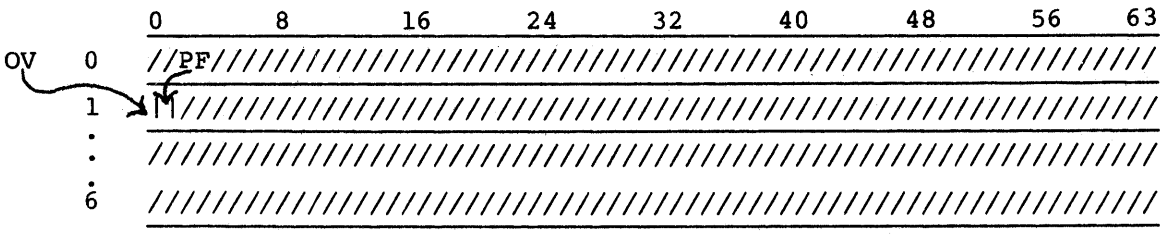


Figure 1.DC-2. DSC page header

Field	Word	Bits	Description
DCOV	1	0	Page overflow has occurred
DCPF	1	1	Page is currently full

DSC ENTRY

A DSC for a permanent dataset may occupy as many DSC entries as necessary to contain the DAT for the dataset. Subsequent DSC entries for the same Permanent dataset contain only continuations of the DAT.

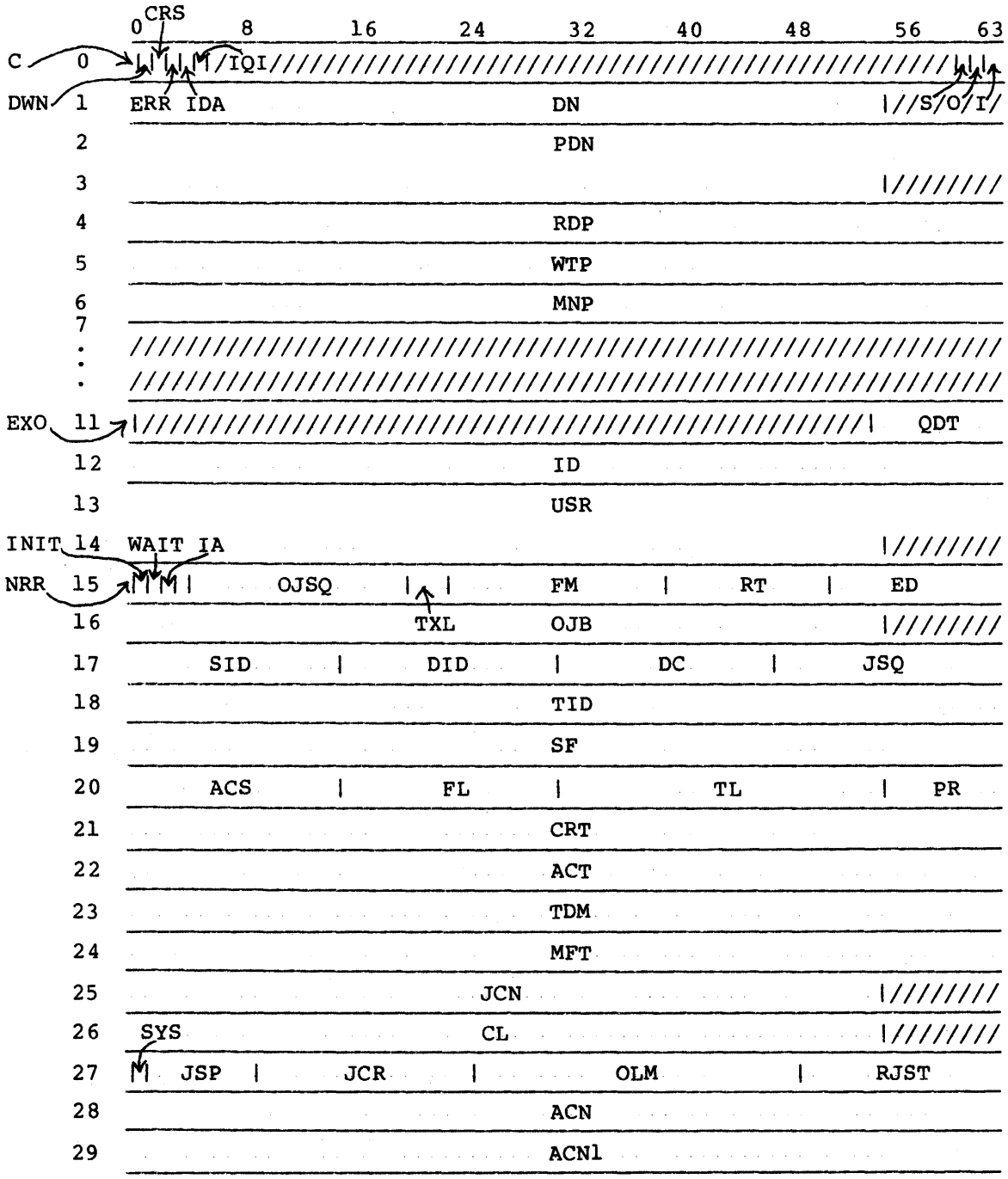


Figure 1.DC-3. Dataset Catalog (DSC) Table entry

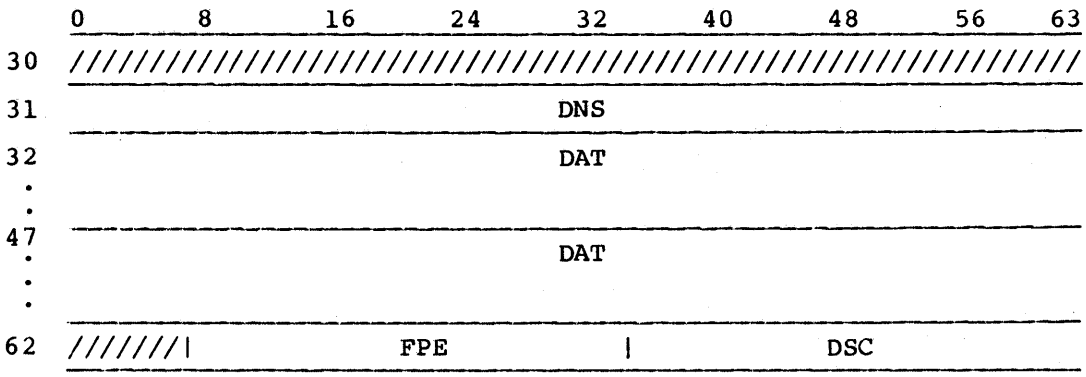


Figure 1.DC-3. Dataset Catalog (DSC) Table entry (continued)

Field	Word	Bits	Description
DCC	0	0	Continuation flag (set if this is a continuation entry)
DCDWN	0	1	Down flag. Set if DAT contains at least one reference to a device whose EQT entry declares the device unavailable (EQNA=1).
DCCRS	0	2	Cross-allocated flag. Set if DAT contains at least one reference to an AI on any device which is either (1) flawed, or (2) mentioned in the DAT for some other permanent dataset, the Dataset Catalog, or the reserved system dump area.
DCERR	0	3	Catastrophic error flag. Set if Startup is unable to recover the dataset due to errors in the DSC entry and the installation or operator selected option was RETAIN.
DCIDA	0	4	Inconsistent disk allocation
DCIQI	0	5	Invalid QDT index
DCS	0	61	Saved flag (set if SAVE entry)
DCO	0	62	Output flag (set if output dataset)
DCI	0	63	Input flag (set if input dataset)
DCDN	1	0-55	Dataset name (spooled datasets only)

Field	Word	Bits	Description
DCPDN	2	0-63	Permanent dataset name, characters 1-8
DCPDN2	3	0-55	Permanent dataset name, characters 9-15
DCRDP	4	0-63	Read permission control word (saved datasets)
DCWTP	5	0-63	Write permission control word (saved datasets)
DCMNP	6	0-63	Maintenance permission control word (saved datasets)
DCEXO	11	0	Execute-only status flag
DCQDT	11	55-63	Multitype flag/QDT entry index (saved and spooled)
DCID	12	0-63	User ID (saved dataset)
DCUSR	13	0-63	User number, characters 1-8
DCUSR2	14	0-55	User number, characters 9-15
DCNRR	15	0	Job rerun flag. Set if job cannot be rerun.
DCINIT	15	1	Job initiation flag. Set if job has been initiated.
DCWAIT	15	2	WAIT flag for disposed dataset
DCIA	15	3	Interactive spool flag
DCOJSQ	15	5-20	Originating job sequence number
DCTXL	15	21-23	Text length in blocks (a block is equal to one DSC DAT page)
DCFM	15	24-39	Format designator (output datasets)
DCRT	15	40-51	Retention period (0-4095 days)
DCED	15	52-63	Edition number (1-4095) (saved datasets)
DCOJB	16	0-55	Originating job name

Field	Word	Bits	Description
DCSID	17	0-15	Source ID 2 characters
DCDID	17	16-31	Destination ID 2 characters
DCDC	17	32-47	Disposition code: DCIN=IN Job dataset DCST=ST Staged permanent dataset DCPR=PR Print dataset DCPT=PT Plot dataset DCPU=PU Punch dataset DCMT=MT Magnetic tape dataset
DCJSQ	17	48-63	Job sequence number
DCTID	18	0-63	Terminal ID
DCSF	19	0-63	Special forms
DCACS	20	0-15	Number of accesses (saved datasets)
DCFL	20	16-31	Field length/512 (input datasets)
DCTL	20	32-55	Time limit (input datasets)
DCPR	20	56-63	Priority (input datasets)
DCCRT	21	0-63	Creation time (cycles)
DCACT	22	0-63	Time of last access (cycles)
DCTDM	23	0-63	Time of last dump (cycles)
DCMFT	24	0-63	Time of last modification (cycles)
DCJCN	25	0-55	Job class name
DCCL	26	0-55	CL parameter from JOB statement
DCSYS	27	1	Flag: system job if set
DCJSP	27	2-9	Priority, from JOB statement
DCJCR	27	10-25	Job class rank
DCOLM	27	26-49	Size of $OUT in 512-word blocks

Field	Word	Bits	Description
DCRJST	27	50-63	JOB statement error
DCACN	28	0-63	Account number (characters 1-8)
DCACN1	29	0-63	Account number (characters 9-15)
DCDNS	31	0-63	Reserved for installation
DCDAT	32-46	0-63	A 15-word DAT page or optional text
	47-61	0-63	A 15-word DAT page
DCFPE	62	8-35	First DSC page/entry for the dataset:
DCFPP	62	8-31	Page number of first DSC entry
DCFEN	62	32-35	Entry number of first DSC for the dataset
DCDSC	62	36-63	Next DSC entry for continuation:
DCDCP	62	36-59	Page number of DSC continuation
DCDCE	62	60-63	Entry number of DSC continuation

1.DD DATASET DEFINITION LIST - DDL

A Dataset Definition List in the user field must accompany any create DNT (F$DNT) request.

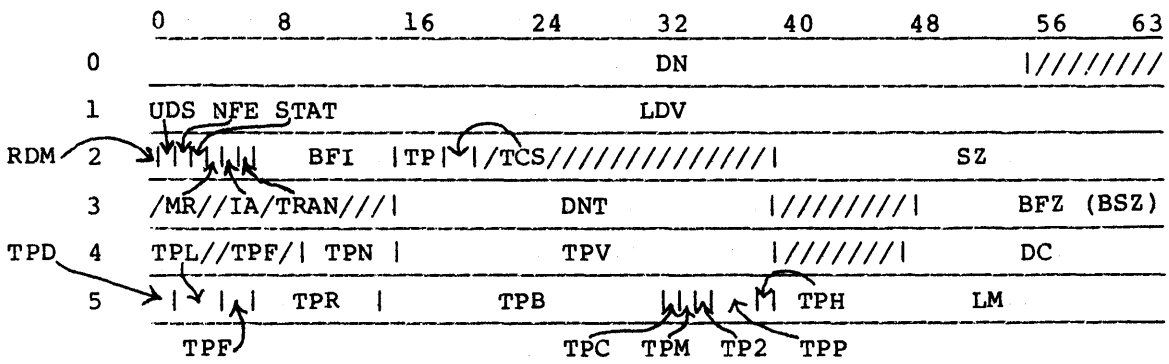


Figure 1.DD-1. Dataset Definition List (DDL)

Field	Word	Bits	Description
DDDN	0	0-55	Dataset name
DDLDV	1	0-63	Logical device name
DDRDM	2	0	Random dataset flag: 0 Sequential 1 Random
DDUDS	2	1	Undefined dataset structure: 0 COS blocked dataset structure 1 Undefined structure
DDNFE	2	2	Return error if dataset does not exist. Register S0 returned non-zero if DNT does not exist; no DNT is created.
DDSTAT	2	3	Request dataset statistics; ignored unless DDNFR=1 (see DDDNT)
DDMR	2	4	Dataset is to be memory resident
DDIA	2	5	Interactive type dataset
DDTRAN	2	6	Transparent mode for interactive dataset

Field	Word	Bits	Description
DDBFI	2	7-15	Blank field indicator for character I/O 000_8 BFI=I@BFI $<400_8$ BFI=user specified ASCII character $=400_8$ BFI=000 $>400_8$ Blank compression disabled
DDTP	2	16-17	Tape dataset (online/staged)
DDTCS	2	18-19	Tape dataset character set
DDSZ	2	40-63	Dataset size in 512-word blocks
DDDNT	3	16-39	Address of DNT image returned by F$DNT when DDNFE=1 and DDSTAT=1
DDBFZ	3	49-63	Buffer size in 512-word blocks
DDBSZ	3	49-63	Alternate name for DDBFZ to match $SYSTXT name
DDTPN	4	10-15	Tape noise block size in bytes
DDTPV	4	16-39	Pointer to Label Definition Table
DDDC	4	48-63	Disposition code: DCIN=IN Job dataset DCST=ST Staged permanent dataset DCSC=SC Scratch dataset DCPR=PR Print dataset DCPT=PT Plot dataset DCPU=PU Punch dataset DCMT=MT Magnetic tape dataset
DDTPD	5	0-1	Tape density
DDTPL	5	2-4	Tape label type
DDTPF	5	5-6	Tape format
DDTPR	5	7-14	Tape recovery options
DDTPB	5	15-32	Tape maximum block size (in bytes)
DDTPC	5	33	Tape cataloged dataset
DDTPM	5	34	Tape online maintenance access

Field	Word	Bits	Description
DDTP2	5	35	Tape second device request
DDTPP	5	36-38	Tape parallel device count
DDTPH	5	39	Tape hold device assignment
DDLM	5	40-63	Dataset size limit in 512-word blocks

1.DE DEVICE ERROR TABLE - DET

This STP-resident table is used for building messages for the system log.

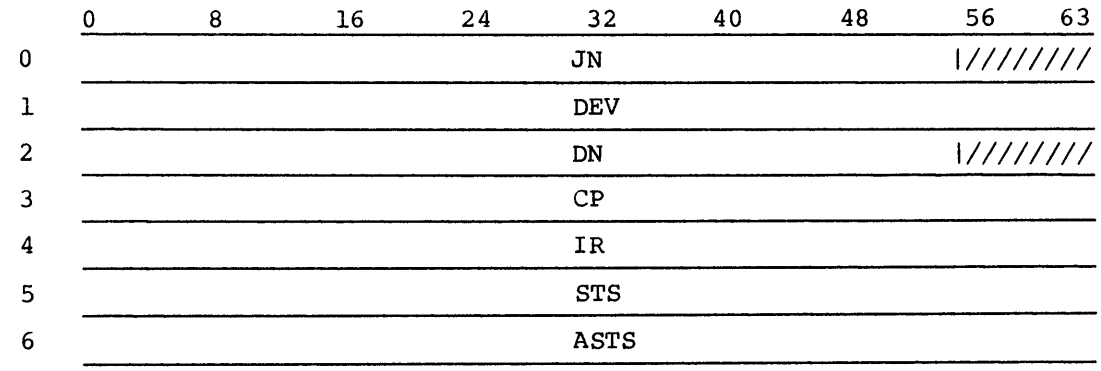


Figure 1.DE-1. Disk Error Table (DET)

Field	Word	Bits	Description
DEJN	0	0-55	Job name
DEDEV	1	0-63	Logical device name
DEDN	2	0-55	Dataset name
DECP	3	0-63	Device current physical position
DEIR	4	0-63	Device initial logical request
DESTS	5	0-63	Equipment status
DEASTS	6	0-63	Auxiliary status

1.DN DATASET NAME TABLE - DNT

The DNT in the Job Table Area (JTA) contains an entry for each dataset of a given job. W@JTDNT is the beginning DNT entry address. Figure 1.DN-1 illustrates a DNT entry.

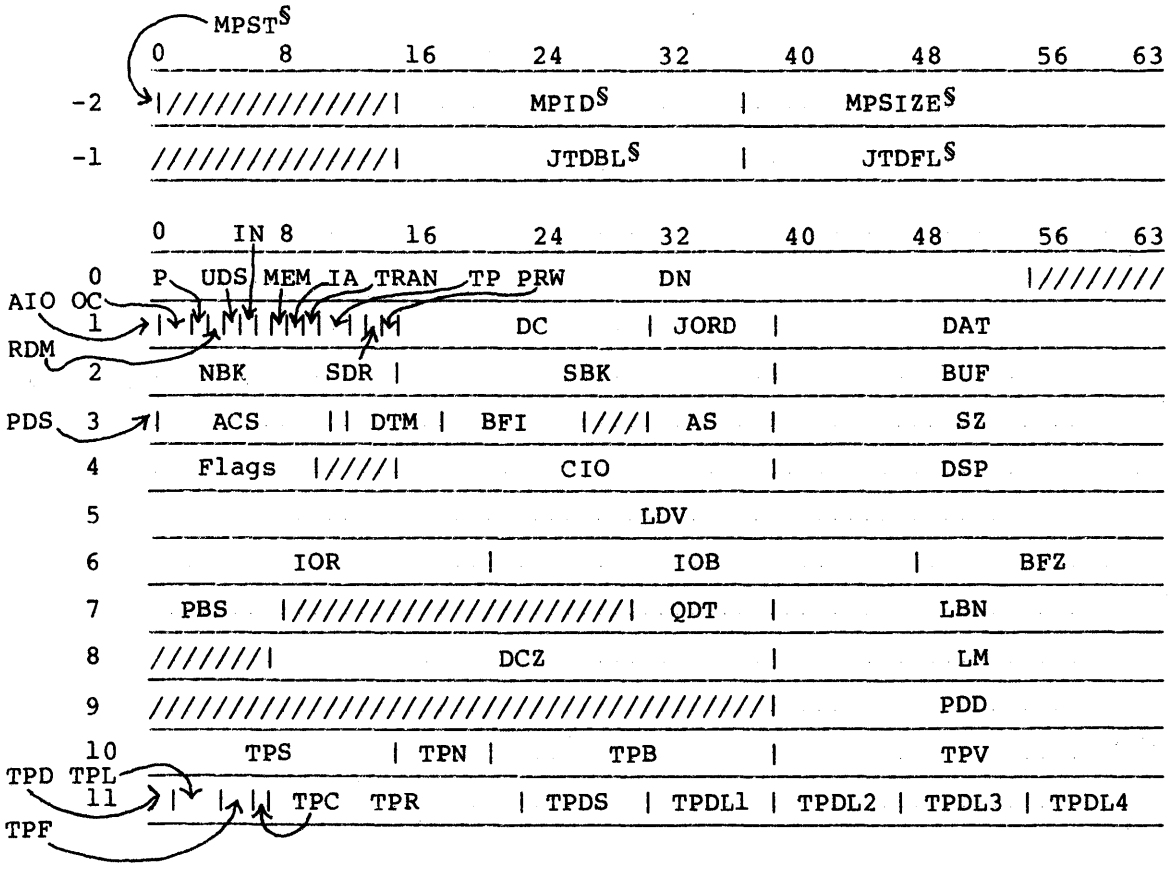


Figure 1.DN-1. Dataset Name Table (DNT) entry

Field	Word	Bits	Description
MPST§	-2	0	Status of memory area: 0 Available 1 In use
MPID§	-2	16-39	Memory pool identification 07070707 JTA dynamic memory
MPSIZE§	-2	40-63	Size of the memory area

§ Fields that exist only when the DNT is in the dynamic area of the JTA. They are used for dynamic memory allocation and DNT linkage.

Field	Word	Bits	Description
JTDBL[§]	-1	16-39	DNT backward link
JTDFL[§]	-1	40-63	DNT forward link
DNDN	0	0-55	Dataset name
DNAIO	1	0	Active I/O, set if outstanding
DNOC	1	1-2	Open/closed status: 00 Closed 10 Open for input 01 Open for output 11 Open for I/O
DNP	1	3	Type of processing; used by Disk Queue Manager: 0 Read 1 Write
DNRDM	1	4	Random dataset flag: 0 Sequential 1 Random
DNUDS	1	5	Dataset structure: 0 COS blocked dataset 1 Unblocked structure
DNIN	1	6	Subdataset; used for $IN
DNMEM	1	8	Dataset is memory resident
DNIA	1	9	Interactive type dataset
DNTRAN	1	10	Transparent mode for interactive dataset
DNTP	1	11-12	Tape dataset (online/staged)
DNEND	1	11	Write end of dataset flag. Used in conjunction with the partial block size DNPBS. DNEND and DNPBS are set by DQM when DPEND is set. DNEND and DNPBS may also be set by a task which does not use a DSP when calling DQM

[§] Fields that exist only when the DNT is in the dynamic area of the JTA. They are used for dynamic memory allocation and DNT linkage.

Field	Word	Bits	Description
DNSDR	1	14	Dataset resides in the SDR
DNPRW	1	15	Previous operation read/write: 0 Previous operation read 1 Previous operation write
DNDC	1	16-31	Disposition code (two characters): DCIN=IN Job dataset DCST=ST Staged permanent dataset DCSC=SC Scratch dataset DCPR=PR Print dataset DCPU=PU Punch dataset DCPT=PT Plot dataset DCMT=MT Magnetic tape dataset
DNJORD	1	32-39	JXT ordinal if the DNT is in the job's JTA; 0 if the DNT resides in STP.
DNDAT	1	40-63	Dataset allocation table address: =0 Not DAT assigned >0 DAT in STP <0 DAT in job's JTA
DNNBK	2	0-15	Number of blocks to be read or written; number of words in last block to be written if (DNEND)=1
DNSBK	2	16-39	Starting block number
DNBUF	2	40-63	I/O buffer address
DNPDS	3	0	Permanent dataset flag
DNACS	3	1-11	Dataset access flags:
DNEXO	3	1	Execute-only
DNMNP	3	9	Maintenance permission flag
DNWTP	3	10	Write permission flag
DNRDP	3	11	Read permission flag
DNDTM	3	13-18	Index to Task I/O save area
DNBFI	3	19-27	Blank field indicator for character I/O 000_8 BFI=I@BFI 400_8 BFI=user specified ASCII 400_8 BFI=000 400_8 Blank compression disabled

Field	Word	Bits	Description
DNAS	3	32-39	Allocation style (tracks per AI)
DNSZ	3	40-63	Dataset size (in 512-word blocks)
DNRCL	4	0	Recall flag from DSP
DNRLS	4	1	Release flag
DNTIO	4	2	Task I/O recall flag; (DNCIO=recall) address
DNJTF	4	3	JTA dataset flag; if (DNJTF)=1, buffer is in the JTA
DNIOU	4	4	User I/O flag; 1 indicates the DSP or buffer for the current I/O request are in the job field (below user HLM).
DNBIO	4	6	Buffered I/O request flag
DNJIO	4	7	Job in recall for this request
DNDPS	4	8	Dispose flag
DNMRCL	4	9	Memory recall flag; 1 if waiting for JTA memoory expansion.
DNDFR	4	10	Deferred disposition flag
DNCIO	4	16-39	Return address for task I/O
DNDSP	4	40-63	DSP address
DNLDV	5	0-63	Logical device name
DNIOR	6	0-21	I/O requests issued to DQM
DNIOB	6	22-48	Blocks transferred
DNBFZ	6	49-63	Dataset buffer size in 512-word blocks
DNPBS	7	0-8	Partial block size in words
DNQDT	7	31-39	Multitype flag/QDT entry index
DNLBN	7	40-63	Number of last block written
DNDCZ	8	8-39	Dataset catalog size in words

Field	Word	Bits	Description
DNLM	8	40-63	Dataset size limit in 512-word blocks
DNPDD	9	40-63	JTA relative address of the PDD for a deferred disposition
DNTPS	10	0-15	Online tape status
DNTPN	10	16-21	Tape noise block size in bytes
DNTPB	10	22-39	Tape max block size in bytes
DNTPV	10	40-63	Tape pointer to system label area
DNTPD	11	0-1	Tape density
DNTPL	11	2-4	Tape label type
DNTPF	11	5-6	Tape format
DNTPC	11	7	Tape cataloged dataset
DNTPR	11	8-23	Tape recovery options
DNTPM	11	16	Tape online maintenance access
DNTP2	11	17	Tape and device request
DNTPP	11	18-20	Tape parallel device count
DNTPH	11	21	Tape hold device assignment
DNTCS	11	22-23	Tape dataset character set
DNTPDS	11	24-31	Tape parallel device status
DNTPD 1	11	32-39	Tape device number (stream 1)
DNTPD 2	11	40-47	Tape device number (stream 2)
DNTPD 3	11	48-55	Tape device number (stream 3)
DNTPD 4	11	56-63	Tape device number (stream 4)

1.DP DATASET PARAMETER AREA - DSP

Logical I/O requires the presence of a DSP for the dataset in the user's field. Refer to publication SR-0011 for details of DSP use.

Figure 1.DP-1 illustrates a DSP.

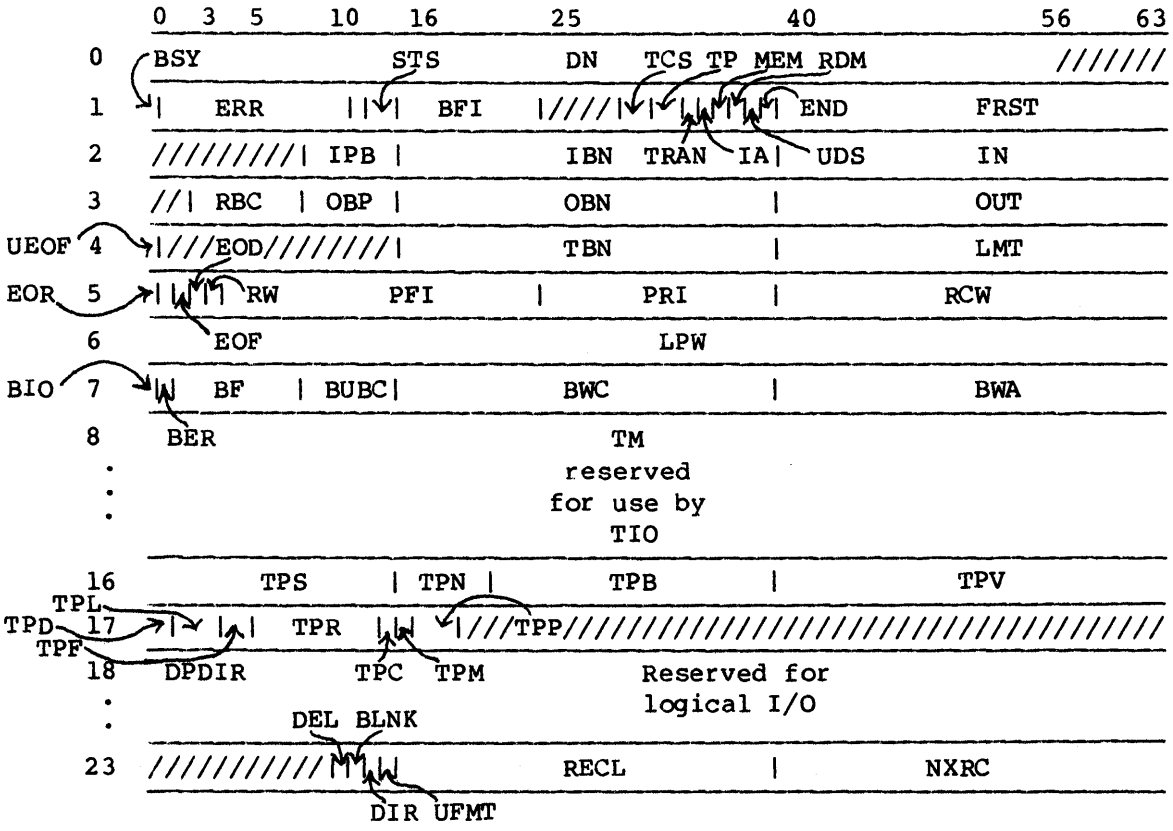


Figure 1.DP-1. Dataset Parameter Area (DSP)

Field	Word	Bits	Description
DPDN	0	0-55	Dataset name
DPBSY	1	0	Busy flag, circular I/O: 0 Not busy 1 Busy
DPERR	1	1-12	Error flags:
DPEOI	1	1	End of data on read; write past allocated disk space on write
DPENX	1	2	Dataset does not exist
DPEOP	1	3	Dataset not open
DPEPD	1	4	Invalid processing direction
DPEBN	1	5	Block number error
DPEDE	1	6	Unrecovered data error
DPEHE	1	7	Unrecovered hardware error
DPERW	1	8	Attempted read after write or past EOD
DPEPT	1	9	Dataset prematurely terminated
	1	10-12	Reserved
DPSTS	1	14-15	Status: 00 Closed 10 Open for input (I) 01 Open for output (O) 11 Open for I/O
DPBFI	1	16-24	Blank compression character in ASCII (BFI=77^8 implies no compression)
DPTCS	1	30-31	Tape dataset character set
DPTP	1	32-33	Tape dataset (online/staged)
DPTRAN	1	34	Transparent mode for interactive dataset
DPIA	1	35	Dataset is interactive
DPMEM	1	36	Dataset is memory resident
DPRDM	1	37	Random dataset flag: 0 Sequential dataset 1 Random dataset

Field	Word	Bits	Description
DPUDS	1	38	Undefined dataset structure: 0 COS blocked dataset structure 1 Undefined dataset structure
DPEND	1	39	Write end-of-data flag
DPFRST	1	40-63	Address of first word of buffer
DPIBP	2	10-15	Bit position in current input word (logical I/O)
DPIBN	2	16-39	Block number, read request System reads from block number until buffer is filled. The next block number is then in word 2.
DPIN	2	40-63	Address of current input word
DPRBC	3	3-9	Remaining blank count
DPOBP	3	10-15	Bit position in current output word
DPOBN	3	16-39	Block number, write request System writes from block number until buffer is empty. The next block number is then in word 3.
DPOUT	3	40-63	Address of current output word
DPUEOF	4	0	Uncleared end-of-file (EOF)
DPTBN	4	16-39	Temporary block number; used by random I/O for last block read
DPLMT	4	40-63	Address of last word+1 of buffer. LMT minus FRST defines buffer size.
DPEOR	5	0	EOR flag
DPEOF	5	2	EOF flag
DPEOD	5	3	EOD flag

Field	Word	Bits	Description
DPRW	5	4	Previous operation read/write flag 0 Read 1 Write
DPPFI	5	5-24	Previous file index; backward index to block containing previous EOF
DPPRI	5	25-39	Previous record index; backward index to block containing previous EOR
DPRCW	5	40-63	Control word address: Previous RCW address if in write mode Next RCW if in read mode
DPLPW	6	0-63	Last partial word; used for character mode I/O
DPBIO	7	0	Buffered I/O busy: 0 Buffered I/O operation complete 1 Buffered I/O operation incomplete
DPBER	7	1	Buffered I/O error flag
DPBF	7	2-9	Function code: 000 Read partial 010 Read record 040 Write partial 050 Write record 052 Write end-of-file 056 Write end-of-data
DPBPD	7	4	Processing direction: 0 Read 1 Write
DPBEO	7	6-9	Termination condition: 00 Partial 10 Record 12 File, write only 16 Dataset, write only

Field	Word	Bits	Description
DPBUBC	7	10-15	Unused bit count; must be specified on a write record request. Value returned on a read request.
DPBWC	7	16-39	Word count: number of words at DPBWA to read or write. Field contains actual number of words read when request is completed.
DPBWA	7	40-63	Word address of user data area
DPTM	8-15	0-63	Used by TIO as follows:
	8	0-63	(T.ZA)
	9	0-63	(T.ZB)
	10	16-39	(B.ZA)
	10	40-63	(B.ZB)
	11	16-39	(B.ZC)
	11	40-63	(B.ZD)
	12	0-7	JTA length/1000_8 when registers are saved
	12	8-15	Bits 0-7 of RBLK/WBLK A5
	12	16-39	(B.ZE)
	12	40-63	RBLK/WBLK B0
	13	16-39	DNT address
	13	40-63	(A7) JXT address
	13	0-63	RBLK/WBLK S5 during task recall
	14	0-15	Bits 8-23 of RBLK/WBLK A5
	14	16-39	RBLK/WBLK A2
	14	40-63	RBLK/WBLK A3
	15	0-63	RBLK/WBLK S6
DPTPS	16	0-15	Online tape status
DPTPN	16	16-21	Tape noise block size in bytes
DPTPB	16	22-39	Tape max. block size in bytes
DPTPV	16	40-63	Tape pointer to label definition table
DPTPD	17	0-1	Tape density
DPTPL	17	2-4	Tape label type
DPTPF	17	5-6	Tape format
DPTPR	17	7-14	Tape recovery options

Field	Word	Bits	Description
DPTPC	17	15	Tape cataloged dataset
DPTPM	17	16	Tape online maintenance access
DPTPP	17	17-19	Tape parallel device count
	18-22	0-63	Reserved for future use by logical I/O
DPDEL	23	12	FORTRAN file status 0 - Keep 1 - Delete
DPBLNK	23	13	FORTRAN numberic input blank conversion 0 - Null 1 - Zero
DPDIR	23	14	FORTRAN direct access flag
DPUFMT	23	15	FORTRAN unformatted I/O flag
DPRECL	23	16-39	FORTRAN direct access record length (in number of characters)
DPNXRC	23	40-63	FORTRAN direct access next record number

1.DR DEVICE RESERVATION TABLE - DRT

STP contains a Device Reservation Table (DRT) for each logical mass storage device known to the system. The table (figure 1.DR-2) consists of a header and a bit map. Each bit in the bit map represents one track on a disk. A set bit implies that the track is in use.

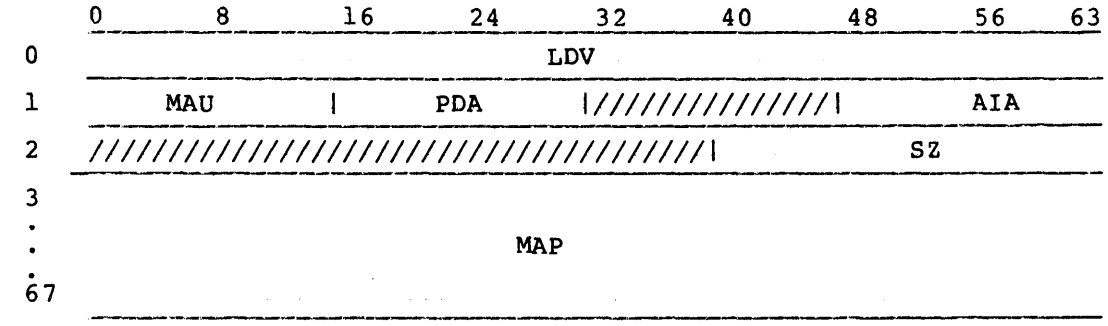


Figure 1.DR-1. Device Reservation Table (DRT)

Field	Word	Bits	Description
DRLDV	0	0-63	Logical device name
DRMAU	1	0-15	Maximum allocation units less flaws
DRPDA	1	16-31	Number of AIs used for permanent dataset
DRAIA	1	48-63	Total available AIs (number of unused bits)
DRSZ	2	40-63	DRT map size in words
DRMAP	3-67	0-63	Bit map, one bit per track

1.DT DEVICE CHANNEL TABLE - DCT

The Device Channel Table is STP-resident and is used by the disk driver to report completion of I/O and to report disk status. The DCT acts as a link between the channel and the Equipment Table (EQT).

Figure 1.DT-1 illustrates the Device Channel Table.

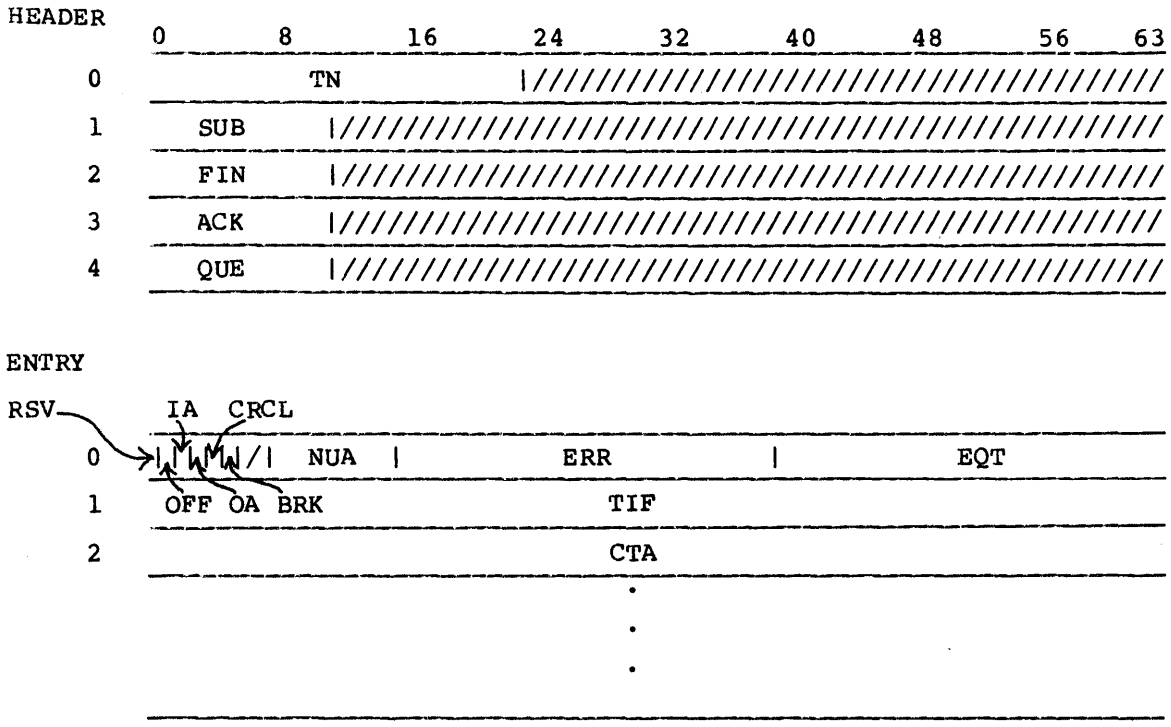


Figure 1.DT-1. Device Channel Table (DCT)

HEADER

Field	Word	Bits	Description
DTTN	0	0-23	Table name; "DCT" in ASCII
DTSUB	1	0-11	Submitted channel bit map
DTFIN	2	0-11	Completed channel bit map
DTACK	3	0-11	Acknowledged channel bit map
DTQUE	4	0-11	Queued channel bit map

ENTRY

There is one entry per channel.

Field	Word	Bits	Description
DTRSV	0	0	Channel reserved
DTOFF	0	1	Channel off
DTIA	0	2	Input channel active
DTOA	0	3	Output channel active
DTCRCL	0	4	Clear recall flag
DTBRK	0	5	Break streaming flag
DTNUA	0	8-15	Number of units active
DTERR	0	16-39	Cumulative channel error count
DTEQT	0	40-63	Active equipment EQT address
DTTIF	1	0-63	Time function issued
DTCTA	2	0-63	Cumulative channel reserved time

1.DV DEVICE LABEL - DVL

A device label resides on the device and is initialized by deadstart initialization. The device label contains a flaw table for the device. The device label for the master device also contains a pointer to the Dataset Catalog.

Figure 1.DV-1 illustrates a DVL table.

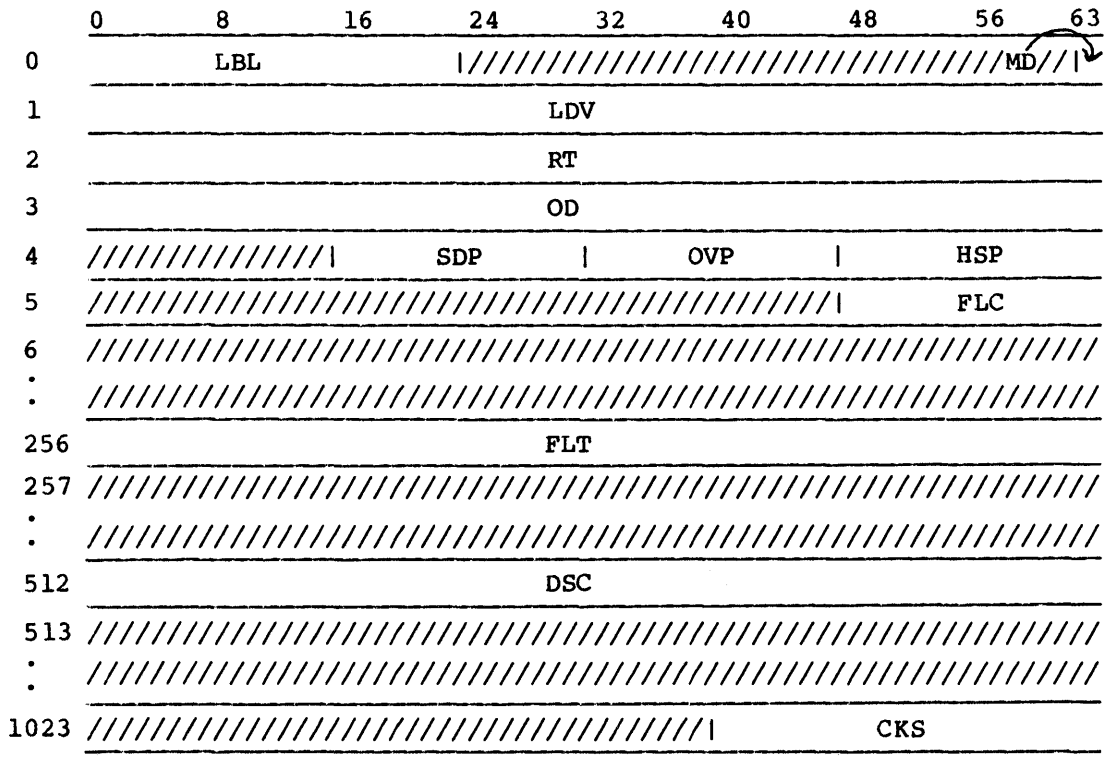


Figure 1.DV-1. Device Label (DVL)

Field	Word	Bits	Description
DVLBL	0	0-23	Device label indicator; "DLB" in ASCII
DVMD	0	63	Master device flag
DVLDV	1	0-63	Logical device name
DVRT	2	0-63	Real-time clock when DVL was written

Field	Word	Bits	Description
DVOD	3	0-63	LDV of device where overlay area preallocation begins (master label only)
DVSDP	4	16-31	First track of system dump area
DVOVL	4	16	First AI of overlay area/on device identified in (DVOD) (master label only)
DVOVP	4	32-47	DSC overflow pages if DVMD=0 (master device)
DVHSP	4	48-63	DSC hash pages if DVMD≠0 (master device)
DVFLC	5	48-63	Number of used AIs
DVFLT	256	0-15	List of reserved AIs such as flaws, FE tracks, etc.
DVDSC	512	0-63	Dataset Catalog DAT page images if DVMD≠0 (master device)
DVCKS	1023	40-63	Checksum

1.EQ EQUIPMENT TABLE - EQT

This STP-resident table is used for working storage by the disk driver, for disk allocation, for passing requests to the disk driver, and for queue management. The EQT is illustrated in figure 1.EQ-1.

HEADER

	0 8 16 24 32 40 48 56 63
0	TN | //////////////// | NUA | NE

ENTRY

MSD	0	OFF RLS DT LDV UT1
	1	M M M M | RCH | ////////// | CH2 | CH1 | DRT
NA	2	UP CPD | TPC | AU | LNK
	3	QL | QT | QH
	4	ACT
	5	//////////////// | LST | //////// | CYL | TRK | SEC
	6	CST
	7	NPR
	8	NRT
	9	TD CLM RSC
	10	M //// | MGN | ISZ | DB0
	11	RET SC | CA | TA | SA | MA
	12	TRY | DSP | ERR
	13	| RER | ECYL | EHD | ESCT
	14	FCT
	15	STS
	16	IB1
	17	IB2
	18	IB3
	19	IB4
	20	IB4

Figure 1.EQ-1. Equipment Table (EQT)

HEADER

Field	Word	Bits	Description
EQTN	0	0-23	Table name; "EQT" in ASCII
EQNUA	0	40-47	Next unit to be allocated
EQNE	0	48-63	Number of entries in table

ENTRY

Field	Word	Bits	Description
EQLDV	0	0-63	Logical device name
EQMSD	1	0	Master device flag
EQOFF	1	1	Unit off
EQNA	1	2	Unit not available
EQRLS	1	3	Flag set if datasets involving this LDV are to be released
EQUP	1	4	*UP flag; set if *UP parameter is present in parameter file. This allows Startup to write a new device label if there is none so that new devices can be added without requiring an INSTALL type Startup.
EQDT	1	5	Disk type: 0 DD-19 1 DD-29
EQRCH	1	8-15	Processor channel number
EQCH2	1	26-31	Secondary channel number
EQCH1	1	32-37	Primary channel number
EQUT1	1	38-39	Primary unit number
EQDRT	1	40-63	DRT address
EQCPD	2	0-15	Cylinders per disk
EQTPC	2	16-23	Tracks per cylinder

Field	Word	Bits	Description
EQAU	2	24-39	Blocks per allocation unit (sectors per track)
EQLNK	2	40-63	Link to next equipment on channel
EQQL	3	0-15	Queue length
EQQT	3	16-39	Queue tail pointer
EQQH	3	40-63	Queue head pointer
EQACT	4	0-63	Anticipated on cylinder time
EQLST	5	16-31	Logical status
EQCYL	5	40-51	Last cylinder position
EQTRK	5	52-57	Last track position
EQSEC	5	58-63	Last sector position
EQCST	6	0-63	Cumulative seek time
EQNPR	7	0-63	Number of physical requests
EQNRT	8	0-63	Number of requests
EQRSC	9	0-63	Number of requests not requiring a seek
EQTD	10	0	Transfer direction 0 Read 1 Write
EQRET	10	1	Retry flag
EQCLM	10	2	Clear margin flag
EQMGN	10	8-23	Last margin flag
EQISZ	10	24-39	Buffer increment size
EQDB0	10	40-63	Driver's saved B0
EQSC	11	0-15	Remaining sector count

Field	Word	Bits	Description
EQCA	11	16-27	Current cylinder address
EQTA	11	28-33	Current track address
EQSA	11	34-39	Current sector address
EQMA	11	40-63	Current memory address
EQTRY	12	0-15	Retry count
EQDSP	12	16-39	DSP address or 0; used to pass DSP address to EXEC
EQERR	12	40-63	Total disk errors
EQRER	13	16-39	Recoverable error count
EQECYL	13	40-51	Last cylinder error address
EQEHD	13	52-57	Last head error address
EQESCT	13	58-63	Last sector error address
EQFCT	14	0-63	Beginning of 6-word a com buffer
EQSTS	15	0-63	Edited status
EQIB1	16	0-63	Input buffer 1
EQIB2	17	0-63	Input buffer 2 Contain error
EQIB3	18	0-63	Input buffer 3 correction vector
EQIB4	19	0-63	Input buffer 4
EQATO	20	0-63	IOP Disk Timeout Save word

1.IB INTERACTIVE BUFFER TABLE - IBT

The Interactive Buffer Table is STP resident and is used to manage the interactive Buffer Pool Table.

HEADER

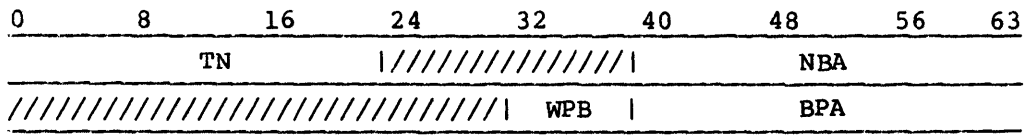


Figure 1.IB-1. Interactive Buffer Table (IBT) header

Field	Word	Bits	Description
IBTN	0	0-23	Table name
IBNBA	0	40-63	Number of available buffers
IBWPB	1	32-39	Words per bit
IBBPA	1	40-63	Buffer pool beginning address

ENTRY

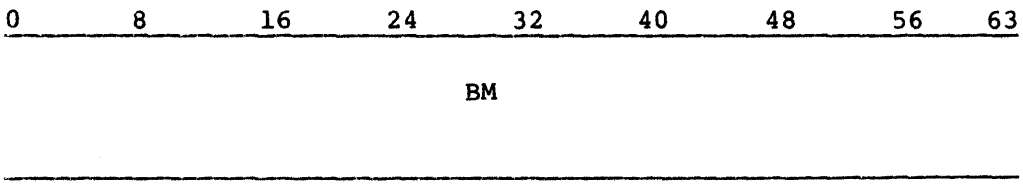


Figure 1.IB-2. IBT entry

Field	Word	Bits	Description
IBBM	0-7	0-63	Bit map

1.JC JOB COMMUNICATION BLOCK - JCB

The first 128 words of each user field comprise the Job Communication Block. The JCB is accessible to the user.

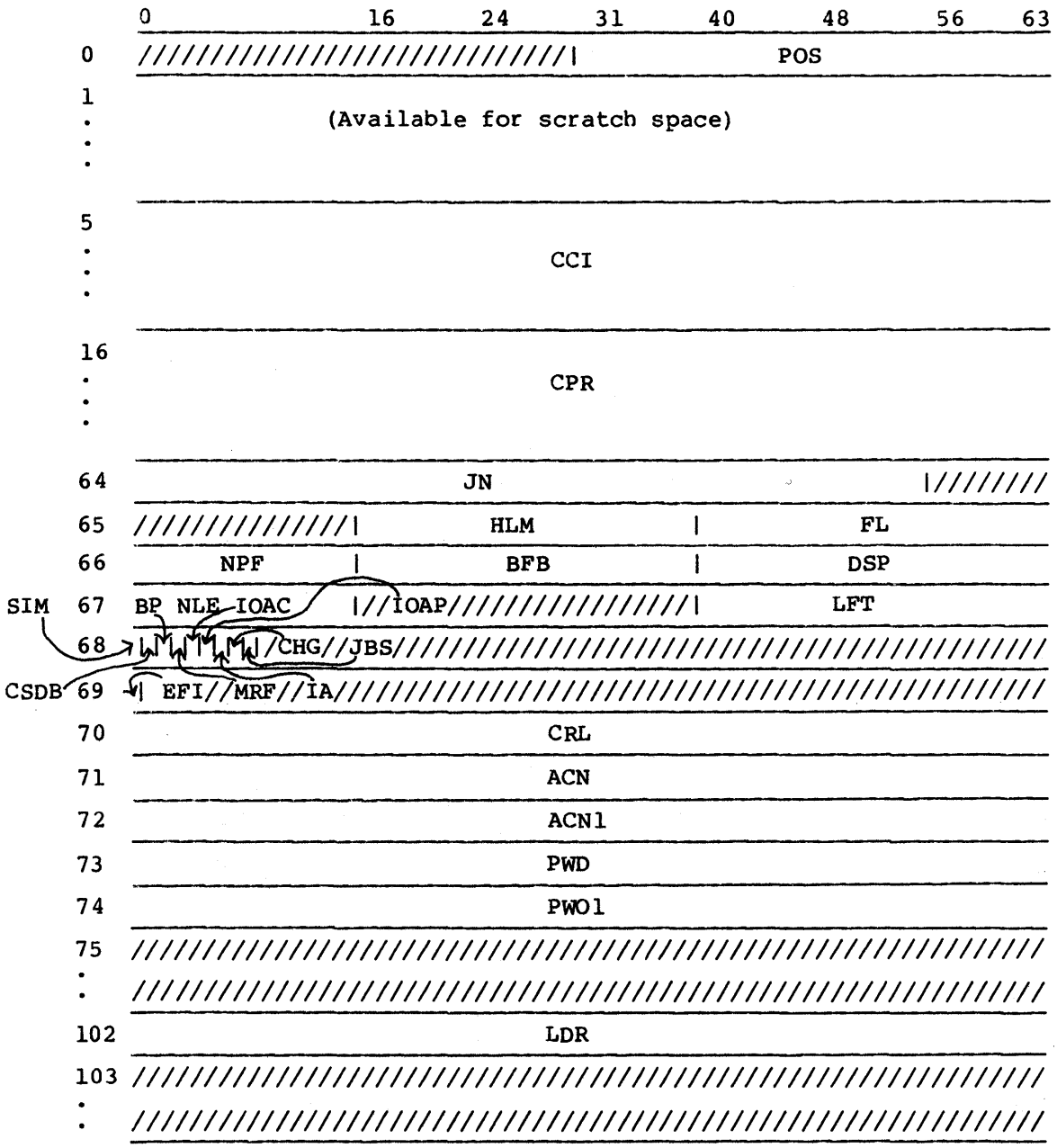


Figure 1.JC-1. Job Communication Block (JCB)

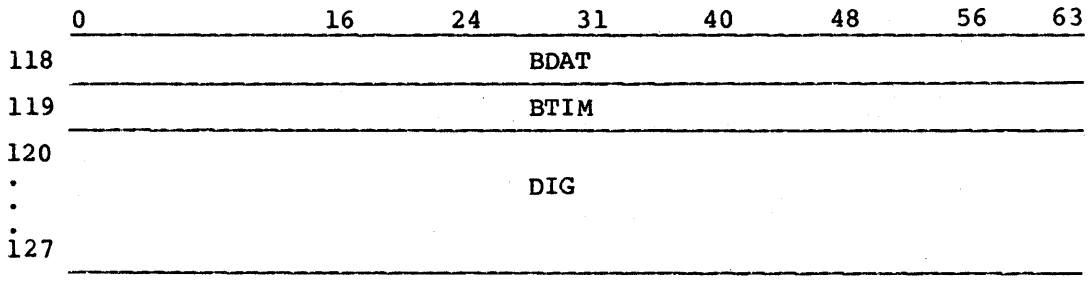


Figure 1.JC-1. Job Communication Block (JCB) (continued)

Field	Word	Bits	Description
JCPOS	0	31-63	Current $CS position
JCCCI	5-15	0-63	Control statement image packed 8 characters per word
JCCPR	16-63	0-63	Control statement parameters, expanded to 2 words per parameter
JCJN	64	0-55	Job name; bits 56-63 must be 0
JCHLM	65	16-39	High limit of user code
JCFL	65	40-63	Current field length
JCNPF	66	0-15	Number of physical buffers and datasets
JCBFB	66	16-39	Base address of I/O buffers
JCDSP	66	40-63	Base address of DSP area
JCNLE	67	0-15	Number of entries in LFT
JCLFT	67	40-63	Base of LFT
JCSIM	68	0	Simulator flag
JCCSDB	68	1	CSP debug flag
JCBP	68	2	JOB statement breakpoint (BP) flag
JCMRF	68	3	Memory request flag. If set, dynamic field management by CAL, LDR, etc. is not allowed.

Field	Word	Bits	Description
JCIOAC[§]	68	4	I/O area current status flag 0 User's I/o area is unlocked 1 User's I/O area is locked
JCIOAP[§]	68	5	I/O area previous status flag 0 User's I/O area is unlocked 1 User's I/O area is locked
JCIA	68	6	Interactive flag
JCCHG	68	7	Execute charges for trailer message
JCJBS	68	8	Job statement flag (if set, JOB statement just processed)
JCEFI	69	0	Enable floating interrupt flag; used by $FTLIB math routines to reset floating point interrupt flag
JCCRL	70	0-63	COS revision level
JCCRLS	70	32-63	COS revision number
JCACN	71	0-63	Account number (characters 1-8)
JCACN1	72	0-63	Account number (characters 9-15)
JCPWD	73	0-63	Password (characters 1-8)
JCPWO1	74	0-63	Password (characters 9-15)
JCLDR	102	0-63	Unsatisfied externals
JCBDAT	118	0-63	Date of absolute load module generation
JCBTIM	119	0-63	Time of absolute load module generation
JCDIG	120-127	0-63	Reserved for diagnostics

§ Deferred implementation

1.JT JOB TABLE AREA - JTA

The JTA (figure 1.JT-1) for a job resides below the field for the job and is not accessible to the user.

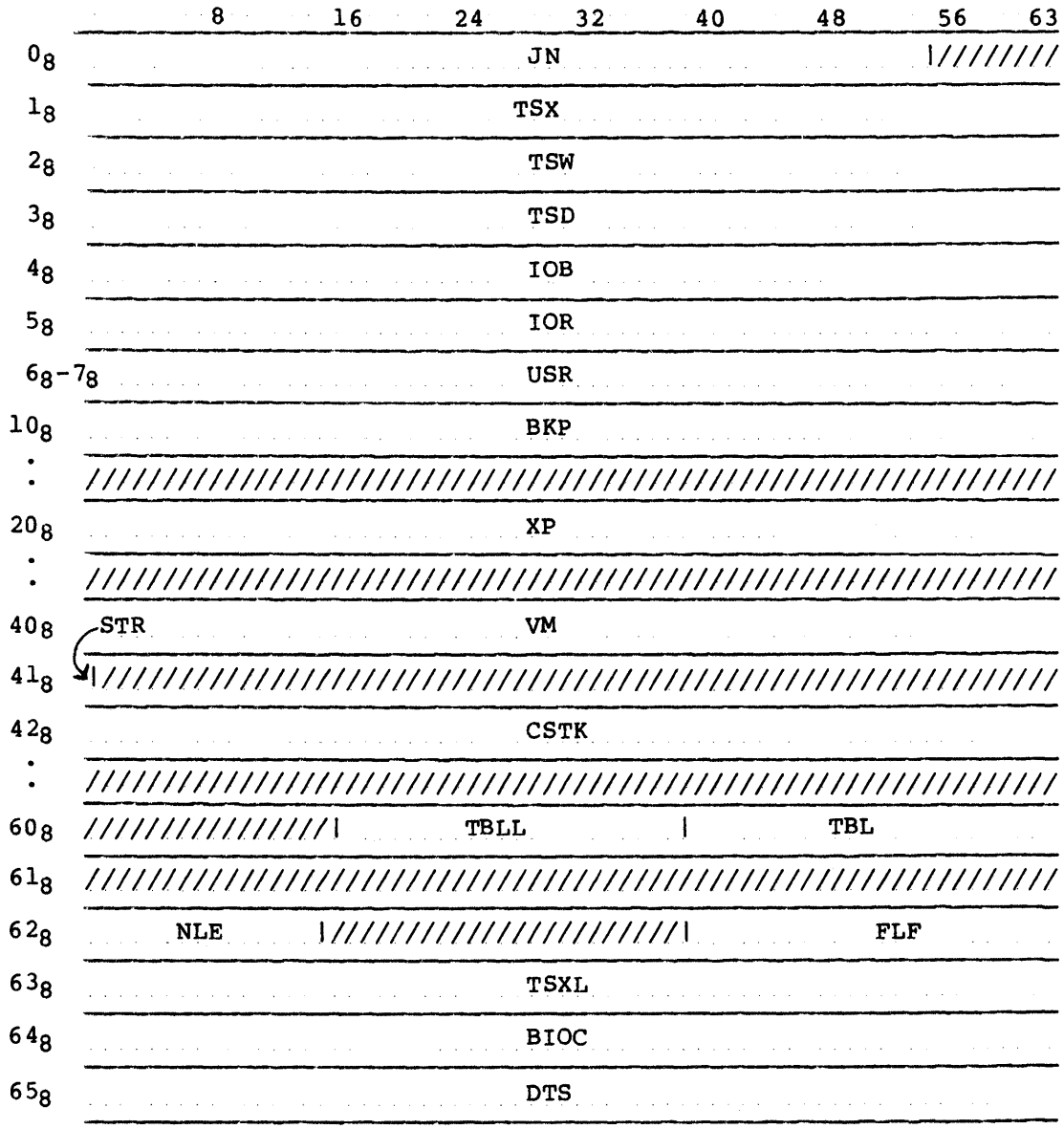


Figure 1.JT-1. Job Table Area (JTA)

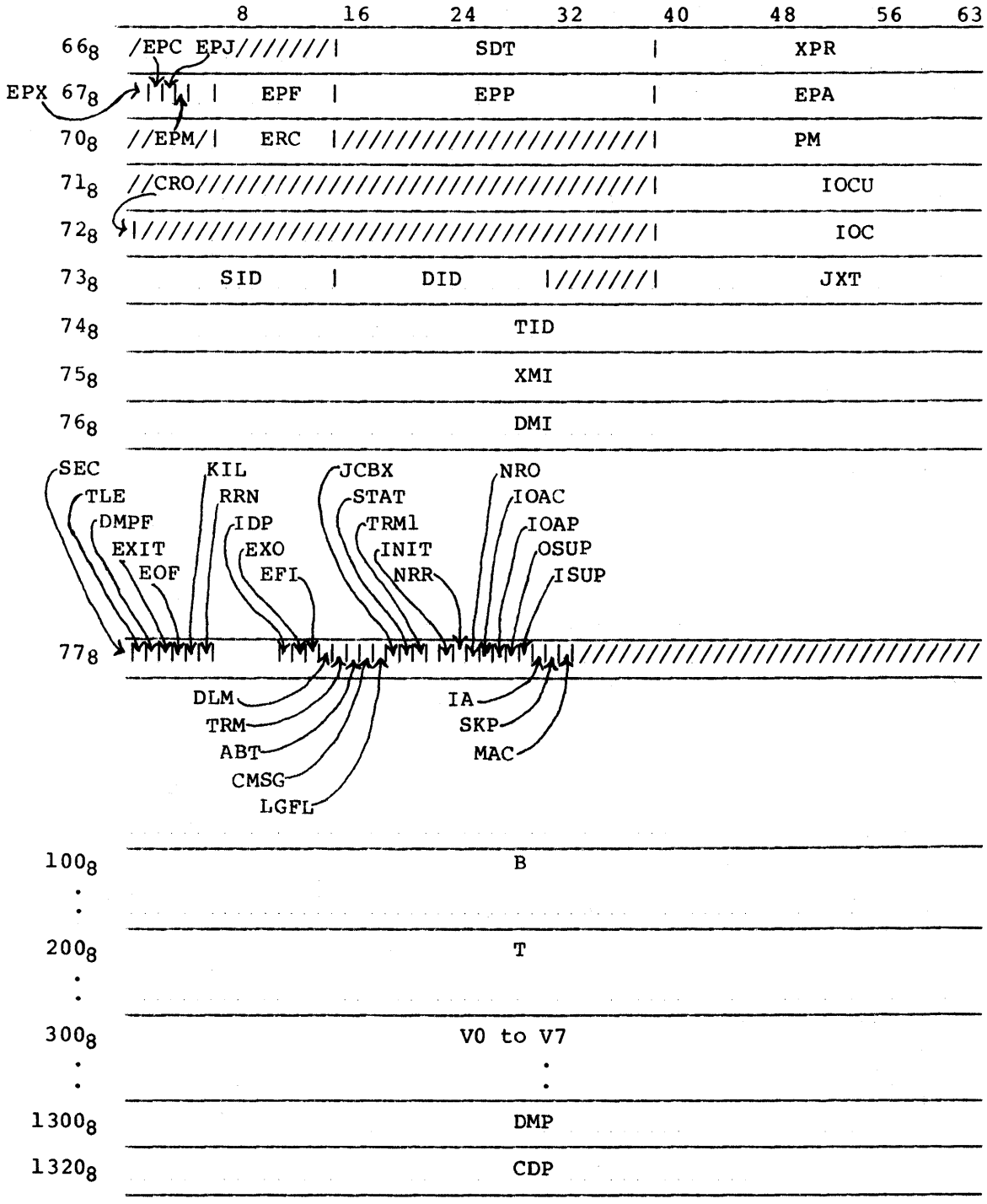


Figure 1.JT-1. Job Table Area (JTA) (continued)

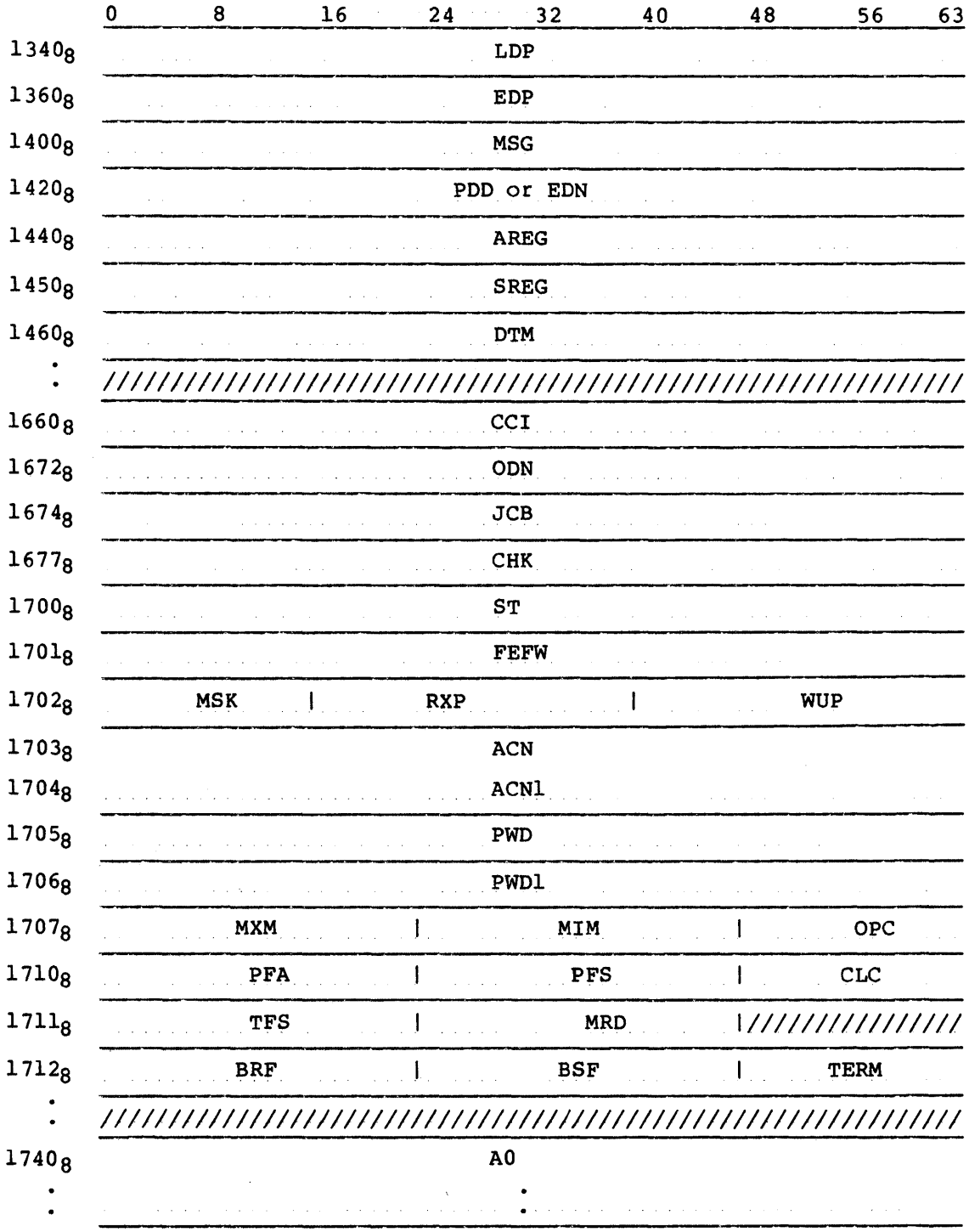


Figure 1.JT-1. Job Table Area (JTA) (continued)

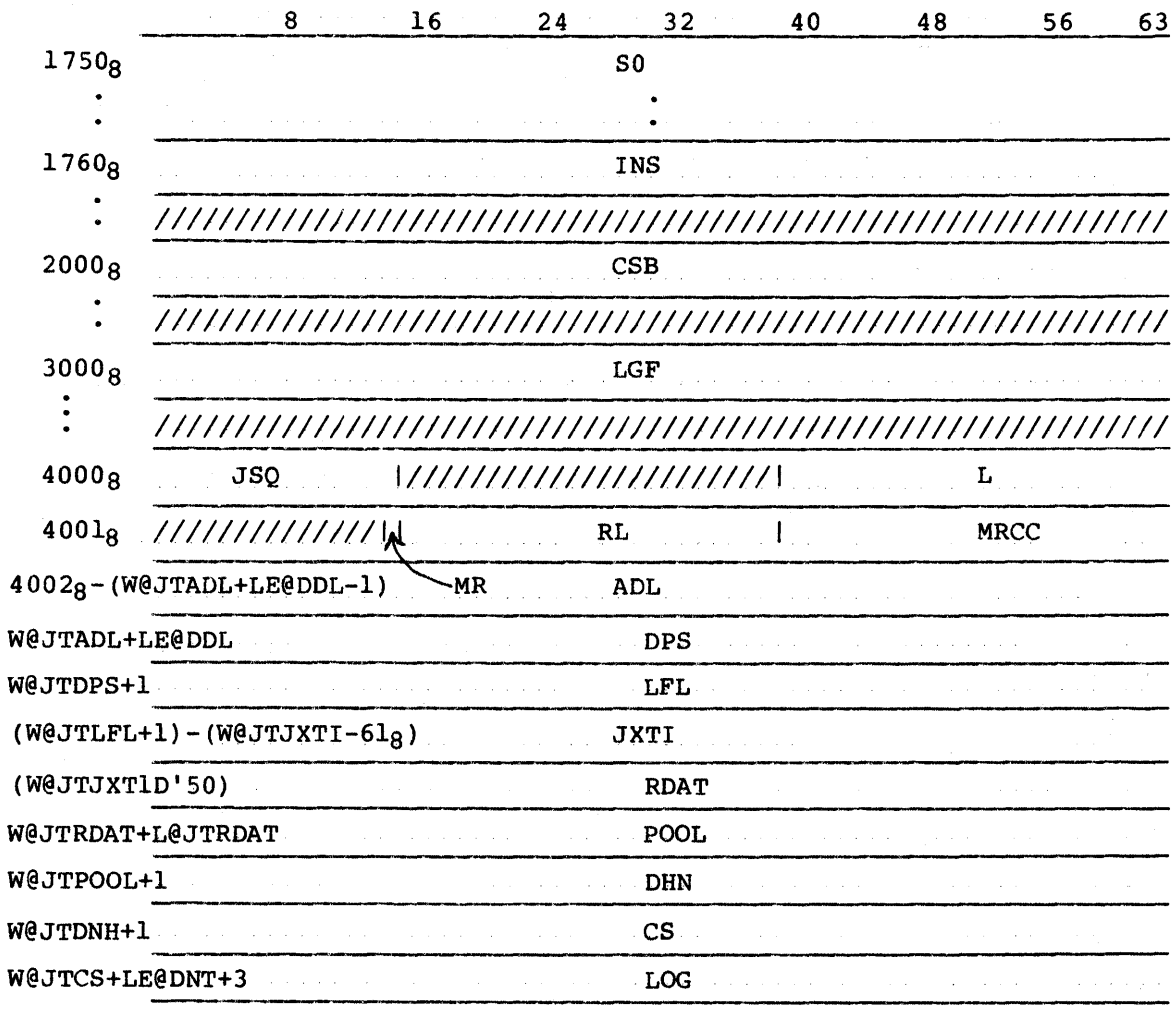


Figure 1.JT-1. Job Table Area (JTA) (continued)

NOTE

The words in the word column below are shown in octal.

Field	Word	Bits	Description
JTJN	0	0-55	Job name; bits 55-63 must be 0
JTTSX	1	0-63	Time spent executing in CPU (cycles)
JTTSW	2	0-63	Time spent waiting to execute (cycles)
JTTSD	3	0-63	Time spent waiting for I/O completion
JTIOB	4	0-63	Disk blocks transferred
JTIOR	5	0-63	User I/O requests
JTUSR	6-7	0-63	User number; 1-15 characters
JTBKP	10	0-63	Breakpoint registers
JTBKPP	10	0-15	Breakpoint instruction parcel
JTBKP2	10	16-39	Breakpoint parcel address 2
JTBKP1	10	40-63	Breakpoint parcel address 1
JTXP	20	0-63	Exchange package
JTVL	23	24-30	Vector length
JTVM	40	0-63	Vector mask
JTSTR	41	0	Job streaming bit
JTCSTK	42	0-63	Control statement file stack
JTTBLL	60	16-39	Length of CSP-managed table area
JTTBL	60	40-63	Address of CSP-managed table area
JTNLE	62	0-15	Number of LFT entries in JTA
JTFLF	62	40-63	Point to first of JTA LFT chain
JTTSXL	63	0-63	Time spent executing at last disconnect
JTBIOC	64	0-63	Buffered I/O request count

Field	Word	Bits	Description
JTDTS	65	0-63	Date/time of last rollout; must be in first sector of roll dataset
JTSDT	66	16-39	SDT address used by RLD in EXP
JTXPR	66	40-63	Return address used by Exchange Processor
JTEPX	67	0-1	Exchange Processor request word: 1 Error exit (bit 1 set) 2 Normal exit (bit 0 set)
JTEPC	67	2	Flag set if JTEPA has a continuation address
JTEPJ	67	3	Flag set if request made by Job Scheduler
JTEPM	67	4	Flag set if JTA expansion is requested for additional DAT space
JTEPF	67	7-15	Flags from user exchange package
JTEPP	67	16-39	P register from user exchange package
JTEPA	67	40-63	Continuation address in EXP
JTERC	70	7-15	Reprieve error code
JTPM	70	40-63	PDD address; used in DISPOSE processing
JTIOCU	71	40-63	User field I/O count; includes buffer in and buffer out requests and I/O requests with DSP
JTCRO	72	0	Outstanding reply from DQM to CIO; must be cleared before job can be expanded or contracted
JTIOC	72	40-63	Count of active I/O requests or functions
JTSID	73	0-15	Source ID; 2 characters
JTDID	73	16-31	Destination ID; 2 characters

Field	Word	Bits	Description
JTJXT	73	40-63	JXT entry address
JTTID	74	0-63	Terminal ID
JTXMI	75	0-63	Memory integral based on execution time
JTDMI	76	0-63	Memory integral based on I/O wait time
JTSEC	77	0	Security flag; set if CSP executing
JTTLE	77	1	Time limit expired once
JTDMPF	77	2	Dump-in-progress flag
JTEXIT	77	3	EXIT statement flag
JTEOF	77	4	End-of-file on $CS flag
JTKIL	77	5	Job killed flag
JTRRN	77	6	Job rerun flag
JTIDP	77	11	Inhibit dumpjob processing flag
JTEXO	77	12	Execute-only dataset open flag
JTEFI	77	13	Enable floating interrupt flag
JTDLM	77	14	Disable log message
JTTRM	77	15	Job in termination flag
JTABT	77	16	Job abort flag
JTCMSG	77	17	Enable conditional messages flag
JTLGFL	77	18	$LOG size exceeds I@LGUSZ
JTJCBX	77	19	JCB bad flag
JTSTAT	77	20	Request dataset statistics flag
JTTRM1	77	21	Second pass through TRM flag
JTINIT	77	23	Job initiated flag
JTNRR	77	24	Not rerunnabale if set
JTNRO	77	25	Disables no rerun if set

Field	Word	Bits	Description
JTIOAC	77	26	I/O area current status flag 0 user's I/O area unlocked 1 user's I/O area locked
JTIOAP	77	27	I/O area previous status flag 0 user's I/O area unlocked 1 user's I/O area locked
JTOSUP	77	28	Interactive output suspended (recovery)
JTISUP	77	29	Interactive input suspended (recovery)
JTIA	77	30	Interactive flag
JTSKP	77	31	Control statement skip flag
JTMAC	77	32	Flag to move account number/password to JTA
JTB	100-177	0-63	B registers
JTT	200-277	0-63	T registers
JTV0	300-377	0-63	V0 register elements
JTV1	400-477	0-63	V1 register elements
JTV2	500-577	0-63	V2 register elements
JTV3	600-677	0-63	V3 register elements
JTV4	700-777	0-63	V4 register elements
JTV5	1000-1077	0-63	V5 register elements
JTV6	1100-1177	0-63	V6 register elements
JTV7	1200-1277	0-63	V7 register elements
JTDMP	1300-1317	0-63	Copy of exchange package for error processing
JTCDP	1320-1337	0-63	Control statement ($CS) DSP
JTLDP	1340-1357	0-63	Log file ($LOG) DSP

Field	Word	Bits	Description
JTEDP	1360-1377	0-63	EXU DSP; also used by DUMPJOB
JTMSG	1400-1417	0-63	Last logfile message issued
JTPDD	1420-1437	0-63	Permanent dataset descriptor entry used by job termination
JTEDN	1420-1427	0-63	DNT for EXU
JTAREG	1440-1447	0-63	A-register save area for RESUME/CONTINUE only
JTSREG	1450-1457	0-63	S-register save area for RESUME/CONTINUE only
JTDTM	1460-1657	0-63	Save area for Task I/O
JTCCI	1660-1671	0-63	80 characters of control statement being prescanned
JTODN	1672-1673	0-63	2-word ODN table used by RELEASE and DISPOSE
JTJCB	1674-1676	0-63	Three words from user JCB starting with W@JCHLM
JTCHK	1677	0-63	Reprieve checksum supplied by user
JTST	1700	0-63	Reprieve status word
JTFEFW	1701	0-63	Reprieve fatal error flag word
JTFE03	1701	1	No DAT space
JTFE10	1701	2	No disk space
JTFE11	1701	3	SDR is full
JTFE23	1701	4	Job time limit exceeded
JTFE24	1701	5	Operator dropped user job
JTFE41	1701	6	Enter allowed on ACCESS only
JTFE58	1701	7	Error exit
JTFE51	1701	8	LFT chain pointer invalid
JTFE43	1701	9	User log size invalid
JTFENR	1701	63	Not reprievable
JTMSK	1702	0-15	Reprieve mask
JTRXP	1702	16-39	Reprieve XP address in user area

Field	Word	Bits	Description
JTWUP	1702	40-63	Reprieve entry address in user area
JTACN	1703	0-63	Account number (characters 1-8)
JTACN1	1704	0-63	Account number (characters 9-15)
JTPWD	1705	0-63	Password (characters 1-8)
JTPWD1	1706	0-63	Password (characters 9-15)
JTMXM	1707	0-23	Maximum amount of memory used
JTMIM	1707	24-47	Minimum amount of memory used
JTOPC	1707	48-63	Number of open calls
JTPFA	1710	0-23	Permanent file space accessed
JTPFS	1710	24-47	Permanent file space saved
JTCLC	1710	48-63	Number of close calls
JTTFS	1711	0-23	Temporary file space used
JTMRD	1711	24-47	Number of memory resident datasets
JTBRF	1712	0-23	Number of blocks from the front end
JTBSF	1712	24-47	Number of blocks sent to the front end
JTTERM	1712	48-63	Termination status 0 = Normal 1 = User requested abort 2 = System requested abort 3 = Drop 4 = Kill
JTA0,..., JTA7	1740-1747	0-63	A-register save area for EXP
JTS0,..., JTS7	1750-1757	0-63	S-register save area for EXP
JTINS	1760-1777	0-63	Reserved for installation
JTCSB	2000-2777	0-63	Control statement ($CS) buffer

Field	Word	Bits	Description
JTLGF	3000-3777	0-63	Logfile ($LOG) buffer
JTJSQ	4000	0-15	Job sequence number
JTL	4000	40-63	Length of Job Table Area
JTMR	4001	15	Memory request outstanding flag
JTRL	4001	16-39	Requested length of JTA expansion
JTMRCC	4001	40-63	Count of datasets waiting for JTA memory
JTADL	4002-(W@JTADL+LE@DDL-1	0-63	DDL for OPEN and DUMPJOB: up to six words long
JTDPS	W@JTADL+LE@DDL	0-63	Control word for Task I/O DSP save area
JTLFL	W@JTDPS+1	0-63	User last word before rollout
JTJXTI	(W@JTLFL+1)-(WAJTJXTI-61$_8$	0-63	Image of JXT at rollout
JTRDAT	(W@JTJXTI+62$_8$ (W@JTRDAT+307$_8$	0-63	Image of roll DAT
JTPOOL	W@JTRDAT+310$_8$	0-63	First word of JTA memory pool
JTDHN	W@JTPOOL+1	0-63	Head of the DNT chain
JTDBL	W@JTPOOL+1	16-39	DNT backward link
JTDFL	W@JTPOOL+1	40-63	NNT forward link
JTCS	W@JTDNH+1	0-63	Control statement ($CS) DNT
JTLOG	W@JTCS+LE@DNT+3	0-63	Logfile ($LOG) DNT

1.JX JOB EXECUTION TABLE - JXT

The JXT in STP memory contains an entry for each job that has begun processing. The JXT is used to control all active jobs in the system.

The JXT may contain from 1 to 63 entries; the firest entry is reserved for the operating system, itself.

The JTA entry and the JXT entry for a particular job contain each other's addresses. Word 0 in both entries contains the 7-character job name.

A JXT entry is illustrated in figure 1.JX-1.

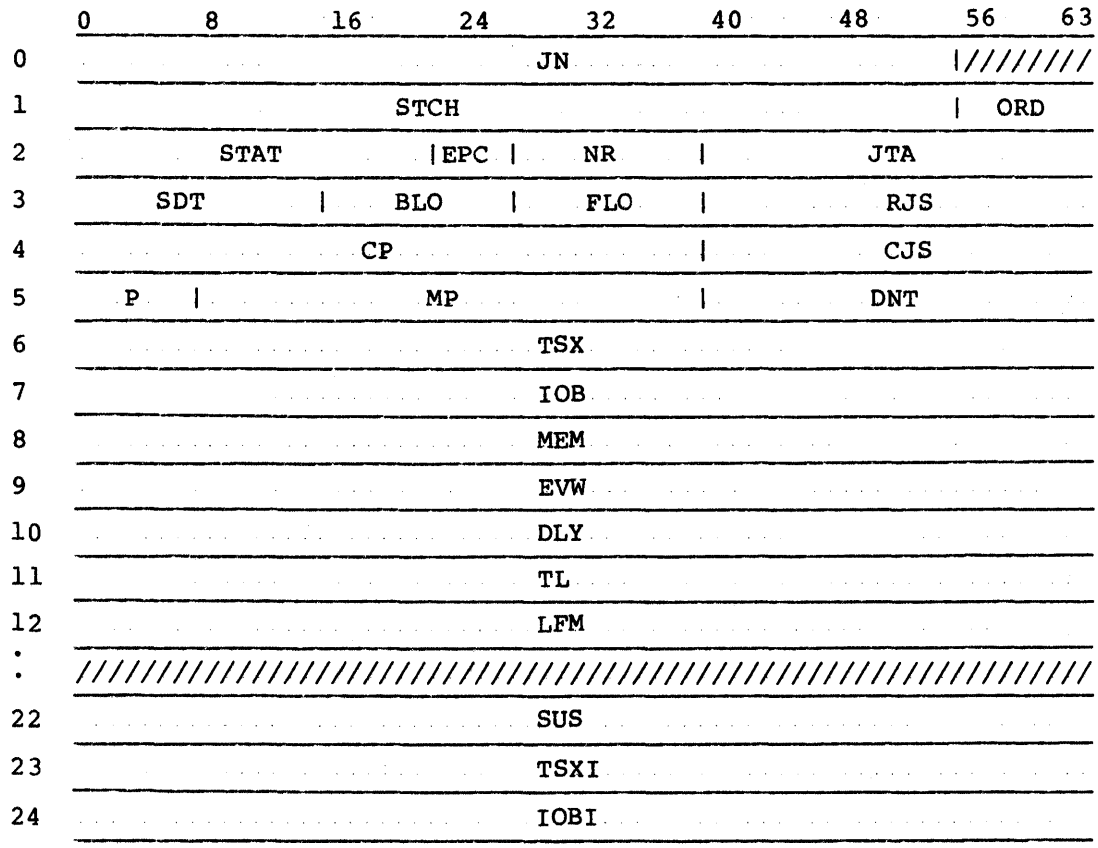


Figure 1.JX-1. Job Execution Table (JXT) entry

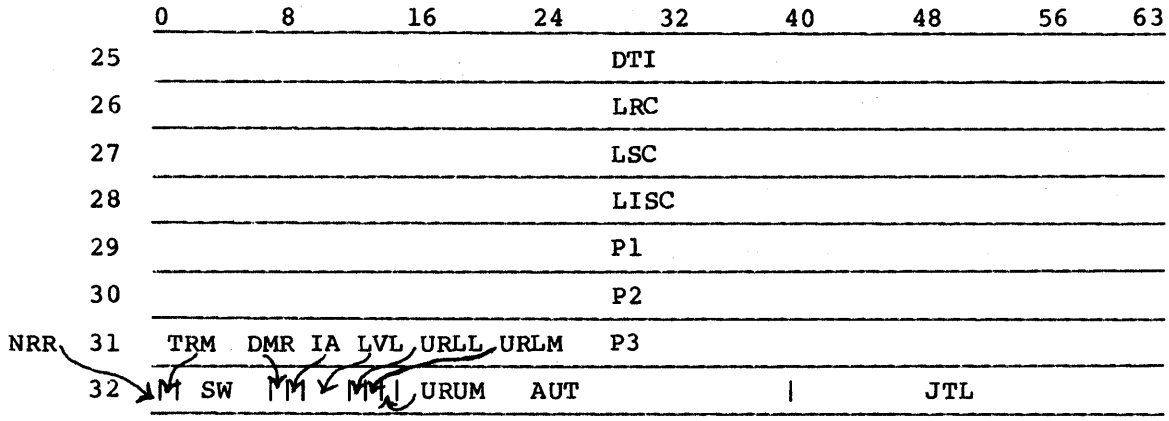


Figure 1.JX-1. Job Execution Table (JXT) entry (continued)

Field	Word	Bits	Description
JXJN	0	0-55	Job name
JXSTCH	1	0-55	Job status in displayable form (7 characters)
JXORD	1	56-63	Ordinal number (0-63) of the JXT entry
JXSTAT	2	0-22	Status; see part 1, section 3.8.6
JXEPC	2	23-27	Reason for abortion if the A status bit is set See Job Scheduler equates for A$ xxx in COS for abort codes.
JXNR	2	28-39	Number of times the job has been rolled in
JXJTA	2	40-63	Job table area address
JXSDT	3	0-15	SDT offset for this job's SDT entry
JXBLO	3	16-27	Backward link as a JXT offset
JXFLO	3	28-39	Forward link as a JXT offset
JXRJS	3	40-63	Requested job size including JTA
JXCP	4	0-39	CPU priority (based on resource use)

Field	Word	Bits	Description
JXCJS	4	40-63	Current job size including JTA
JXP	5	0-7	Priority from JOB statement
JXMP	5	8-39	Floating memory priority (based on JXP)
JXDNT	5	40-63	Rolled immage's DNT entry address
JXTSX	6	0-63	Time spent executing as of last rescheduling
JXIOB	7	0-63	Disk blocks transferred as of last rescheduling
JXMEM	8	0-63	Saved memory request word (J$ALLOC)
JXEVW	9	0-63	Saved event word (J$AWAIT)
JXDLY	10	0-63	Wake-up time in cycles (J$DELAY)
JXTL	11	0-63	Time limit in cycles
JXLFM	12	0-63	Last logfile message
JXSUS	22	0-63	Reply word for J$SUSPK
JXTSXI	23	0-63	Time spent executing in past scheduling interval
JXIOBI	24	0-63	Disk blocks transferred in past scheduling interval
JXDTI	25	0-63	Data and time initiated
JXLRC	26	0-63	Date and time of last residence change
JXLSC	27	0-63	Date and time of last status change
JXLISC	28	0-63	Date and time of last I/O status change
JXP1	29	0-63	Temporary storage word 2 for TRACEMP
JXP2	30	0-63	Temporary storage word 2 for TRACEMP
JXP3	31	0-63	Temporary storage word 3 for TRACEMP
JXNRR	32	0	Job rerun flag; set if job cannot be rerun

Field	Word	Bits	Description
JXTRM	32	1	Job in termination flag
JXSW	32	2-7	Sense switches
JXDMR	32	8	Don't-mark-recoverable flag - set when a request is made to declare a job non-recoverable; cleared when the job is connected.
JXIA	32	9	Interactive flag
JXLVL	32	10-12	Current procedure level
JXURLL	32	13	UROLL request indicator
JXURLM	32	14	System log message indicator
JXURUM	32	15	User log message indicator
JXAUT	32	16-39	Address of Active User Table (AUT) for interactive jobs
JXJTL	32	40-63	Length of the Job Table Area (JTA)

There are four temporary tables for displaying the name, SDT offsets, CPU priority, memory priority, and status for each job in the JXT. These tables, which will be removed when a complete job display is implemented, follow the JXT and precede the MST in memory. Each table consists of a single word for each JXT entry; in each table, the initial entry (for JXT ordinal zero) contains the table description is ASCII (that is, "NAME+SDO", "CPU PRI", "MEM PRI", or "STATUS").

The first table (job names and SDT ordinals) immediately follows the JXT. The SDT ordinal occupies the rightmost 8 bits of a word in this table. The remainder of the word is needed for the 7-character name.

The second and third tables (CUP and memory priorities) contain floating point values in ASCII to four decimal places. Entries in these tables are updated by the Job Scheduler at the end of each scheduling interval when the priorities are recomputed. However, if there are fewer than I@AGECP is zero, the CPU priority algorithm and is either 0 or 1. I@AGECP also is 0 or 1; if it is 0, aging of CPU priorities is disabled and the changing memory priorities are used instead.) Similarly, if there are no unsatisfied memory requests, the memory priorities are not recomputed.

The fourth table (job statuses) immediately precedes the MST. It contains copies of the JXSTCH and JXORD fields from the JXT. The appropriate entry is updated whenever the status of a job is changed by the Job Scheduler.

1.LC LINK CONFIGURATION TABLE - LCT

The Link Configuration Table resides in STP memory. It contains an entry for each physically connected front-end.

Figure 1.LC-1 illustrates the LCT format.

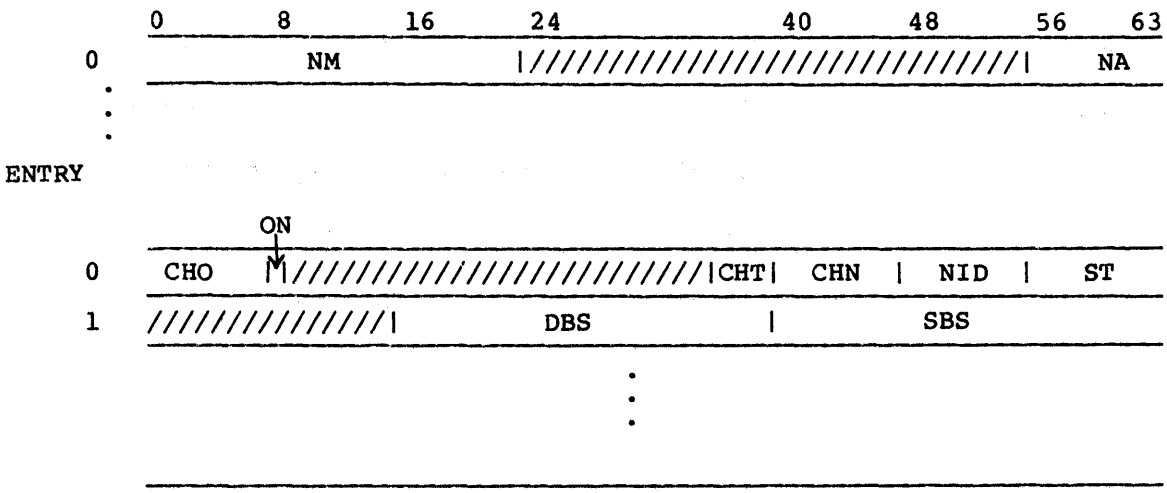


Figure 1.LC-1. Link Configuration Table (LCT)

HEADER

Field	Word	Bits	Description
LCNM	0	0-23	Table name; "LCT" in ASCII
LCNA	0	56-63	Number of active physical channels

ENTRY

Field	Word	Bits	Description
LCCHO	0	0-7	Channel ordinal (used with IOP)
LCON	0	8	Channel configured on flag
LCCHT	0	36-39	Channel type
LCCHN	0	40-47	Software channel pair number
LCNID	0	48-55	Number of logical IDs for channel
LCST	0	56-63	Number of streams per physical channel
LCDBS	1	16-39	Size of disk buffer
LCSBS	1	40-63	Maximum size of segment

1.LG LOG TABLES - LGI, LGR, LGUQ

1.LG.1 REQUEST WORD TO MSG - LGI

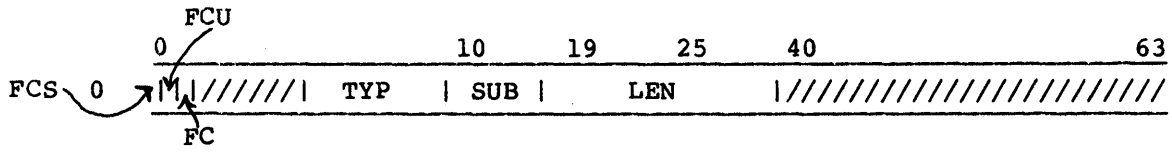


Figure 1.LG-1. Request word to MSG (LGI)

Field	Word	Bits	Description
LGIFCS	0	0	System log flag
LGIFCU	0	1	User log flag
LGIFC	0	2	Function code
LGITYP	0	10-18	Major type
LGISUB	0	19-24	Subtype
LGILEN	0	25-39	Length

1.LG.2 RECORD IN SYSTEM LOG - LGR

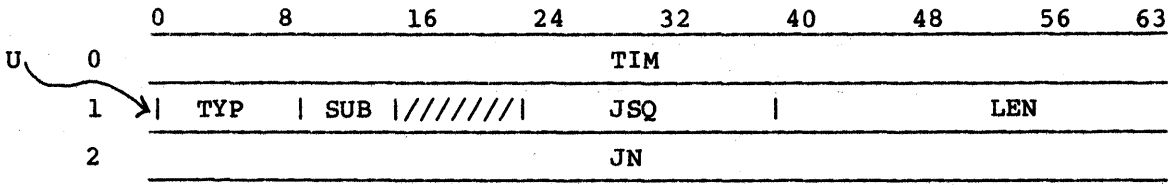


Figure 1.LG-2. Record in system log (LGR)

Field	Word	Bits	Description
LGRTIM	0	0-64	Time
LGRU	1	0	User flag; message also in $LOG
LGRTYP	1	1-9	Major type
LGRSUB	1	10-15	Subtype
LGRJSQ	1	24-39	Job sequence number, if associated with a job, otherwise 0
LGRLEN	1	40-63	Length
LGRJN	2	0-63	Jobname, if associated with a job

1.LG.3 RECORD IN MEMORY POOL

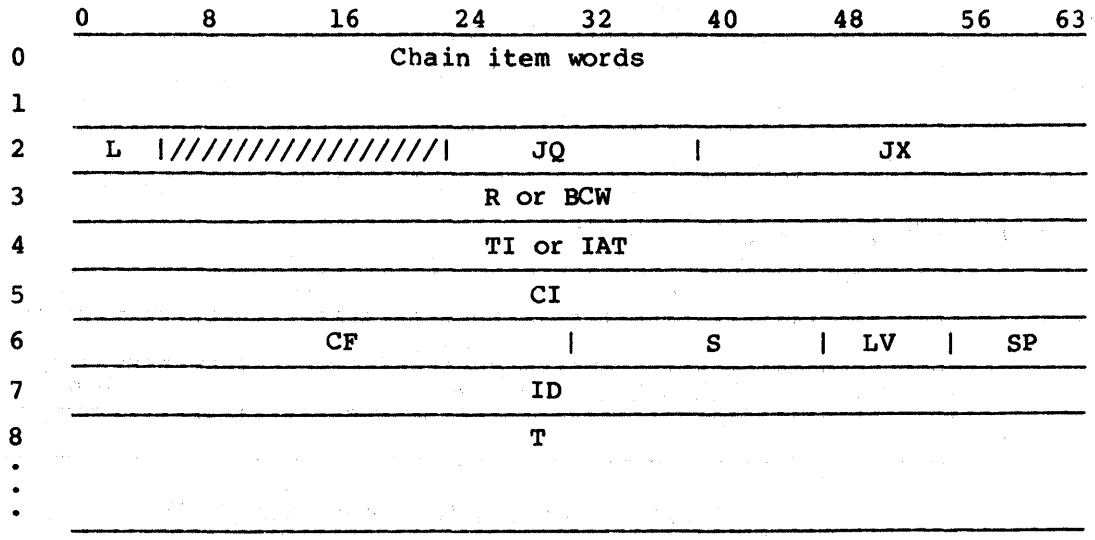


Figure 1.LG-3. $LOG Record in Memory Pool (LGUQ)

Field	Word	Bits	Description
LGUQL	2	0-5	Length of $LOG record
LGUQJQ	2	24-39	Job sequence number
LGUQJX	2	40-63	JXT address
LGUQR	3	0-63	Spaces
LGBCW	3	0-63	BCW for interactive message
LGUQTI	4	0-63	Time
LGIAT	4	0-63	Text area for interactive message
LGUQCI	5	0-63	CPU TIME (integer portion
LGUQCF	6	0-31	CPU time (fractional portion)
LGUQS	6	32-47	Two spaces
LGUQLV	6	48-55	Procedure level
LGUQSP	6	56-63	Spare space
LGUQID	7	0-63	Task ID
LGUQT	8-n	0-63	Message text

1.LG.4 LOG JXT TABLE - LGJ

The LGJ table contains a wone-word entry for each job having records placed in its user logfile ($LOG). The entries are in the same ordinal positions as their JXT entries.

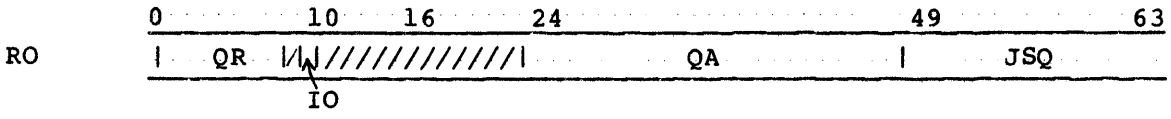


Figure 1.LG-4. $LOG Record in JXT Table (LGJ)

Field	Word	Bits	Description
LGJRO	0	0	Rollout flag - Log Manager tries to write message to this job while it was rolled out
LGJQR	0	1-8	Number of queue entries remaining
LGJIO	0	10	I/O busy flag
LGJQA	0	24-47	Address of queue entry
LGJJSQ	0	48-63	Job sequence number

1.LS LINK INTERFACE STREAM TABLE - LST

Eight input stream LSTs and eight output stream LSTs are contained within each LXT entry. Each LST is used only by the Station Call Processor and contains SCP working storage.

Figure 1.LS-1 illustrates an LST format.

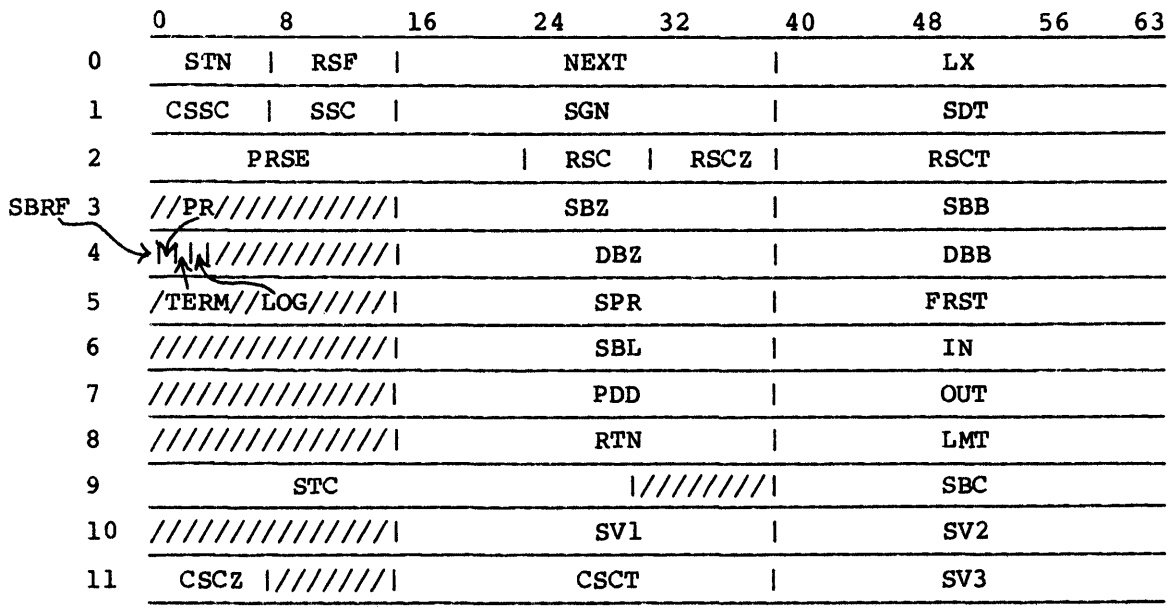


Figure 1.LS-1. Link Interface Stream Table (LST)

Field	Word	Bits	Description
LSSTN	0	0-7	Stream number
LSRSF	0	8-15	Right shift count
LSNEXT	0	16-39	Link to next LST
LSLX	0	40-63	Extension table address
LSCSSC	1	0-7	Current send stream control code
LSSSC	1	8-15	Next send stream control code
LSSGN	1	16-39	Segment number

Field	Word	Bits	Description
LSSDT	1	40-63	SDT address
LSPRSC	2	0-23	Process received stream control code
LSRSC	2	24-31	Received stream control code
LSRSCZ	2	32-39	Next received stream control code maximum value
LSRSCT	2	40-63	Next received stream control start
LSSBZ	3	16-39	Segment buffer size
LSSBB	3	40-63	Segment buffer base address
LSSBRF	4	0	Segment buffer ready
LSPR	4	1	Outstanding PUTREQ
LSTERM	4	2	Terminate for PPN, CAN, or MCL
LSLOG	4	3	LOGON received
LSDBZ	4	16-39	Disk buffer size
LSDBB	4	40-63	Disk buffer base address
LSSPR	5	16-39	Segment buffer pointer
LSFRST	5	40-63	Disk buffer "first" address
LSSBL	6	16-39	Segment buffer limit address
LSIN	6	40-63	Disk buffer "in" address
LSPDD	7	16-39	Pointer to PDD for steam request
LSOUT	7	40-63	Disk buffer "out" address
LSRTN	8	16-39	Return address for deferred processing
LSLMT	8	40-63	Disk buffer limit address
LSSTC	9	0-30	Send stream transmission word count
LSSBC	9	40-63	Segment bit count

Field	Word	Bits	Description
LSSV1	10	16-39	Save A1 = LIT for common reply
LSSV2	10	40-63	Save A2 = LXT for common reply
LSCSCZ	11	0-7	Current steam control code maximum
LSCSCT	11	16-39	Current steam control code table
LSSV3	11	40-63	Save A3 = LST for common reply

1.LT LINK INTERFACE TABLE - LIT

The Link Interface Table is STP resident. It is used by both the Station Call Processor and EXEC and contains SCP-EXEC communication areas, working storage, and channel buffers. An LIT entry is assigned by SCP at deadstart to each channel which is to be used by SCP for link interface communications.

Figure 1.LT-1 illustrates the LIT.

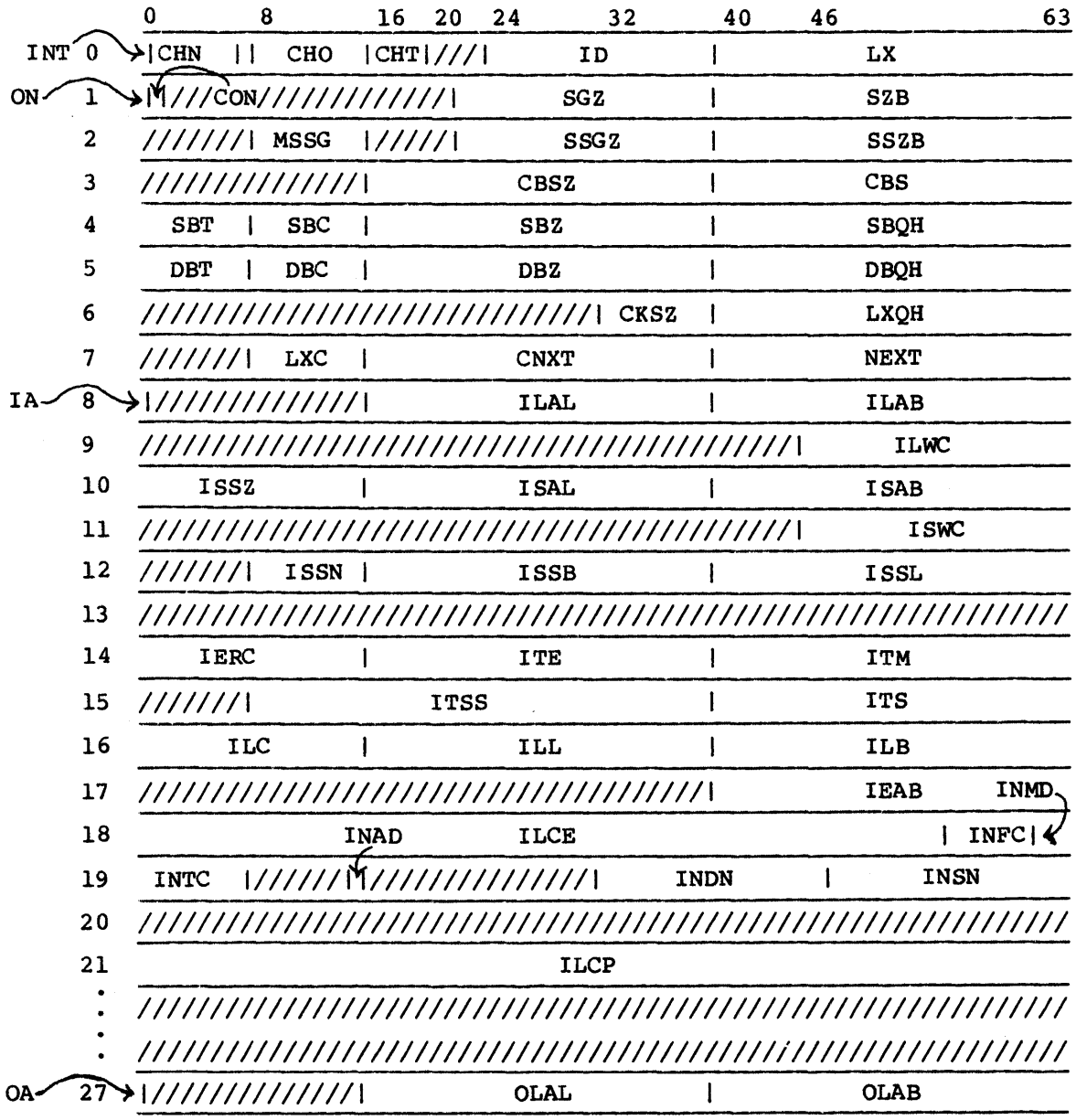


Figure 1.LT-1. Link Interface Table (LIT)

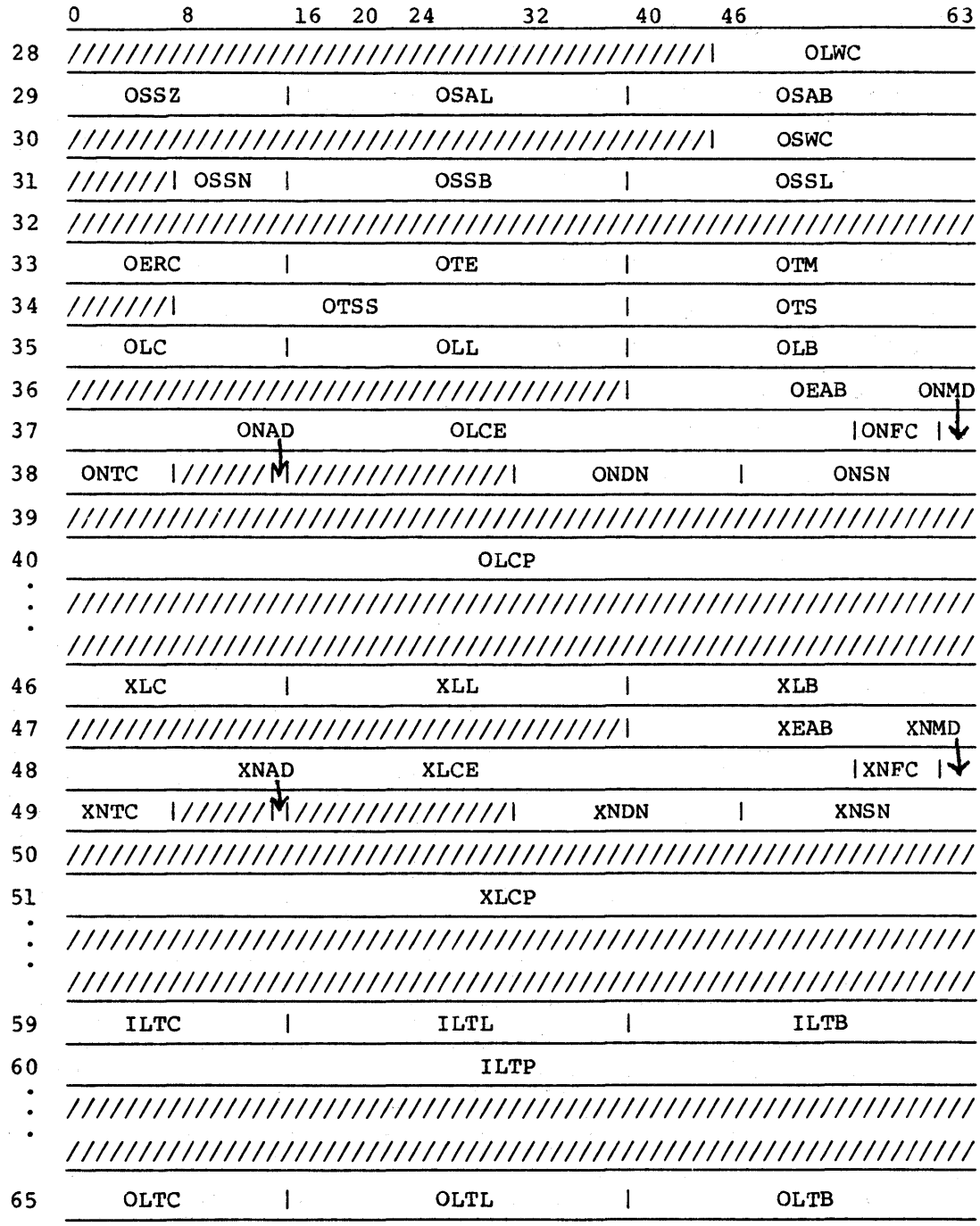


Figure 1.LT-1. Link Interface Table (LIT) (continued)

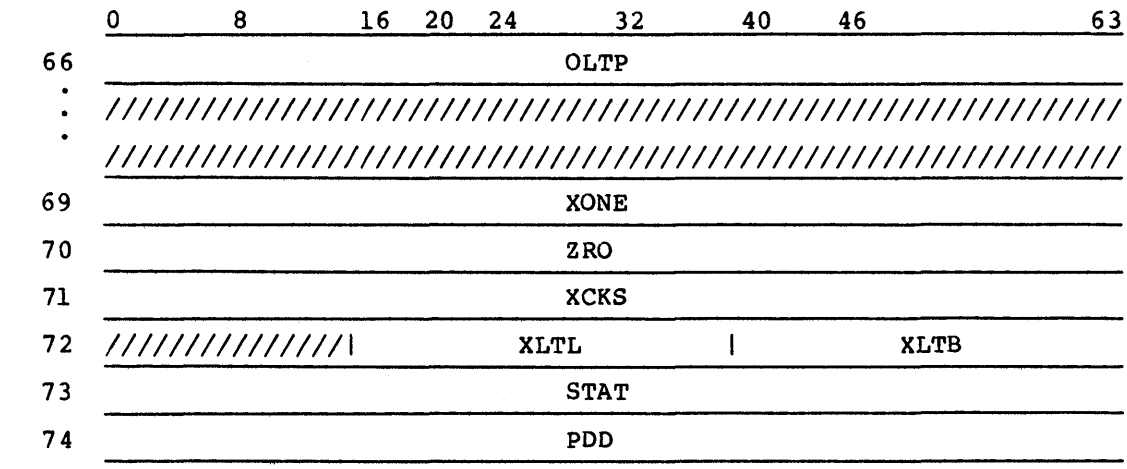


Figure 1.LT-1. Link Interface Table (LIT) (continued)

Field	Word	Bits	Description
LTINT	0	0	Channel interrupt flag. Set by EXEC upon completion of O/I, cleared by SCP.
LTCHN	0	1-6	Channel pair number (input channel number divided by 2). (SCP)
LTCHO	0	8-15	Channel ordinal (used with IOP)
LTCHT	0	16-19	Channel type (copied from LCCHT at deadstart) 0 Standard channel 1 NSC hyperchannel
LTLID	0	24-39	Link ID (SCP)
LTLX	0	40-63	Extension table address (SCP)
LTON	1	0	Link on flag
LTCON	1	1	Channel on flag. Set by SCP when channel is turned on. Cleared by EXEC
LTSGZ	1	22-39	Segment size in words (SCP)
LTSZB	1	40-63	Segment size in bits (SCP)
LTMSSG	2	8-15	Maximum number of subsegments in a segment (SCP)

Field	Word	Bits	Description
LTSSGZ	2	22-39	Subsegment size in words (SCP)
LTSSZB	2	40-63	Subsegment size in bits (SCP)
LTCBSZ	3	16-39	Channel buffer space size (SCP)
LTCBS	3	40-63	Channel buffer space base address (SCP)
LTSBT	4	0-7	Total segment buffer count
LTSBC	4	8-15	Free segment buffer count
LTSBZ	4	16-39	Segment buffer size in words (SCP)
LTSBQH	4	40-63	Segment buffer queue head (SCP)
LTDBT	5	0-7	Total disk buffer count
LTDBC	5	8-15	Free disk buffer count
LTDBZ	5	16-39	Disk buffer size in words (SCP)
LTDBQH	5	40-63	Disk buffer queue head (SCP)
LTCKSZ	6	32-39	Checksum width
LTLXQH	6	40-63	Extension table queue head address
LTLXC	7	8-15	Extension table entry count
LTCNXT	7	16-39	Link to first active extension table (SCP)
LTNEXT	7	40-63	Link to next LIT entry (SCP)
LTIA	8	0	Input active flag (EXEC)
LTILAL	8	16-39	Input LCP absolute limit address (SCP)
LTILAB	8	40-63	Input LCP absolute base address (SCP)
LTILWC	9	46-63	Input LCP word count (EXEC)
LTISSZ	10	0-15	Input subsegment size in words (SCP)
LTISAL	10	16-39	Input segment absolute limit address (LCP)
LTISAB	10	40-63	Input segment absolute base address (LCP)

Field	Word	Bits	Description
LTISWC	11	46-63	Input segment word count (EXEC)
LTISSN	12	8-15	Current input subsegment number (EXEC)
LTISSB	12	16-39	Input subsegment base address (EXEC)
LTISSL	12	40-63	Input subsegment limit address (EXEC)
LTIERC	14	0-15	Input error retry count (EXEC)
LTITE	14	16-39	Input total error message count (EXEC)
LTITM	14	40-63	Input total non-error message count (EXEC)
LTITSS	15	8-39	Input total subsegments count (EXEC)
LTITS	15	40-63	Input total segments count (EXEC)
LTILC	16	0-15	Input LCP buffer word count (SCP)
LTILL	16	16-39	Input LCP buffer limit address (SCP)
LTILB	16	40-63	Input LCP buffer base address (SCP)
LTIEAB	17	40-63	Input LCP extension absolute base address (SCP)
LTILCE	18	0-55	Input LCP extension buffer (EXEC)
LTINFC	18	56-61	Input LCPE function code
LTINMD	18	62-63	Input LCPE mode (EXEC)
LTINTC	19	0-7	Input LCPE network trunk control (EXEC)
LTINAD	19	15	Input LCPE associated data flag (EXEC)
LTINDN	19	32-47	Input LCPE destination (EXEC)
LTINSN	19	48-63	Input LCPE source number (EXEC)
LTILCP	21	0-63	Input LCP buffer area (SCP)
LTOA	27	0	Output active flag (EXEC)
LTOLAL	27	16-39	Output LCP absolute limit address (SCP)
LTOLAB	27	40-63	Output LCP absolute base address (SCP)

Field	Word	Bits	Description
LTOLWC	28	46-63	Output LCP word count (SCP)
LTOSSZ	29	0-15	Output subsegment size in words (SCP)
LTOSAL	29	16-39	Output segment absolute limit address (SCP)
LTOSAB	29	40-63	Output segment absolute base address (SCP)
LTOSWC	30	46-63	Output segment word count (SCP)
LTOSSN	31	8-15	Current output subsegment number (EXEC)
LTOSSB	31	16-39	Output subsegment base address (EXEC)
LTOSSL	31	40-63	Output subsegment limit address (EXEC)
LTOERC	33	0-15	Output error retry count (EXEC)
LTOTE	33	16-39	Output total error message count (EXEC)
LTOTM	33	40-63	Output total non-error message count (EXEC)
LTOTSS	34	8-39	Output total subsegments count (EXEC)
LTOTS	34	40-63	Output total segments count (EXEC)
LTOLC	35	0-15	Output LCP buffer word count (SCP)
LTOLL	35	16-39	Output LCP buffer limit address (SCP)
LTOLB	35	40-63	Output LCP buffer base address (SCP)
LTOEAB	36	40-63	Output LCP extension absolute base address (SCP)
LTOLCE	37	0-55	Output LCP extension buffer (EXEC)
LTONFC	37	56-61	Output LCPE function code (EXEC)
LTONMD	37	62-63	Output LCPE Mode Exec
LTONTC	38	0-7	Output LCPE network trunk control (EXEC)
LTONAD	38	15	Output LCPE network associated data
LTONDN	38	32-47	Output LCPE network destination (EXEC)
LTONSN	38	48-63	Output LCPE network source number (EXEC)

Field	Word	Bits	Description
LTOLCP	40	0-63	Output LCP buffer area (SCP)
LTXLC	46	0-15	Output LCP buffer word count (EXEC)
LTXLL	46	16-39	Output LCP buffer limit address (EXEC)
LTXLB	46	40-63	Output LCP buffer base address (EXEC)
LTXEAB	47	40-63	Error LCP extension absolute base address (SCP)
LTXLCE	48	0-55	Error LCP extension buffer (EXEC)
LTXNFC	48	56-61	Error LCPE function code (EXEC)
LTXNMD	48	62-63	Error LCPE Mode Exec
LTXNTC	49	0-7	Error LCPE network trunk control (EXEC)
LTXNAD	49	15	Error LCPE network associated data
LTXNDN	49	32-47	Error LCPE network destination (EXEC)
LTXNSN	49	48-63	Error LCPE network source number (EXEC)
LTXLCP	51	0-63	Error LCP buffer area (EXEC)
LTILTC	59	0-15	Input LTP buffer word count (SCP)
LTILTL	59	16-39	Input LTP buffer limit address (SCP)
LTILTB	59	40-63	Input LTP buffer base address (SCP)
LTILTP	60	0-63	Input LTP buffer area (SCP)
LTOLTC	65	0-15	Output LTP buffer word count (SCP)
LTOLTL	65	16-39	Output LTP buffer limit address (SCP)
LTOLTB	65	40-63	Output LTP buffer base address (SCP)
LTOLTP	66	0-63	Output LTP buffer area (SCP)
LTXONE	69	0-63	Error - all ones pattern
LTZRO	70	0-63	Error - all zeros pattern
LTXCKS	71	0-63	Error - checksum

Field	Word	Bits	Description
LTXLTL	72	16-39	Error - LTP limit address
LTXLTB	72	40-63	Error - LTP base address
LTSTAT	73	0-63	Hyperchannel status word (EXEC)
LTPDD	74	0-63	Channel PDD table (SCP)

1.LX LINK INTERFACE EXTENSION TABLE - LXT

The Link Interface Extension Table is STP resident. It is used only by the Station Call Processor and contains SCP working storage. Also contained in each LXT entry are eight input stream LSTs and eight output stream LSTs. An LXT entry is assigned to an active LIT entry for each front-end ID at LOGON and deassigned at LOGOFF.

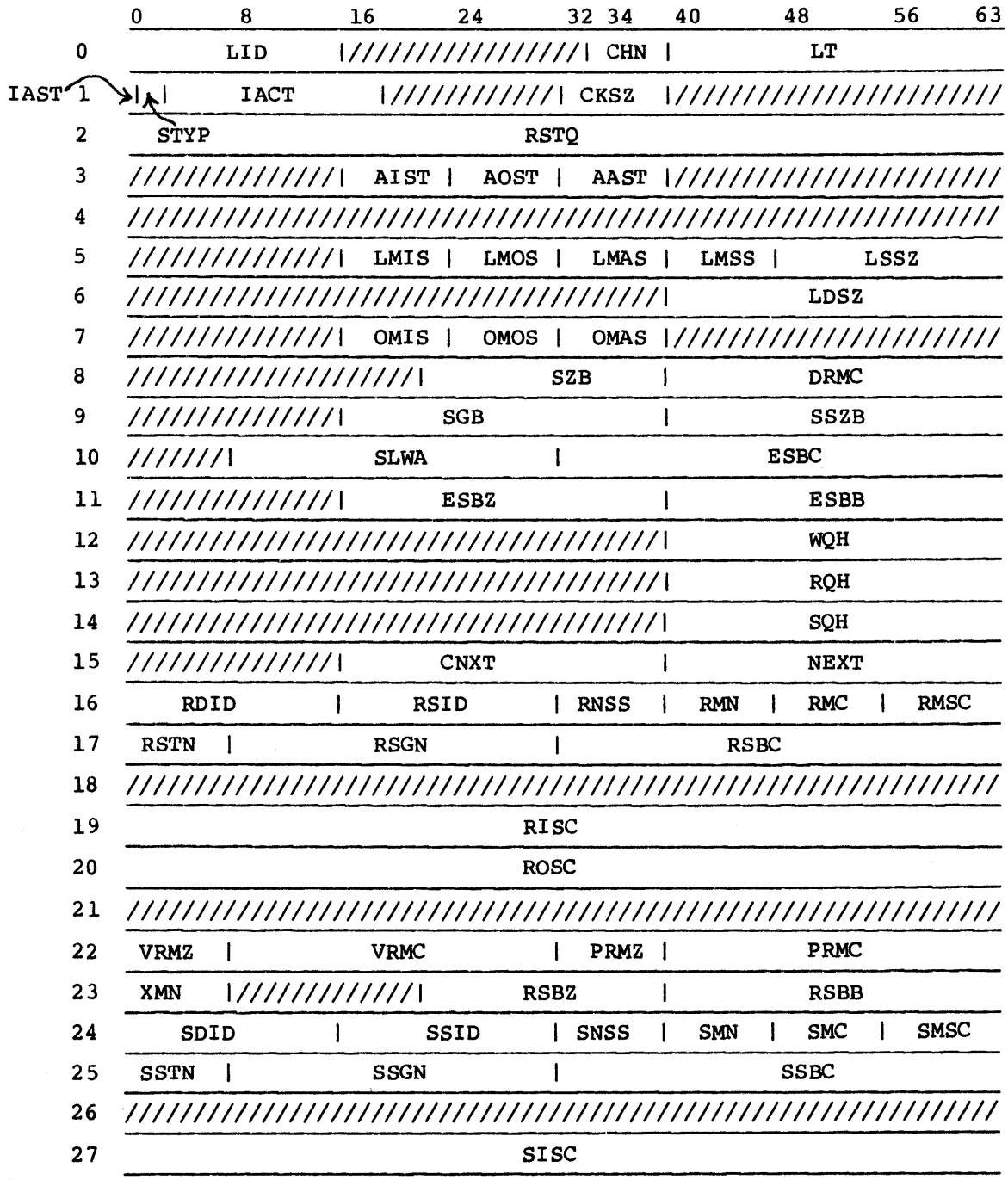


Figure 1.LX-1. Link Interface Extension Table (LXT)

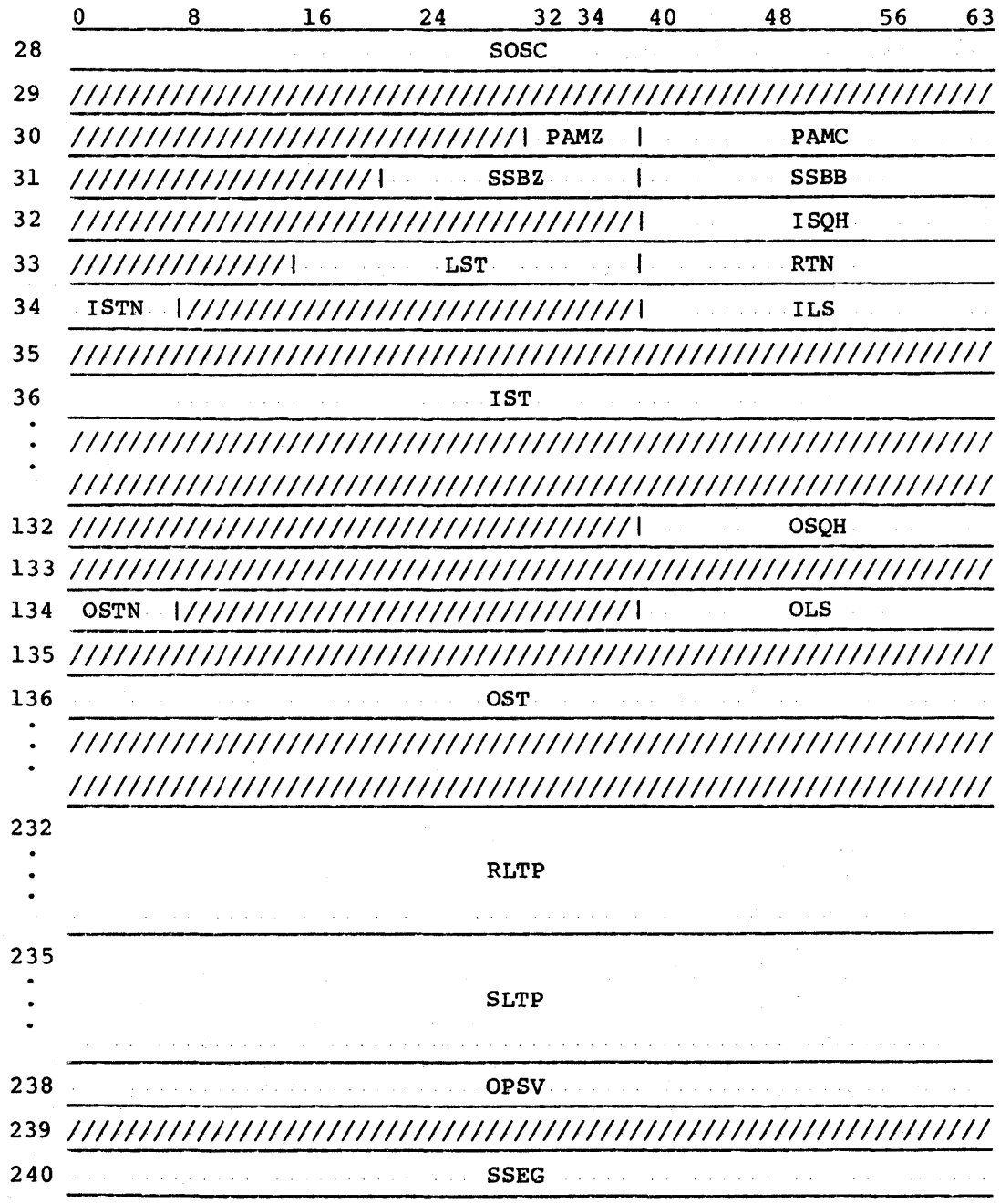


Figure 1.LX-1. Link Interface Extension Table (LXT) (continued)

Field	Word	Bits	Description
LXLID	0	0-15	Link ID
LXCHN	0	34-39	Channel pair number
LXLT	0	40-63	LIT address
LXIAST	1	0	Interactive request received flag
LXSTYP	1	1-2	Station Type 0 Batch only 1 Interactive only 2 Both
LXIACT	1	3-18	Interactive message count
LXCKSZ	1	32-39	Checksum width (0, 8, 16, 32, or 64)
LXRSTQ	2	0-63	Interactive restart Q control word
LXNRM	2	0-15	Number of messages
LXRSQT	2	32-47	Q Tail
LXRSQH	2	48-63	Q Head
LXAIST	3	16-23	Current active input streams
LXAOST	3	24-31	Current active output streams
LXAAST	3	32-39	Current total active streams
LXLMIS	5	16-23	Logon maximum active input streams
LXLMOS	5	24-31	Logon maximum active output streams
LXLMAS	5	32-39	Logon maximum total active streams
LXLMSS	5	40-47	Logon maximum subsegments
LXLSSZ	5	48-63	Logon subsegment size
LXLDSZ	6	40-63	Maximum output dataset size (in 512-word blocks)
LXOMIS	7	16-23	Operator maximum active input streams
LXOMOS	7	24-31	Operator maximum active output streams
LXOMAS	7	32-39	Operator maximum total active streams

Field	Word	Bits	Description
LXSGZ	8	22-39	Segment size in words
LXDRMC	8	40-63	Deferred received message code
LXSZB	9	16-39	Segment size in bits
LXSSZB	9	40-63	Subsegment size in bits
LXSLWA	10	8-31	LWA+1 of segment
LXESBC	10	32-63	Diagnostic echo segment bit count
LXESBZ	11	16-39	Diagnostic echo segment size
LXESBB	11	40-63	Diagnostic echo segment address
LXWQH	12	40-63	Waiting SDT queue head address
LXRQH	13	40-63	Receiving SDT queue head address
LXSQH	14	40-63	Sending SDT queue head address
LXCNXT	15	16-39	Link to next active LXT entry for this channel
LXNEXT	15	40-63	Link to next available or active LXT entry
LXRDID	16	0-15	Received destination identifier
LXRSID	16	16-31	Received source identifier
LXRNSS	16	32-39	Received number of subsegments
LXRMN	16	40-47	Received message number
LXRMC	16	48-55	Received message code
LXRMSC	16	56-63	Received message subcode
LXRSTN	17	0-7	Received stream number
LXRSGN	17	8-31	Received segment number
LXRSBC	17	32-63	Received segment bit count
LXRISC	19	0-63	Received input stream control bytes

Field	Word	Bits	Description
LXROSC	20	0-63	Received output stream control bytes
LXVRMZ	22	0-7	Verify received message code maximum value
LXVRMC	22	8-31	Verify received message code table address
LXPRMZ	22	32-39	Process received message code maximum value
LXPRMC	22	40-63	Process received message code table address
LXXMN	23	0-7	Expected message number
LXRSBZ	23	22-39	Received segment buffer size
LXRSBB	23	40-63	Received segment buffer base address
LXSDID	24	0-15	Send destination identifier
LXSSID	24	16-31	Send source identifier
LXSNSS	24	32-39	Send number of subsegments
LXSMN	24	40-47	Send message number
LXSMC	24	48-55	Send message code
LXSMSC	24	56-63	Send message subcode
LXSSTN	25	0-7	Send stream number
LXSSGN	25	8-31	Send segment number
LXSSBC	25	32-63	Send segment bit count
LXSISC	27	0-63	Send input stream control bytes
LXSOSC	28	0-63	Send output stream control bytes
LXPAMZ	30	32-39	Process acknowledged message code maximum value
LXPAMC	30	40-63	Process acknowledged message code table
LXSSBZ	31	22-39	Send segment buffer size

Field	Word	Bits	Description
LXSSBB	31	40-63	Send segment buffer base address
LXISQH	32	40-63	Input LST queue head address
LXLST	33	16-39	Pointer to active LST address
LXRTN	33	40-63	Return address for active LST
LXISTN	34	0-7	Input stream number
LXILS	34	40-63	Input stream LST address
LXIST	36	0-63	Input LST table
LXOSQH	132	40-63	Output LST queue head address
LXOSTN	134	0-7	Output stream number
LXOLS	134	40-63	Output stream LST address
LXOST	136	0-63	Output LST table
LXRLTP	232-234	0-63	Receive - LTP
LXRONE	232	0-63	Receive - all ones pattern
LXRZRO	233	0-63	Receive - all zeros pattern
LXRCKS	234	0-63	Receive - checksum
LXSLTP	235-237	0-63	Send - LTP
LXSONE	235	0-63	Send - all ones pattern
LXSZRO	236	0-63	Send - all zeros pattern
LXSCKS	237	0-63	Send - checksum
LXOPSV	238	0-63	Save area for op requests
LXSSEG	240	0-63	"Special protocol" segment

1.MP MEMORY POOL - MP

Memory pool areas are surrounded by header and trailer words that control the allocation and deallocation of the areas. A memory pool is depicted in figure 1.MP-1.

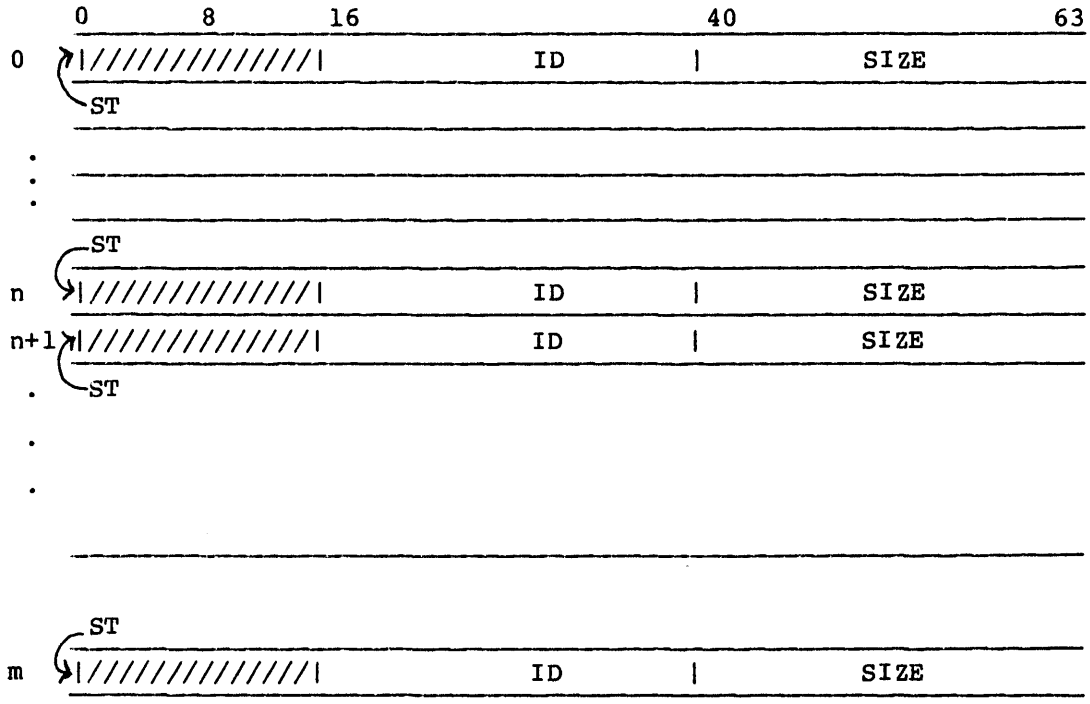


Figure 1.MP-1. Memory Pool

Field	Word	Bits	Description
MPST	0,n,etc.	0	Status of the memory area: 0 Available 1 In use
MPID	0,n,etc.	16-39	Memory pool identification: 01010101 Pool 1 0x0x0x0x Pool x
MPSIZE	0,n,etc.	40-63	Size of the memory pool

1.MS MEMORY SEGMENT TABLE - MST

The MST in STP memory contains a one-word entry for each segment of memory that has been allocated by the Job Scheduler plus additional entries that describe free segments. MST entries are stored in ascending order according to the beginning address of the segment (MSADDR). Any free space between two allocated segments is consolidated and is represented by a single entry stored in the MST between entries for the two allocated segments. The last entry in the table is always followed by a zero word. To provide for the case where every allocated segment is surrounded by free segments, the MST must have twice as many words in it as the maximum number of allocated segments, plus two more.

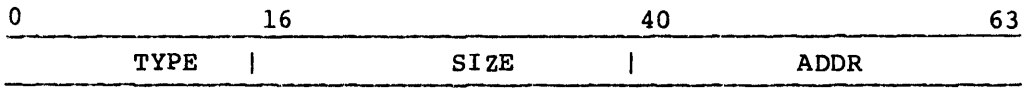


Figure 1.MS-1. Memory Segment Table (MST) entry

Field	Word	Bits	Description
MSTYPE	0	0-15	Contains 0 if the segment is free; otherwise, it contains the JXT ordinal of the job to which the segment is allocated.
MSSIZE	0	16-39	Number of words in the segment. This is always a multiple of 1000_8.
MSADDR	0	40-63	STP-relative address of the first word in the segment. This is always a multiple of 1000_8.

1.PD PERMANENT DATASET TABLE - PDS

The PDS in STP resident contains an entry for each active permanent dataset. A PDS entry indicates how a dataset is accessed and, if multiple access exists, how many users are accessing the dataset.

The PDS is used to control the release of DAT entries for permanent datasets. Figure 1.PD-1 illustrates the PDS.

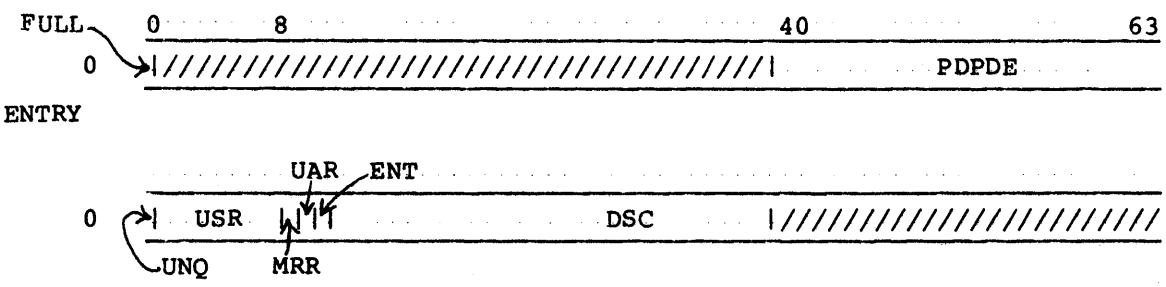


Figure 1.PD-1. Permanent Dataset Table (PDS)

HEADER

Field	Word	Bits	Description
PDFULL	0	0	PDS full indicator; i.e., datasets currently being accessed
PDPDE	0	40-63	Number of permanent datasets currently being accessed; i.e., number of entries in table

ENTRY

Field	Word	Bits	Description
PDUNQ	0	0	Unique access flag
PDUSR	0	1-8	Number of users currently accessing dataset
PDMRR	0	9	Multiread access requested
PDUAR	0	10	Unique access requested
PDENT	0	11	System directory flag

ENTRY (continued)

Field	Word	Bits	Description
PDDSC	0	12-39	Dataset Catalog pointer
PDDCP	0	12-35	DSC page number
PDDCE	0	36-39	DSC entry number

1.PI PERMANENT DATASET INFORMATION TABLE - PDI

The PDI (figure 1.PI-1) is a 1-word STP-resident table generated during system startup for use by the permanent dataset manager.

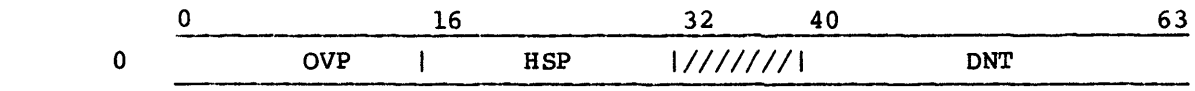


Figure 1.PI-1. Permanent Dataset Information Table (PDI)

Field	Word	Bits	Description
PIOVP	0	0-15	Number of overflow pages
PIHSP	0	16-31	Number of hash pages
PIDNT	0	40-63	DNT for DSC

1.PM PERMANENT DATASET DEFINITION - PDD

A PDD is a parameter list that accompanies a Permanent Dataset Management request.

The PDD illustrated in figure 1.PM-1 is used for save, save input, save output, access, access spooled, load, load input, load output, and PDN requests.

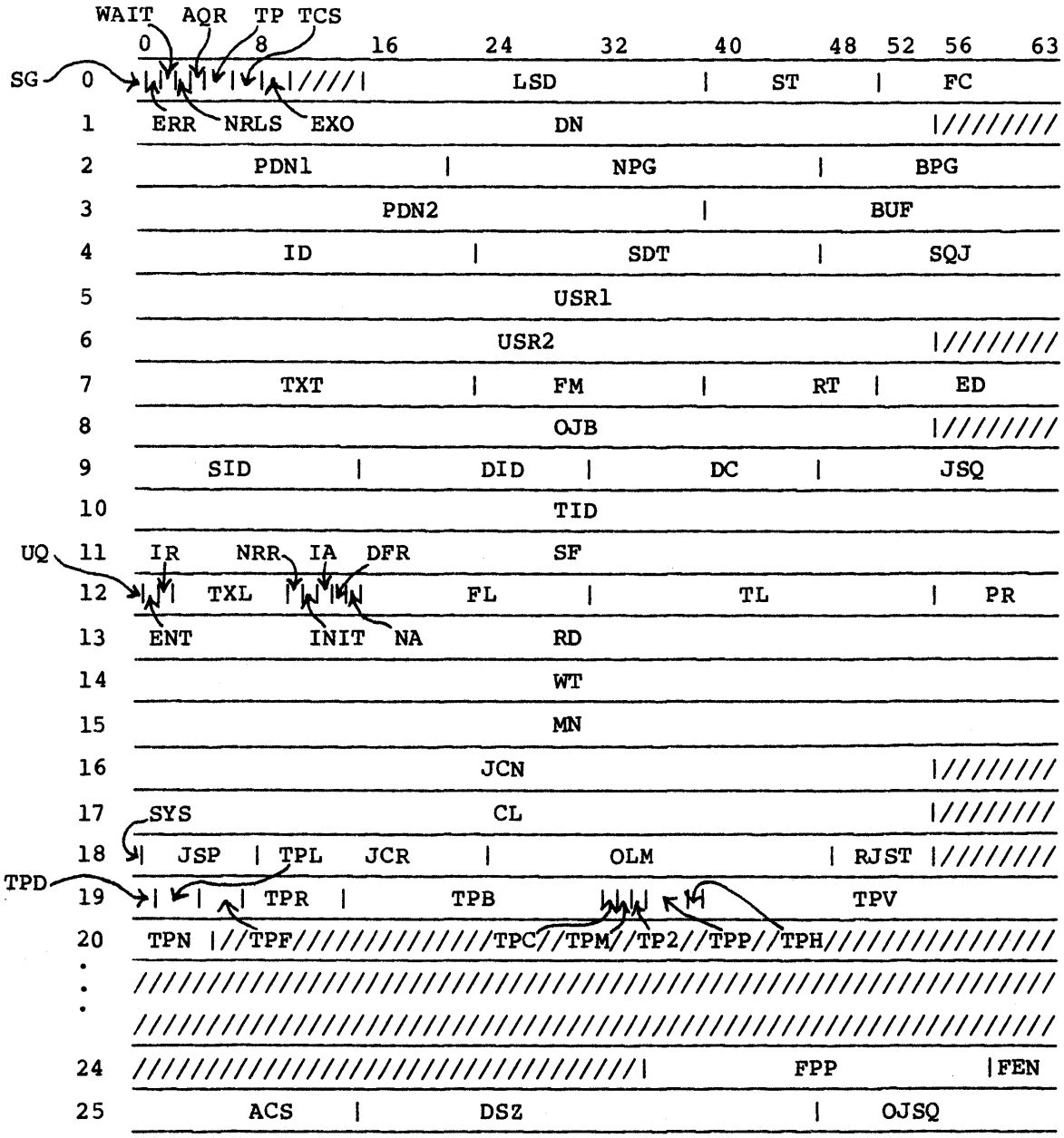


Figure 1.PM-1. PDD Format

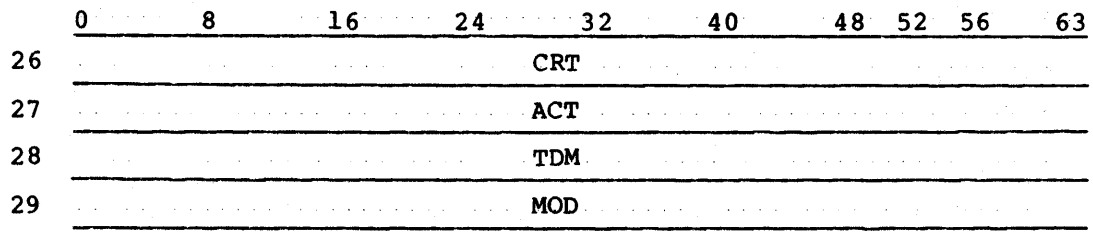


Figure 1.PM-1. PDD Format (continued)

Field	Word	Bits	Description
PMSG	0	0	Normal completion message suppression indicator
PMERR	0	1	Error message suppression indicator
PMWAIT	0	2	WAIT flag for a disposed dataset
PMNRLS	0	3	No release of dataset on DISPOSE
PMAQR	0	4	Acquire flag for accounting
PMTP	0	5-6	Tape dataset (online/staged)
PMTCS	0	7-8	Tape dataset character set
PMEXO	0	9-10	Execute only
PMLSD	0	16-39	Temporary SDT address for load input/output
PMST	0	40-51	Return status
PMFC	0	52-63	Function code (table 1.PM-1)
PMDN	1	0-55	Local dataset name
PMPDN1	2	0-31	Permanent dataset name; characters 1-8
PMNPG	2	32-47	Number of pages
PMBPG	2	48-63	Beginning page number
PMPDN2	3	0-39	Permanent dataset name; characters 9-15
PMBUF	3	40-63	Buffer address

Field	Word	Bits	Description
PMID	4	0-47	User identification
PMSQJ	4	48-63	Job sequence number for SDT requests
PMUSR1	5	0-63	User number; characters 1-8
PMUSR2	6	0-56	User number; characters 9-15
PMTXT	7	0-23	Address of optional text field
PMFM	7	24-39	Format designator; FMCD=CD Character/deblocked FMCB=CB Character/blocked FMBD=BD Binary/deblocked FMBB=BB Binary/blocked
PMRT	7	40-51	Retention period; 0-4095 days
PMED	7	52-63	Edition number (0-4095)
PMOJB	8	0-55	Originating job name
PMSID	9	0-15	Source ID; 2 characters
PMDID	9	16-31	Destination ID; 2 characters
PMDC	9	32-47	Disposition code; 2 characters DCIN=IN Job dataset DCST=ST Dataset to be staged DCSC=SC Scratch dataset DCPR=PR Print dataset DCPU=PU Punch dataset DCPT=PT Plot dataset DCMT=MT Magnetic tape dataset
PMJSQ	9	48-63	Job sequence number
PMTID	10	0-63	Terminal ID: 1-8 characters
PMSF	11	0-63	Special forms
PMUQ	12	0	Unique access required
PMENT	12	1	Enter in System Directory

Field	Word	Bits	Description
PMIR	12	2	Immediate reply requested
PMTXL	12	3-10	Number of words of text
PMNRR	12	11	Job rerun flag; set if job cannot be rerun (input entries only)
PMINIT	12	12	Job initiate flag; set if job has been initiated
PMIA	12	13	Interactive flag
PMDFR	12	14	Deferred disposition indicator
PMNA	12	15	No abort flag. If set, processing will continue even if an error is encountered.
PMFL	12	16-31	Field length/512 (input datasets only)
PMTL	12	32-55	Time limit (input datasets)
PMPR	12	56-63	Priority (input datasets)
PMRD	13	0-63	Read permission control word
PMWT	14	0-63	Write permission control word
PMMN	15	0-63	Maintenance permission control word
PMJCN	16	0-55	Job class name
PMCL	17	0-55	CL parameter from JOB statement
PMSYS	18	0	System job
PMJSP	18	1-8	JOB statement priority
PMJCR	18	9-24	Job class rank
PMOLM	18	25-48	Size of $OUT in 512-word block
PMRJST	18	49-55	Job status flag
PMTPD	19	0-1	Tape density
PMTPL	19	2-4	Tape label type

Field	Word	Bits	Description
PMTPF	19	5-6	Tape format
PMTPR	19	7-14	Tape recovery options
PMTPB	19	15-32	Tape maximum block size in bytes
PMTPC	19	33	Tape cataloged dataset
PMTPM	19	34	Tape online maintenance access
PMTP2	19	35	Tape second device request
PMTPP	19	36-38	Tape parallel device count
PMTPH	19	39	Tape hold device assignment
PMTPV	19	40-63	Tape pointer to label definition table
PMTPN	20	0-5	Tape noise block size in bytes
PMFPE	24	36-63	First DSC page/entry for dataset
PMFPP	24	36-59	First DSC page for dataset
PMFEN	24	60-63	First entry for dataset
PMACS	25	0-15	Number of accesses (load saved datasets only)
PMDSZ	25	16-47	Size of dataset as reflected by DSC DAT bodies (used only when a pseudo access is performed during the recovery of rolled jobs)
PMOJSQ	25	48-63	Originating job sequence number
PMCRT	26	0-63	Creation time in cycles (load request only)
PMACT	27	0-63	Time of last access in cycles (load request only)
PMTDM	28	0-63	Time of last dump in cycles (load request only)
PMMOD	29	0-63	Time of last modification in cycles (load request only)

1.PR PROCEDURE FILE STACK TABLE

The Procedure File Stack Table is JTA-resident and serves as a stack for the nesting of control statement datasets. The F$PRC and F$RTN calls add entries to and delete them from this stack.

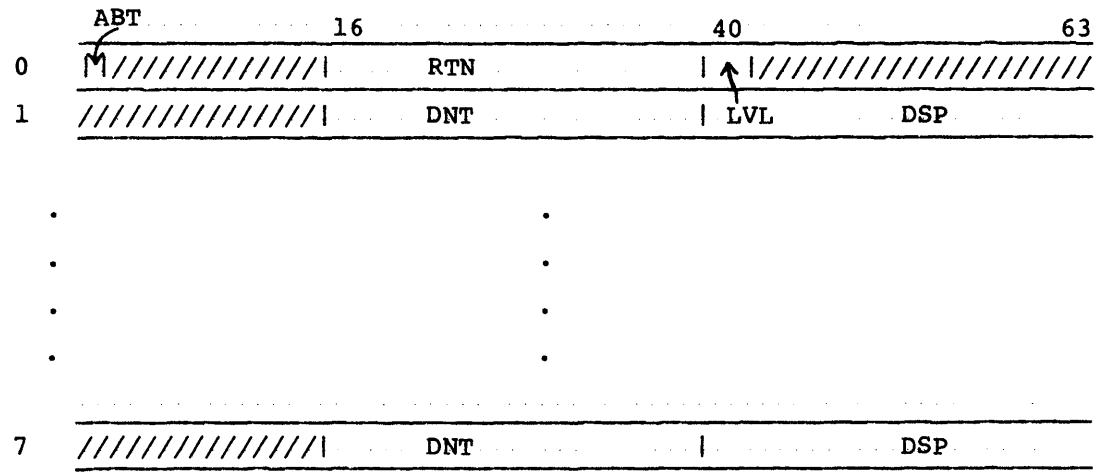


Figure 1.PR-1. Procedure File Stack Table

Field	Word	Bits	Description
PRABT	0	1	RTN abort flag
PRRTN	0	16-39	RTN return address
PRLVL	0	40-42	Current stack level (0-7)
PRDNT	1-7	16-39	$CS DNT address (STP relative)
PRDSP	1-7	40-63	$CS JTA save area address (STP relative)

1.PT POOL TABLE - PT

The Pool Table is an STP-resident table used for memory pool management. It is illustrated in figure 1.PT-1.

HEADER

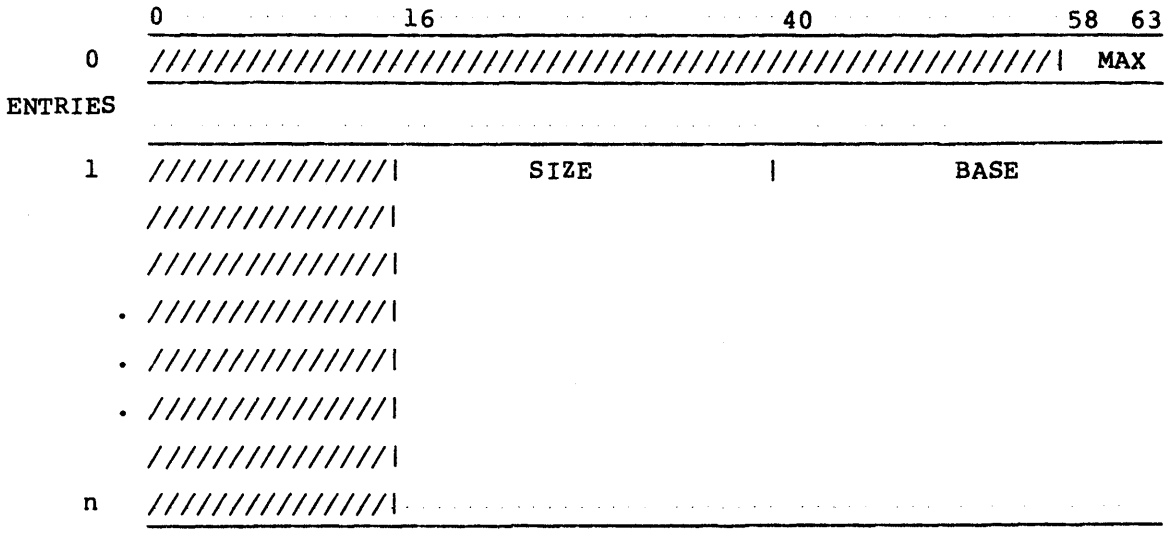


Figure 1.PT-1. Pool Table

HEADER

Field	Word	Bits	Description
PTMAX	0	58-63	Maximum valid memory pool number in system

ENTRY

Field	Word	Bits	Description
PTSIZE	1-n	16-39	Size of the memory pool
PTBASE	1-n	40-63	Base address of the memory pool

1.PU PHYSICAL UNIT TABLE - PUT

This EXEC-resident table is used for working storage by the disk driver. There is one entry for each disk drive in the system. The PUT is illustrated in figure 1.PU-1.

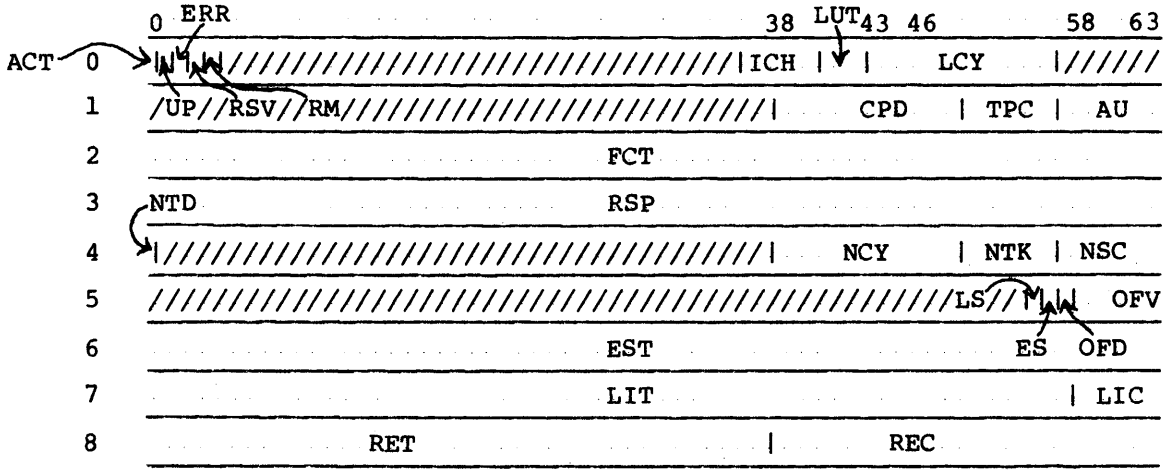


Figure 1.PU-1. Physical Unit Table (PUT)

Field	Word	Bits	Description
PUACT	0	0	Disk active flag
PUUP	0	1	Unit up
PUERR	0	2	Error
PURSV	0	3	Unit reserved
PURM	0	4	Recovery mode
PUICH	0	38-42	Input channel number
PULUT	0	43-45	Last unit number
PULCY	0	46-57	Last cylinder
PUCPD	1	40-51	Cylinders per disk
PUTPC	1	52-57	Tracks per cylinder
PUAU	1	58-63	Blocks per allocation unit (sectors per track)

Field	Word	Bits	Description
PUFCT	2	0-63	Last function
PURSP	3	0-63	Last response
PUNTD	4	0	Next transfer direction
PUNCY	4	40-51	Next cylinder
PUNTK	4	52-57	Next track
PUNSC	4	58-63	Next sector
PULS	5	56	Last margin late strobe flag
PUES	5	57	Last margin early strobe flag
PUOFD	5	58	Last margin offset direction
PUOFV	5	59-63	Last margin offset value
PUEST	6	0-63	Edited status
PUERRE	6	1	Error flag
PUCEF	6	2	Channel error flag encountered
PULSS	6	16-39	Subsystem status, last retry
PUFSS	6	40-63	Subsystem status, first error
PULIT	7	0-58	Estimated latest time of last function completion for lost-interrupt detection
PULIC	7	59-63	Hardware input channel number
PURET	8	0-39	Time of last retry
PUREC	8	40-63	Retry count

1.QC QUEUE CONTROL TABLE - QCT

This table is resident in both STP and EXEC. It is used by the general queue management routines CLRQ, ENQ, and DEQ.

HEADER

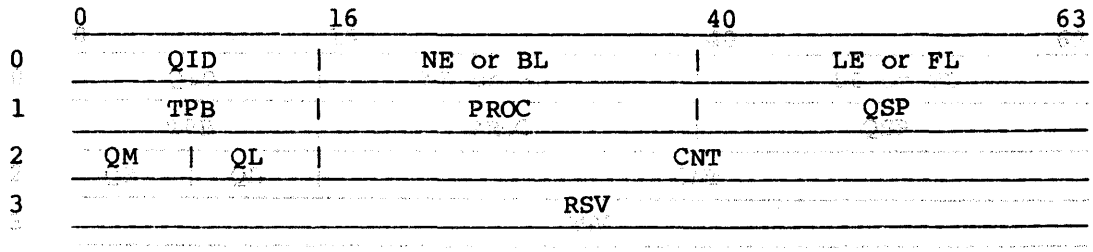


Figure 1.QC-1. Queue Control Table header (QCT)

ENTRY

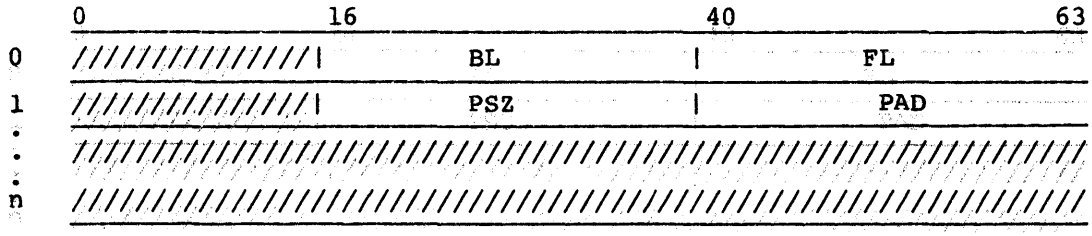


Figure 1.QC-2. Queue Control Table entry

HEADER

Field	Word	Bits	Description
QCQID	0	0-15	Queue ID (2 ASCII characters)
QCNE	0	16-39	Initial number of entries in queue
QCBL	0	16-39	Backward link
QCLE	0	40-63	Initial length of each queue entry
QCFL	0	40-63	Forward link
QCTPB	1	0-15	Task parameter block address
QCPROC	1	16-39	Queue processor address

QCQSP	1	40-63	External queue status pointer (links to STP-resident SCT table)
QCQM	2	0-7	Queue maximum
QCQL	2	8-15	Current number of items in the queue
QCCNT	2	16-63	Total items ever queued
QCRSV	3	0-63	Reserved for expansion

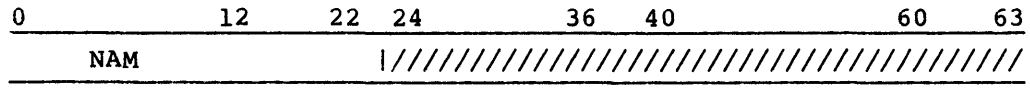
ENTRY

Field	Word	Bits	Description
QCBL	0	16-39	Backward link
QCFL	0	40-63	Forward link
QCPSZ	1	16-39	Packet size
QCPAD	1	40-63	Packet address

1.QD QUEUED DATASET TABLE - QDT

The Queued Dataset Table is an STP-resident table that describes the multitype attributes for a dataset that has been disposed. This table is managed by PDM and EXP. The number of entries in the QDT must be equal to the SDT entry count.

HEADER



ENTRY

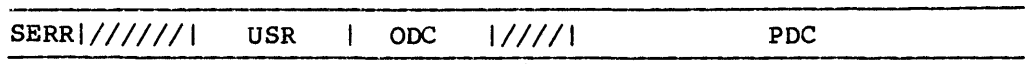


Figure 1.QD-1. Queued dataset table (QDT)

QDT HEADER

Field	Word	Bits	Description
QDNAM	0	0-23	ASCII name of table, i.e., "QDT"

QDT ENTRY

Field	Word	Bits	Description
QDSERR	0	0-4	STARTUP entry deactivation flags
QDDWN	0	0	Down device encountered
QDCRS	0	1	Cross allocation found
QDCAT	0	2	Catastrophic error in DSC entry
QDIDA	0	3	Inconsistent multitype allocation
QDUSR	0	12-21	Number of users who have disposed the dataset with no release
QDODC	0	22-30	Outstanding dispose count
QDPDC	0	36-63	DSC entry of permanent version
QDPDP	0	36-59	DSC page number
QDPDE	0	60-63	DSC entry number

1.RJ ROLLED JOB INDEX - RJI

The RJI table contains entries for each defined JXT entry describing the job assigned to the JXT entry and controlling the recovery of jobs from mass storage entries.

Entry zero fields (used for index validation)

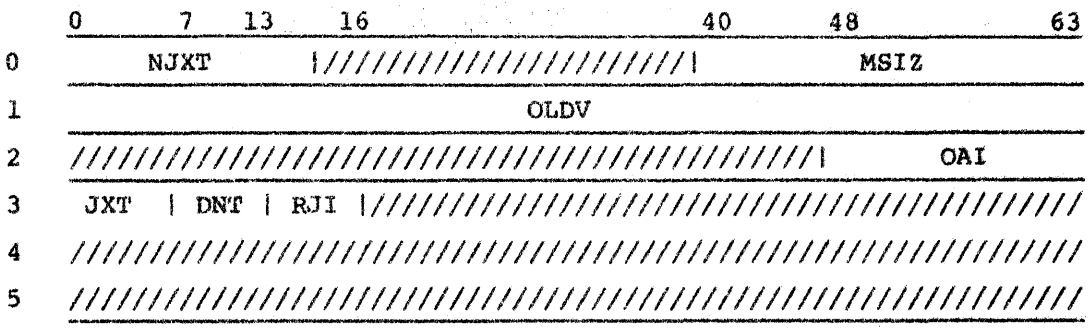


Figure 1.RJ-1. Rolled Job Index (RJI) entry zero fields

Field	Word	Bits	Description
RJNJXT	0	0-15	Number of JXT entries in the last Deadstarted system
RJMSIZ	0	40-63	Memory size at last Deadstart
RJOLDV	1	0-63	Device name containing index for $ROLL dataset
RJOAI	2	48-63	First (or only) AI in $ROLL index
RJLJXT	3	0-6	Length of JXT entry in old system
RJLDNT	3	7-12	Length of DNT entry in old system
RJLRJI	3	13-18	Length of RJ index entry in old system

Other entry fields

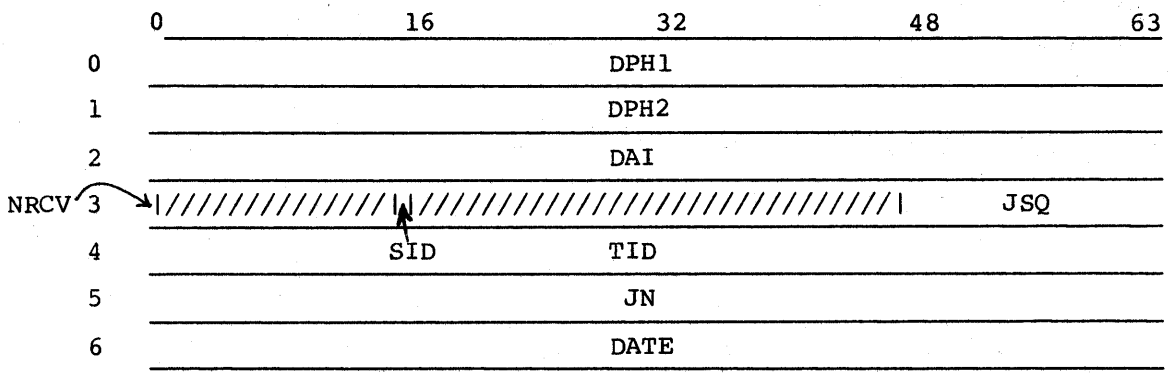


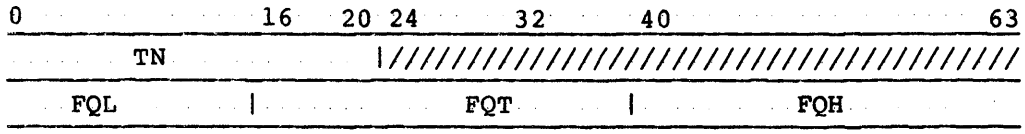
Figure 1.RJ-2. Rolled Job Index (RJI) other entry fields

Field	Word	Bits	Description
RJDPH1	0	0-63	Word 0 of job roll DAT partition header
RJDPH2	1	0-63	Word 1 of job roll DAT partition header
RJDAI	2	0-63	First AI word from roll DAT (1-4 AIs)
RJNRCV	3	0	Job irrecoverabale flag
RJSID	3	16	Station ID of job origin
RJJSQ	3	48-63	Job sequence number
RJTID	4	0-63	Terminal ID of job origin
RJJN	5	0-63	Jobname
RJDATE	6	0-63	Date/time (system generated)

1.RQ REQUEST TABLE - RQT

The Request Table is an STP-resident table primarily used for disk queue management. The RQT is illustrated in figure 1.RQ-1.

HEADER



ENTRY

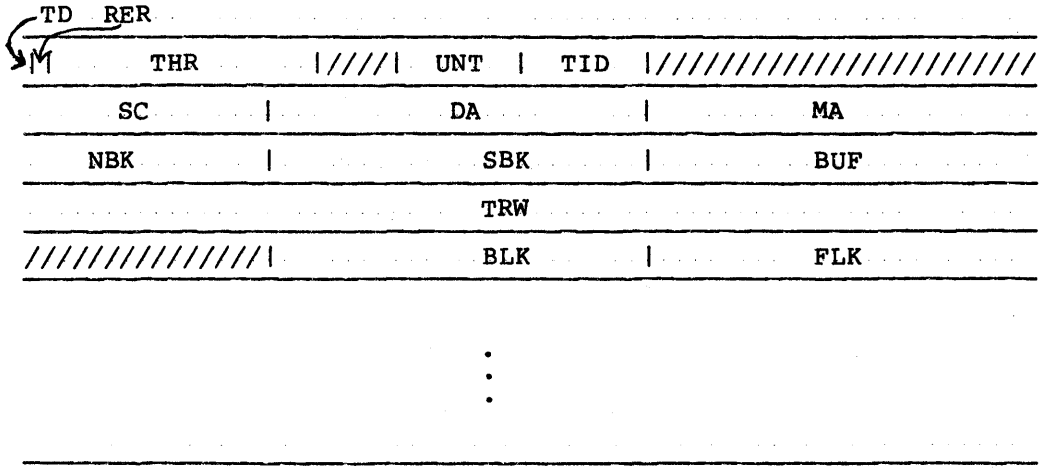


Figure 1.RQ-1. Request Table (RQT)

HEADER

Field	Word	Bits	Description
RQTN	0	0-23	Table name; "RQT" in ASCII
RQFQL	1	0-15	Free queue length
RQFQT	1	16-39	Free queue tail
RQFQH	1	40-63	Free queue head

ENTRY

Field	Word	Bits	Description
RQTD	0	0	Transfer direction
RQRER	0	1	Reread flag
RQTHR	0	2-18	Streaming threshold
RQUNT	0	24-31	Unit number
RQTID	0	32-39	Requesting task ID
RQSC	1	0-15	Sector count
RQDA	1	16-39	Disk address
RQMA	1	40-63	Memory address
RQNBK	2	0-15	Block count
RQSBK	2	16-39	Starting block
RQBUF	2	40-63	Buffer address
RQTRW	3	0-63	Task reply word
RORET	3	0-23	Caller's return address
RQRCL	3	24	Recall reply flag
RQJXT	3	25-39	JXT offset for job-related requests
RQDNT	3	40-63	DNT address (STP relative)
RQBLK	4	16-39	Backward link
RQFLK	4	40-63	Forward link

1.SBU SYSTEM BILLING UNIT TABLE - SBU

The SBU table is an STP-resident table which contains the values obtained when system billing units are calculated for system resources.

	0 — 63
0	TSX
1	TSW
2	TSD
3	TWJ
4	IOB
5	IOR
6	MXM
7	MIM
8	OPC
9	CLC
10	MRD
11	PFA
12	PFS
13	TFS
14	BRF
15	BSF

Figure 1.SBU-1. System Billing Unit Table (SBU)

Field	Word	Bits	Description
SBUTSX	0	0-63	Time spent executing in CPU
SBUTSW	1	0-63	Time waiting to execute
SBUTSD	2	0-63	Time waiting for I/O
SBUTWJ	3	0-63	Time waiting for JXT
SBUIOB	4	0-63	Disk blocks moved
SBUIOR	5	0-63	Physical I/O requests
SBUMXM	6	0-63	Maximum memory used
SBUMIM	7	0-63	Minimum memory used
SBUOPC	8	0-63	Open calls
SBUCLC	9	0-63	Close calls
SBUMRD	10	0-63	Memory resident datasets
SBUPFA	11	0-63	Permanent file space accessed
SBUPFS	12	0-63	Permanent file space saved
SBUTFS	13	0-63	Temporary file space used
SBUBRF	14	0-63	Blocks received from front end
SBUBSF	15	0-63	Blocks sent to the front end

1.SC SUBSYSTEM CONTROL TABLE - SCT

This table is resident in both STP and EXEC.

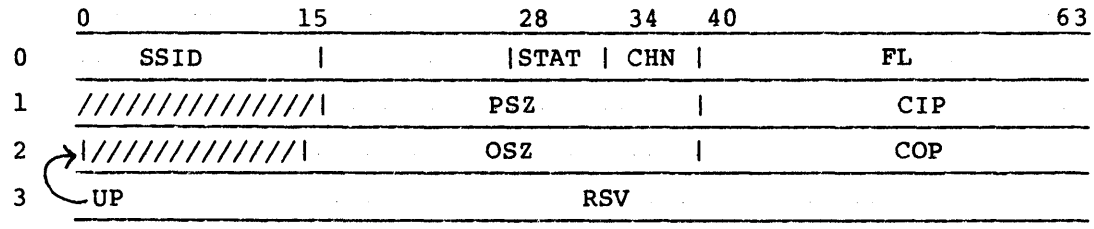


Figure 1.SC-1. Subsystem Control Table (SCT)

Field	Word	Bits	Description
SCSSID	0	0-15	Subsystem IO in ASCII
SCSTAT	0	28-33	Subsystem Status (STP read only)
SCIR	0	31	Input ready flag
SCRST	0	32	Subsystem restart flag
SCDOWN	0	33	Subsystem down flag (0 = UP, 1 = DOWN)
SCCHN	0	34-39	Input channel number
SCFL	0	40-63	Forward link to another SCT
SCPSZ	1	16-39	Input pocket size
SCCIP	1	40-63	Input pocket address
SCUP	2	0	Subsystem up flag (STP use) (0 = DOWN, 1 = UP)
SCOSZ	2	16-39	Output pocket size
SCCOP	2	40-63	Current output pocket address
SCRSV	3	0-63	Reserved for expansion

1.SD SYSTEM DATASET TABLE - SDT

An SDT entry is created in System Task Processor (STP) resident memory for each dataset that is spooled to or from a front-end system.

For staged datasets that are submitted as jobs to the CRAY-1, the first control statement (the JOB statements) must be cracked to obtain job scheduling information.

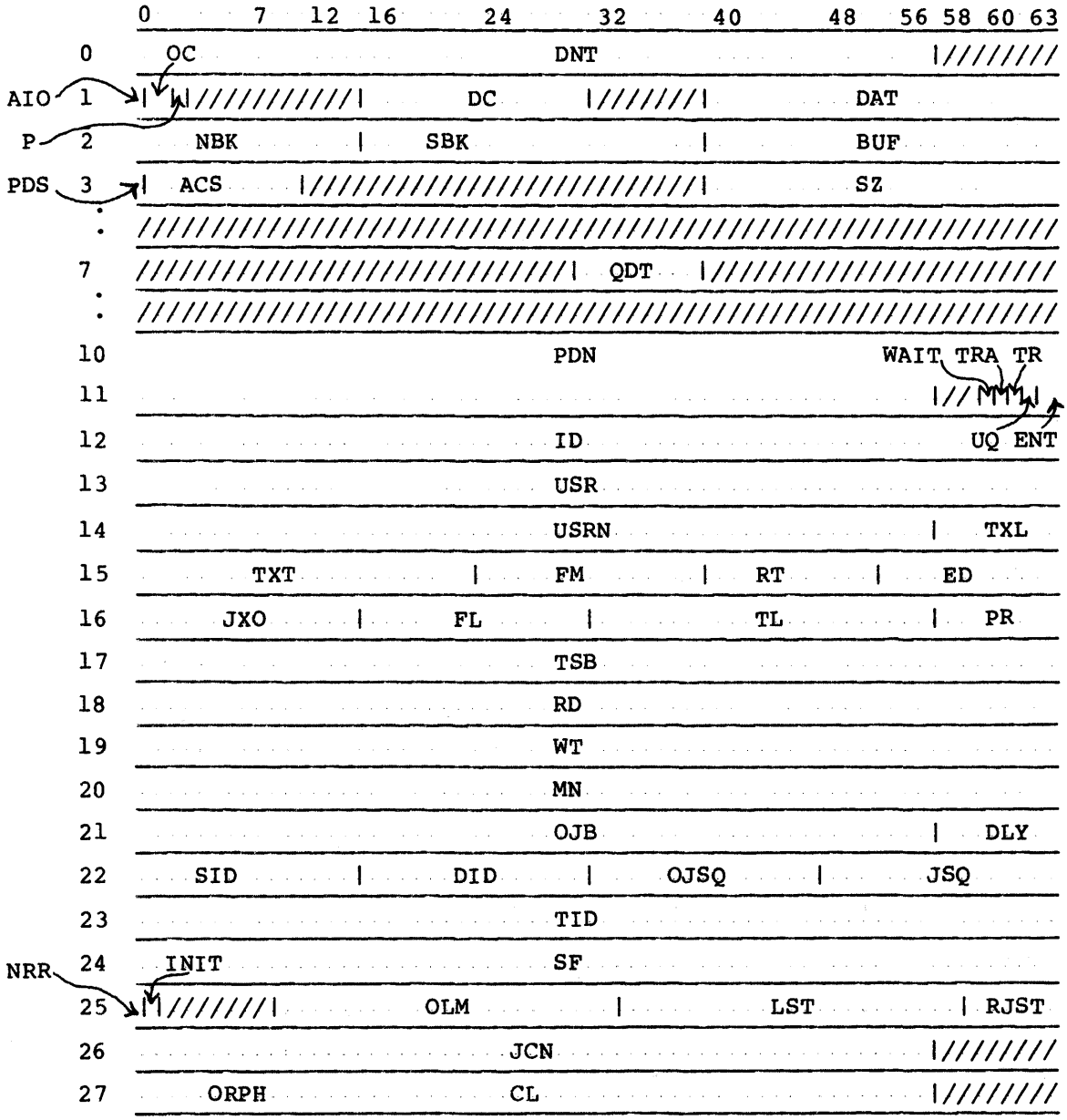


Figure 1.SD-1. SDT entry

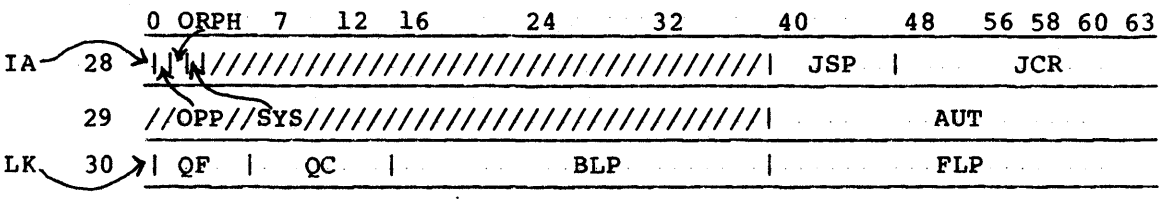


Figure 1.SD-1. SDT entry (continued)

ENTRY:

Field	Word	Bits	Description
SDDNT	0	0-63	DNT area
SDAIO	1	0	Active I/O
SDOC	1	1-2	Open/close status (binary) 1 In 2 Out 3 In/out
SDP	1	3	Type of processing, used by Disk Queue Manager 0 Read 1 Write
SDDC	1	16-31	Disposition code (2 characters) DCIN=IN Job dataset DCST=ST Dataset to be staged and made permanent DCSC=SC Scratch dataset DCPR=PR Print dataset DCPU=PU Punch dataset DCPT=PT Plot dataset DCMT=MT Magnetic tape dataset
SDDAT	1	40-63	DAT address
SDNBK	2	0-15	Number of blocks to be read or written
SDSBK	2	16-39	Starting block number
SDBUF	2	40-63	I/O buffer address
SDPDS	3	0	Permanent dataset flag

Field	Word	Bits	Description
SDACS	3	1-11	Dataset access flags
SDRDA	3	1	Read access flag
SDWTA	3	2	Write access flag
SDMNA	3	3	Maintenance access flag
SDSZ	3	40-63	Dataset size in 512-word blocks
SDQDT	7	31-39	Multitype flag/QDT entry index
SDPDN	10	0-63	1-15 character permanent dataset name
SDPDN1	10	0-63	Characters 1-8 of PDN
SDPDN2	11	0-55	Characters 9-15 of PDN
SDWAIT	11	59	WAIT flag for a disposed dataset
SDTRA	11	60	Transfer request issued flag
SDTR	11	61	Transfer request issued flag
SDUQ	11	62	Unique access flag
SDENT	11	63	Enter system directory flag
SDID	12	0-63	User ID: 1-8 characters
SDUSR	13	0-63	Characters 1-8 of user number
SDUSRN	14	0-55	Characters 9-15 of user number
SDTXL	14	56-63	Test field length in blocks
SDTXT	15	0-23	Location of text area
SDFM	15	24-39	Format designator: two characters

FMCD=CD Character/deblocked
FMCB=CB Character/blocked
FMBD=BD Binary/deblocked
FMBB=BB Binary/blocked

Field	Word	Bits	Description
SDRT	15	40-51	Retention period (0-4095 days)
SDED	15	52-63	Edition number (0-4095)
SDJX	16	0-15	JXT offset
SDFL	16	16-31	Field length/512
SDTL	16	32-55	Time limit
SDPR	16	56-63	Priority
SDTSB	17	0-63	Time submitted
SDRD	18	0-63	Read permission control word
SDWT	19	0-63	Write permission control word
SCMN	20	0-63	Maintenance permission control word
SDOJB	21	0-55	Originating job name
SDDLY	21	56-63	Postpone delay count
SDSID	22	0-15	Source ID: two characters
SDDID	22	16-31	Destination ID: two characters
SDOJSQ	22	32-47	Originating job sequence number
SDJSQ	22	48-63	Job sequence number
SDTID	23	0-63	Terminal ID: eight characters
SDSF	24	0-63	Special forms
SDNRR	25	0	Job rerun flag: set if job cannot be rerun
SDINIT	25	1	Job initiation flag: set if job has been initiated
SDOLM	25	10-33	Size of $OUT in 512-word blocks
SDLST	25	34-57	Pointer to current LST address

Field	Word	Bits	Description
SDRJST	25	58-63	Status flag set by recovery of rolled job 0 Never initiated 1 Rerun by system recovery 2 Job not recoverable or rerunnable 3 Job statement error 4 Roll in error-rerun 5 Roll in error - not rerunable 6 Class error - fits no class 7 Class error - no class cl 8 Class error - doesn't fit cl
SDJCN	26	0-55	Job class name
SDCL	27	0-55	CL parameter from JOB statement
SDIA	28	0	Interactive job, if set
SDOPP	28	1	Operator raised priority to 15, if set
SDORPH	28	2	Orphan job, if set
SDSYS	28	3	System job, if set
SDJSP	28	40-47	P parameter from JOB statement
SDJCR	28	48-63	Job class rank
SDAUT	29	40-63	AUT pointer (used for interactive only)
SDLK	30	0	Lock flag
SDQF	30	1-6	Queue flags
SDI	30	1	Input
SDO	30	2	Output
SDE	30	3	Execution
SDQ	30	4	Request
SDR	30	5	Receiving
SDS	30	6	Sending
SDQC	30	7-15	Queue count; used in queue head only
SDBLP	30	16-39	Backward link pointer
SDFLP	30	40-63	Forward link pointer

1.ST SYSTEM TASK TABLE - STT

The System Task Table (STT) is an EXEC-resident table used by EXEC for scheduling and controlling tasks. The table has three parts: a header, a part containing a parameter area for each task, and a part containing the exchange packages for each task. The STT is illustrated in figure 1.ST-1.

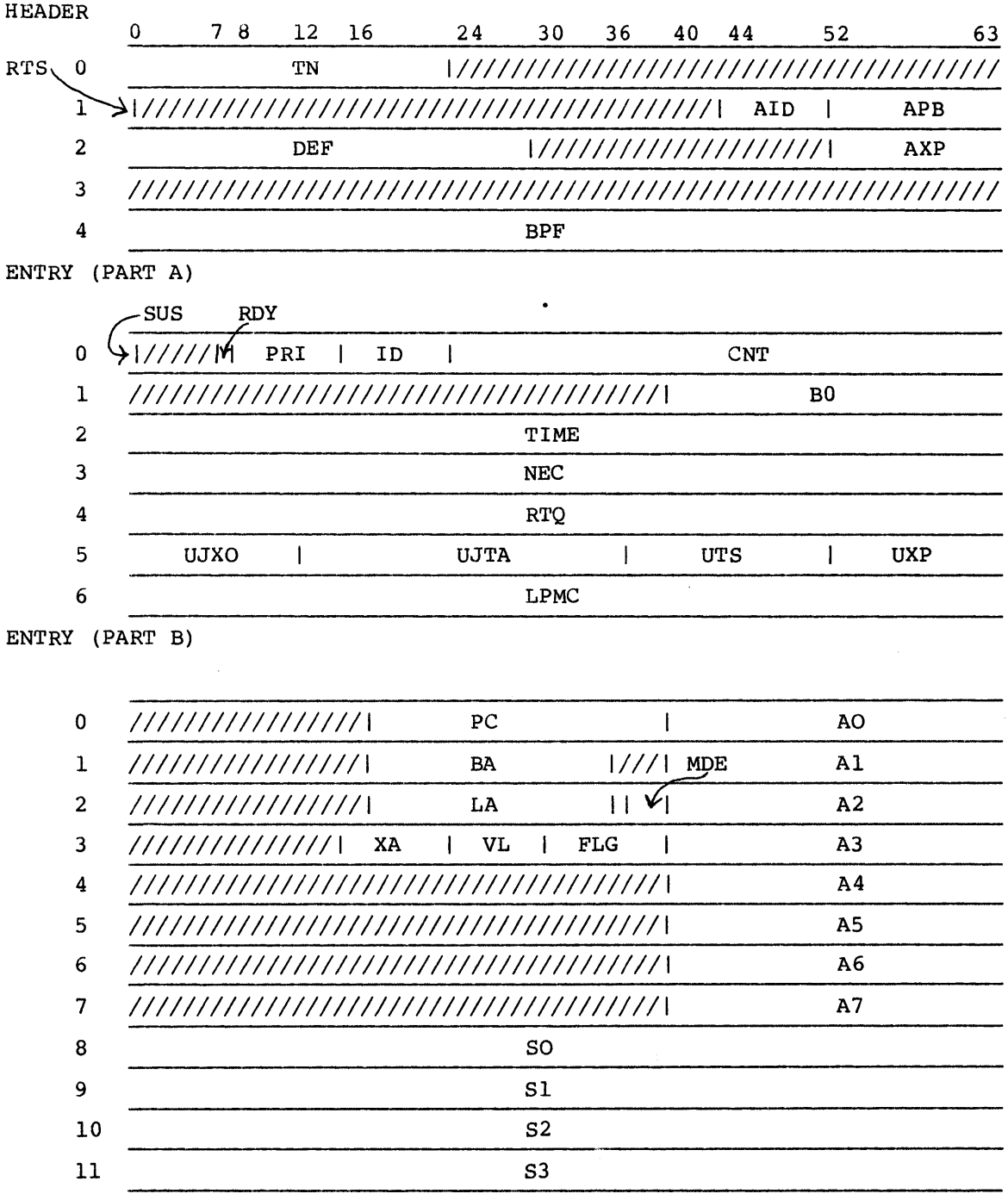


Figure 1.ST-1. System Task Table (STT)

	0 7 8 12 16 24 30 36 40 44 52 63
12	S4
13	S5
14	S6
15	S7

Figure 1.ST-1. System Task Table (STT) (continued)

HEADER

Field	Word	Bits	Description
STTN	0	0-23	Table name; "STT" in ASCII
STRTS	1	0	Request task scheduler flag
STAID	1	44-51	Active task ID
STAPB	1	52-63	Active task parameter block address
STDEF	2	0-29	Defined task flags
STAXP	2	52-63	Active exchange package address
STBPF	4	0-63	Breakpoint flags

ENTRY (PART A)

Field	Word	Bits	Description
STSUS	0	0	Task suspend bit
STRDY	0	7	Task ready request
STPRI	0	8-15	Task priority
STID	0	16-23	Task ID
STCNT	0	24-63	Task startup count
STBO	1	40-63	BO save area
STTIME	2	0-63	Cumulative execution time
STNEC	3	0-63	Count of normal exits from task
STRTQ	4	0-63	Task time delay queue control word

Field	Word	Bits	Description
STUJXO	5	0-12	User job execution table offset
STUJTA	5	13-36	User job table area
STUTS	5	37-51	User time slice
STUXP	5	52-63	User XP address within EXEC
STLPMC	6	0-63	Last performance monitor call

ENTRY (PART B)

Field	Word	Bits	Description
STPC	0	18-39	Program counter
STAO	0	40-63	AO
STBA	1	18-35	Base address
STA1	1	40-63	A1
STLA	2	18-35	Limit address
STMDE	2	37-39	Mode flags
STA2	2	40-63	A2
STXA	3	16-23	Exchange address
STVL	3	24-30	Vector length
STFLG	3	31-39	Interrupt flags
STA3	3	40-63	A3
STA4	4	40-63	A4
STA5	5	40-63	A5
STA6	6	40-63	A6
STA7	7	40-63	A7
STSO	8	0-63	SO

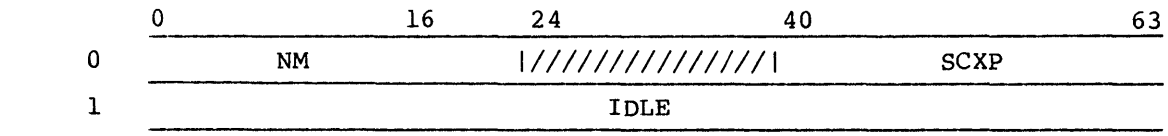
Field	Word	Bits	Description
STS1	9	0-63	S1
STS2	10	0-63	S2
STS3	11	0-63	S3
STS4	12	0-63	S4
STS5	13	0-63	S5
STS6	14	0-63	S6
STS7	15	0-63	S7

1.TB TASK BREAKPOINT TABLE - TBPT

The TBPT table is an EXEC-resident table used by EXEC for interactive debugging using breakpoints.

Figure 1.TB-1. illustrates the TBPT.

HEADER



ENTRY

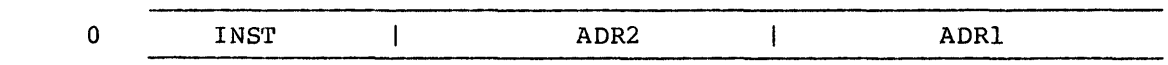


Figure 1.TB-1. Task Breakpoint Table - TBPT

HEADER

Field	Word	Bits	Description
TBNM	0	0-23	Table name; "TBP" in ASCII
TBSCXP	0	40-63	Station control word address
TBIDLE	1	0-63	Idle flag; invokes alternate part of task scheduler.

ENTRY

Field	Word	Bits	Description
TBINST	0	0-15	Instruction replaced by breakpoint
TBADR2	0	16-39	Address of breakpoint used to reset first breakpoint
TBADR1	0	40-63	Address of breakpoint

LOADER TABLE DESCRIPTIONS 2

2.1 INTRODUCTION

A relocatable binary program consists of a single record composed of a series of tables. Nine types of tables are currently defined:

Acronym	Table type (octal)	Name
BRT	15	Block relocation table
DIR	10	Directory (BUILD)
DMT	7	Debug map table
DPT	13	Duplication table
PDT	17	Program description table
SMT	11	Symbol table
TXT	16	Text table
XRT	14	External relocation table
	12	Reserved for user

The first table in a relocatable module is the program description table (PDT). The relocatable code, itself, is contained in one or more text (TXT) tables.

Each table has a prefix word that contains the table type in the leftmost four bits and the table word count in the next 24 bits. The word count serves as an offset to the beginning of the next table.

2.BRT BLOCK RELOCATION TABLE - BRT

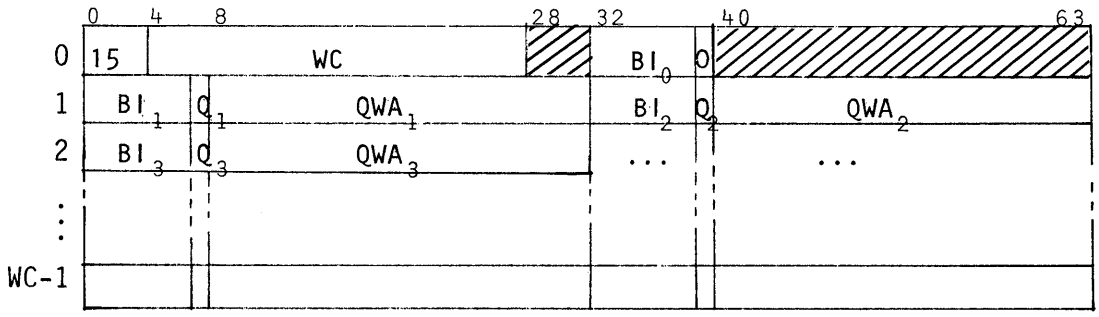
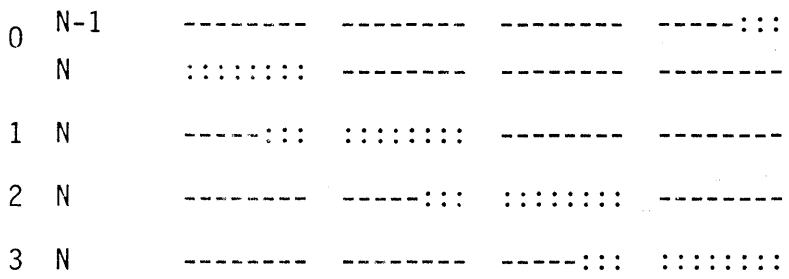


Figure 2.BRT. Block Relocation Table - BRT

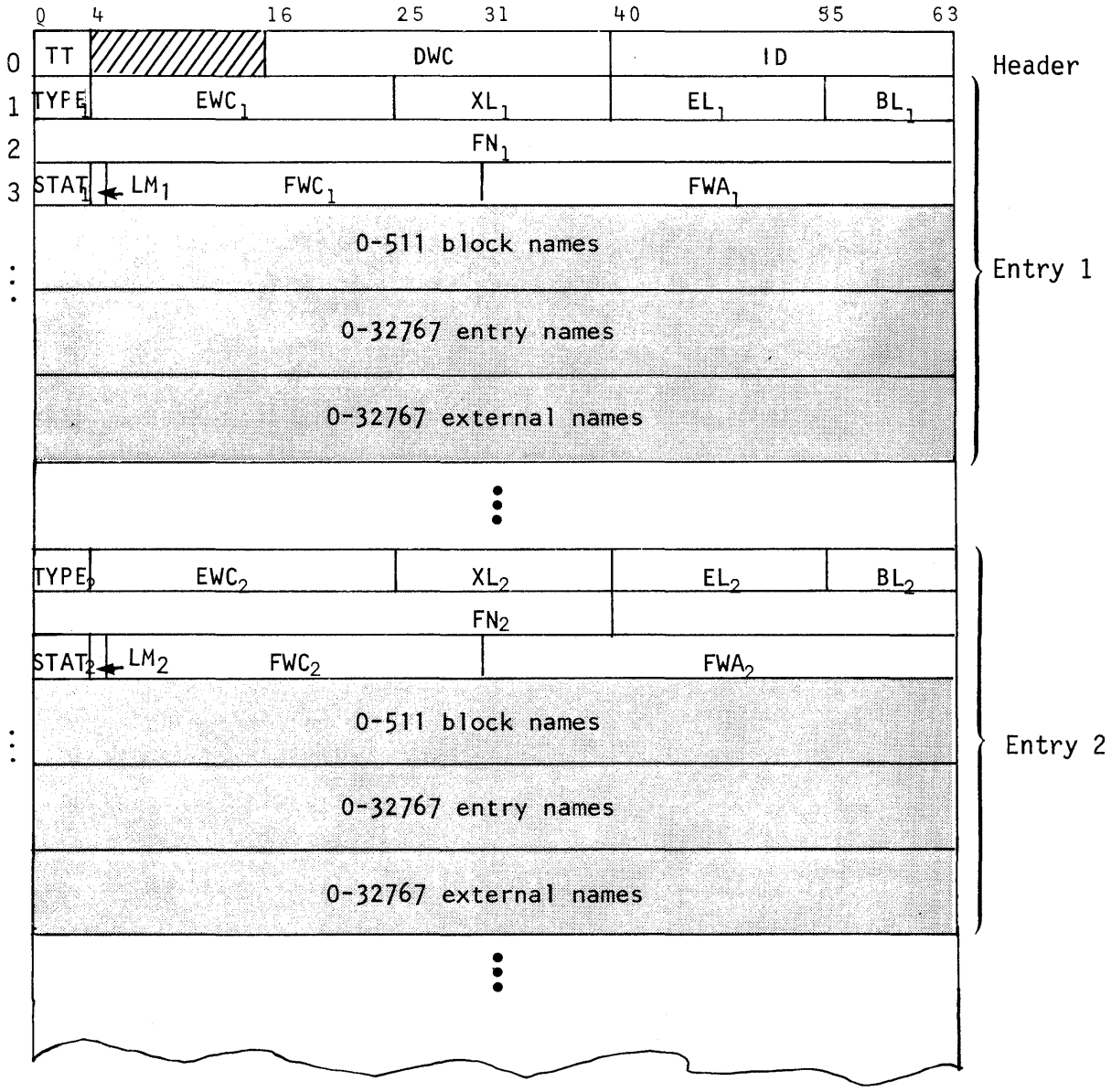
Field	Word	Bits	Description
TT	0	0-3	Table type; 15
WC	0	4-27	Table word count
BI_0		32-38	A relocation quantity to be added to the QWAs to obtain the addresses of the fields to be modified.
$BI_{1,2...n}$	1,2, ...WC-1	0-6, 32-38	Block index; specifies a block base address to be added to the relocation field as the relocation address.
$Q_{1,2...n}$	1,2, ...WC-1	7,39	Relocation mode: 0 Word address relocation is performed on relocation field. 1 Quarter word address relocation is performed. Word address relocation is generally used to relocate the address in memory read and store instructions. Quarter word address relocation is generally used to relocate addresses in branch instructions.
$QWA_{1,2...n}$	1,2, ...WC-1	8-31, 40-63	Quarter word address; indicates the parcel address of a field relative to the block BI to be modified. QWA is composed of a 22-bit word address and a 2-bit field specifying the parcel. Parcels are located within words as follows:

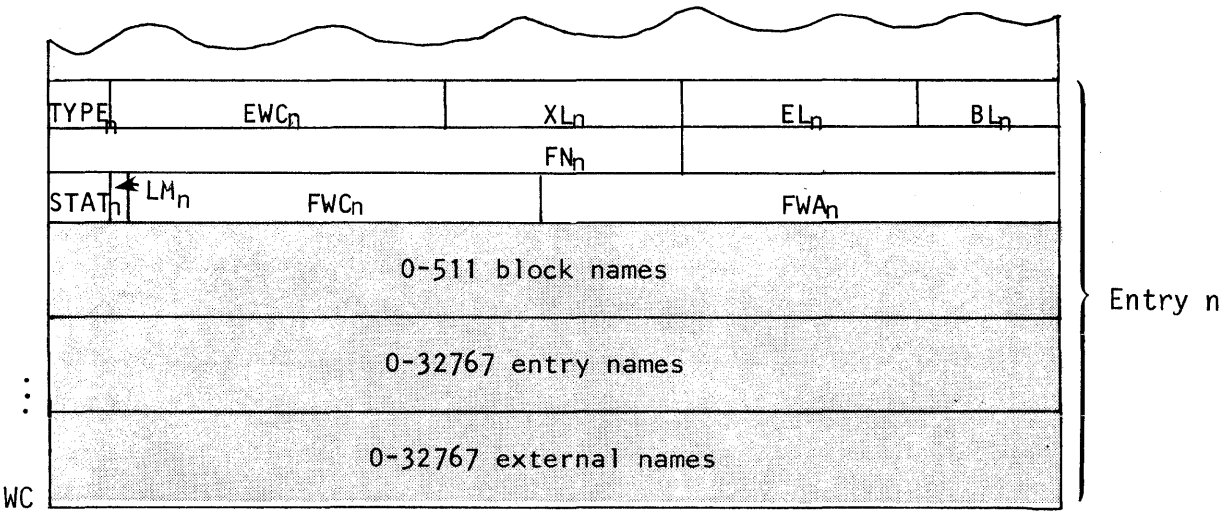


The rightmost bits of the parcel indicate the rightmost bits of the field to be relocated. The relocation is 22 bits wide. Relocation across a word boundary occurs if parcel 0 is specified.

2.DIR DIRECTORY - DIR (BUILD)

BUILD is an operating system utility program for generating and maintaining library datasets. BUILD generates a directory file consisting of a one word header followed by one variable-length entry for each program in the library dataset. A program record's entry may have any length from 3 to 66048 words.





Field	Word	Bits	Description
TT	0	0-3	Table type: 10_8
DWC	0	16-39	Directory's word count
ID	0	40-63	'DØ1' in ASCII. The Ø1 indicates the BUILD revision level, thus specifying the directory format.
TYPE	1	0-3	Entry type: 1
EWC	1	4-24	Entry's word count, 66048 maximum
XL	1	25-39	Number of external names, 32767 maximum
EL	1	40-54	Number of entry names, 32767 maximum
BL	1	55-63	Number of block names, 511 maximum
FN	2	0-63	8-character name of program module
STAT	3	0-3	Entry status: 1
LM	3	4	Load module flag (LDR set and used)
FWC	3	4-30	Program module's maximum word count, 134×10^6 (an approximate value for information only)
FWA	3	31-63	Program module's location, 17×10^9 maximum

Any of the three sets of names (block, entry, or external) may be null. Each name is 1 to 8 ASCII characters, left justified with zero fill. No blank characters are used.

Block names represent FORTRAN references to BLOCK DATA subprograms and labeled common.

Entry names correspond to names of main programs and subroutines and to names of any labeled common blocks that are initialized by DATA statements.

External names represent references to entry names in other programs.

2.DMT DEBUG MAP TABLE - DMT

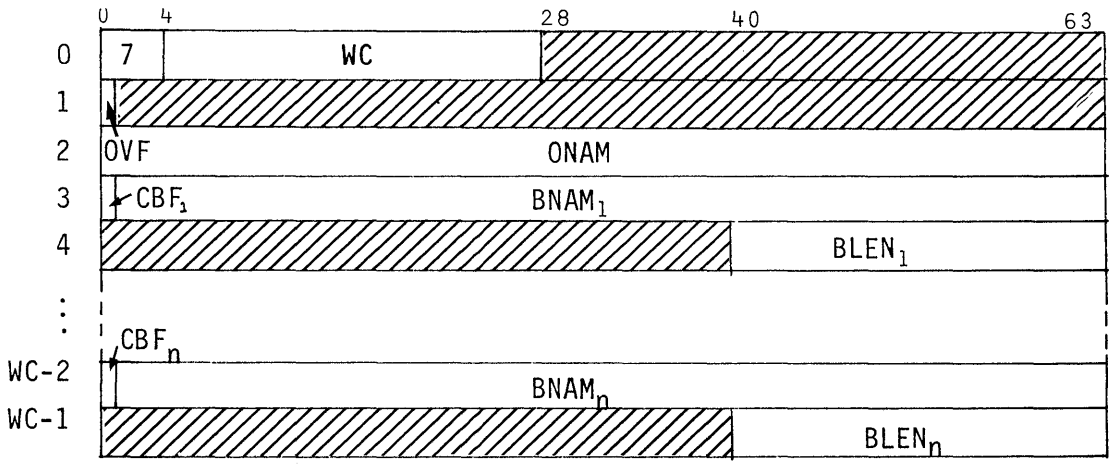


Figure 2.DMT-1. Debug map table - DMT

Field	Word	Bits	Description
TT	0	0-3	Table type; 7
WC	0	4-27	Table word count
OVF	1	0	Overlay flag; set if overlays exist
ONAM	2	0-63	Overlay name in ASCII
CBF	3,5,7..WC-2	0	Common block flag
BNAM	3,5,7..WC-2	1-63	Block name in ASCII
BLEN	4,6,8..WC-1	40-63	Length of block in words

2.DPT DUPLICATION TABLE - DPT

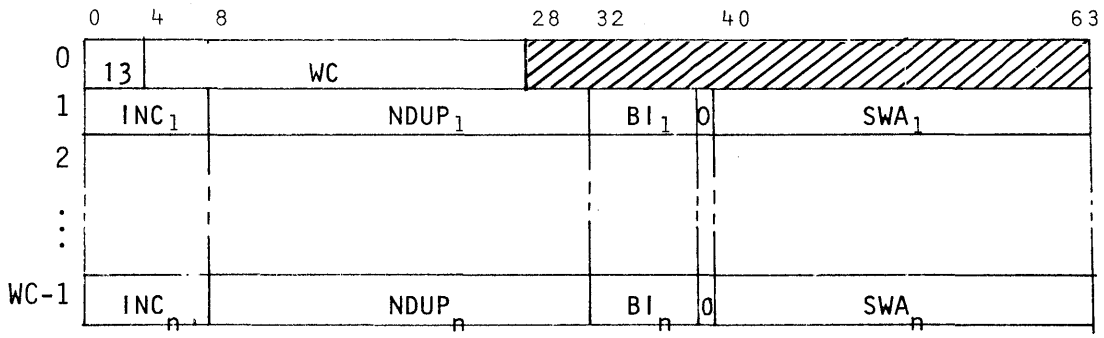


Figure 2.DPT. Duplication Table - DPT

Field	Word	Bits	Description
TT	0	0-3	Table type; 13
WC	0	4-27	Table word count
$INC_{1,2...n}$	1,2,... WC-1	0-7	Increment between stores of the source word. No duplication occurs if a zero increment is specified.
$NDUP_{1,2...n}$	1,2,... WC-1	8-31	Number of times the word at SWA is duplicated. NDUP must be nonzero.
$BI_{1,2...n}$	1,2,... WC-1	32-38	Block index; specifies the block whose base address is added to SWA in obtaining the word to be duplicated.
$SWA_{1,2...n}$	1,2,... WC-1	40-63	Source word address; the address of the word that is duplicated. Duplication is performed before relocation or external linkage in the load process.

2.PDT PROGRAM DESCRIPTION TABLE - PDT

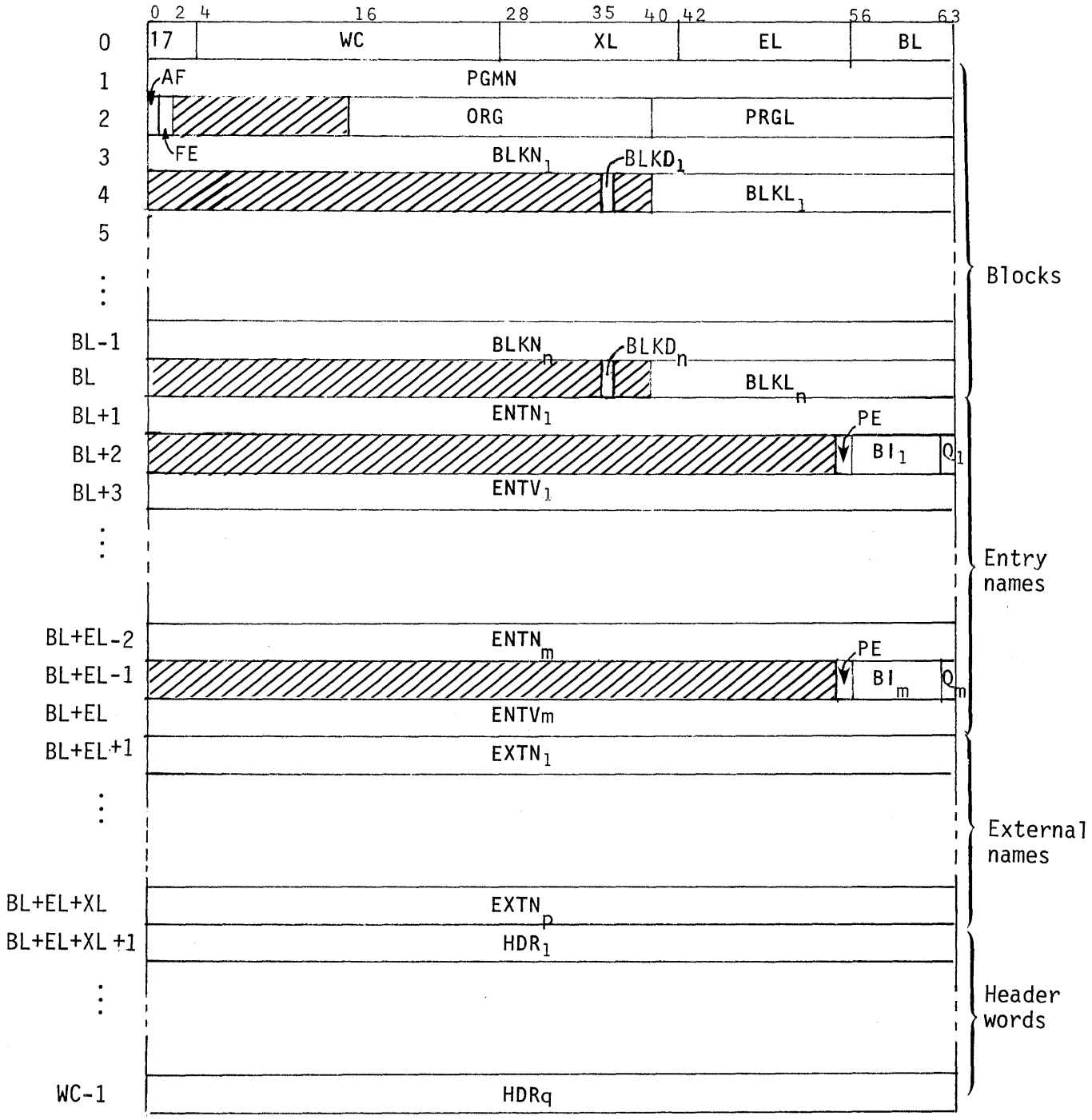


Figure 2.PDT-1. Program Description Table - PDT

Field	Word	Bits	Description
TT	0	0-3	Table type; 17
WC	0	4-27	Table word count
XL	0	28-41	Word count for external names
EL	0	42-55	Word count for entry names
BL	0	57-63	Word count for block information
PGMN	1	0-63	Program name
AF	2	0	Absolute flag; set to 1 if code has no BRT or XRT tables.
FE	2	1	Fatal error flag; set to 1 if fatal compile/assembly errors occurred. The loader ignores the binary record.
ORG	2	16-39	Origin of absolute blocks
PRGL	2	40-63	Program length in words
$BLKN_{1,2...n}$	3,5,7...	0-63	Block name
$BLKD_{1,2...n}$	4,6,8...	35	Reserved for dynamic common block indicator; not used by COS loader.
$BLKL_{1,2...n}$	4,6,8...	40-63	Length in words of named common block
$ENTN_{1,2...m}$	BL+1,+4, +7...	0-63	Entry name
$PE_{1,2...m}$	BL+2,+5, +8...	55	Primary entry flag. If this bit is set, this entry is the primary entry of the current load. The Loader transfers control to the first encountered primary entry.
$BI_{1,2...m}$	BL+2,+5, +8...	56-62	Block index; specifies the block containthe named entry. Associated with the block is a block address used to modify the entry value when it is used to satisfy externals of the same name. The 7-bit BI field used in all table entries defines a relocation quantity as follows: 0 None 1 Negative to the program block 2 Positive to the program block 3 Positive to common block 1 : : 127 Positive to common block 125
$Q_{1,2...m}$	BL+2,+5, +8...	63	The Q field determines the relocation mode of the entry value. If the bit is set, the entry value is a parcel address and the block address is justified before relocation. If clear, relocation is performed with a word address. Note that if BI=0, the entry value is not modified.

Field	Word	Bits	Description
$ENTV_{1,2...m}$	BL+3,+6, +9...	0-63	Entry value. This is a 64-bit quantity associated with the entry name. For satisfying externals, an entry relocation quantity is determined by adding a BI block address to the entry value.
$EXTN_{1,2...p}$	BL+EL+1, +2...	0-63	External name. A name is t through 8 characters, left justified with zero fill. The string must not include the space character. Blank common is indicated in the tables either by a zero word or by the name //.
$HDR_{1,2...q}$	BL+EL+XL+1 through WC-1	0-63	PDT header data. See figure 2.PDT-2.

0	M	M	/	D	D	/	Y	Y	Date and time of compilation
1	H	H	:	M	M	:	S	S	
	C	O	S	Δ	1	.	N	N	COS revision level
	M	M	/	D	D	/	Y	Y	COS assembly date
4	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
5	C	A	L	Δ	1	.	0	0	Processor name and version
6	7	6	2	1	6	Δ	Δ	Δ	Processor level (Julian date or
7	o	...					...	o	modification level)
8	o	...					...	o	
9	o	...					...	o	Reserved for future use - hardware
10	o	...					...	o	dependencies, etc.
11	C	O	P	Y	R	I	G	H	
.	T	Δ	C	R	A	Y	Δ	R	0-80 characters of user comment left
:	E	S	E	A	R	C	H	Δ	justified, blank filled
N≤20	I	N	C	.	1	9	7	6	

Figure 2.PDT-2. PDT header data

2.SMT SYMBOL TABLE - SMT

A relocatable file may contain symbol table information for each program unit in a compilation. The information is in table type 11. A type 11 table consists of two parts: a subroutine table and one or more common block tables.

Subroutine table

The subroutine table contains information about the subroutine block, the common block(s) referenced by the subroutine, and the local symbols. Figure 2.SMT-1 illustrates the basic format of the subroutine table; for more detail, refer to the figures named in figure 2.SMT-1.

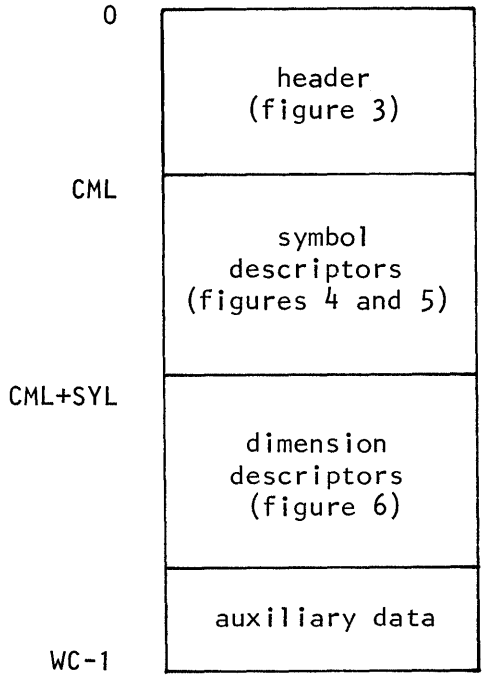


Figure 2.SMT-1. Subroutine table

Common block table

The common block table contains information about a specific common block referenced within a subroutine and the symbols that the common block contains. In a symbol table there is one common block table for each common block named in the subroutine table. The final word of the common block table, field THC, gives the common block table checksum. Figure 2.SMT-2 illustrates the basic format of the common block table.

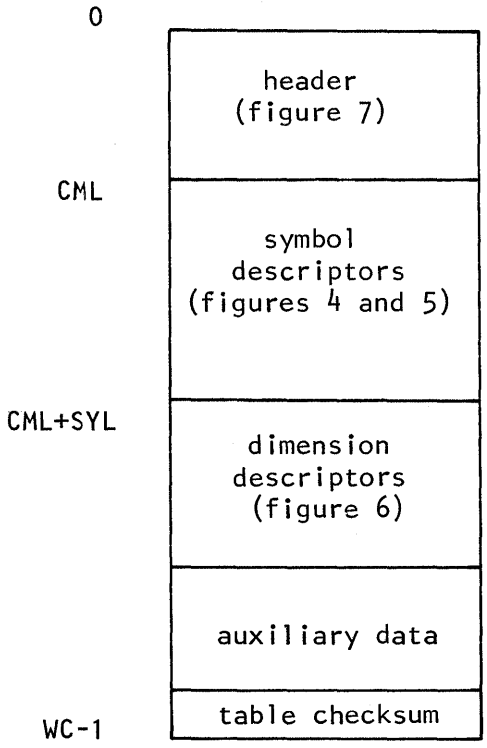


Figure 2.SMT-2. Common block table

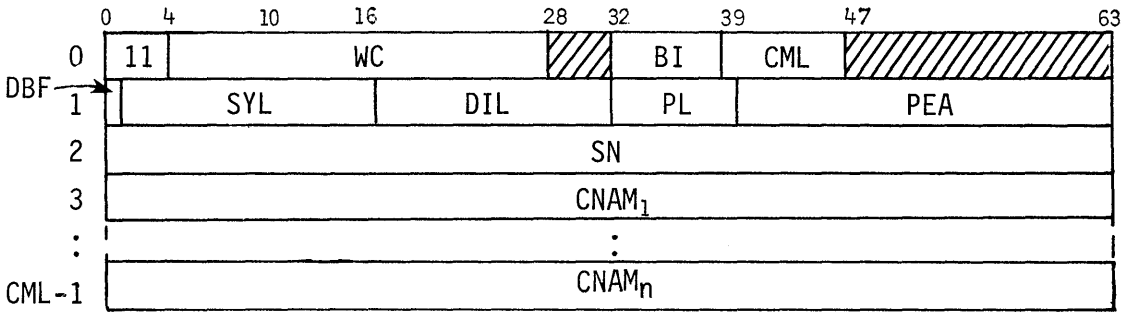


Figure 2.SMT-3. Subroutine table header

Field	Word	Bits	Description
TT	0	0-3	Table type; 11
WC	0	4-27	Table word count
BI	0	32-38	Block index. This is an index into the subroutine table common block name list (the same list as contained in the PDT table).
CML	0	39-46	Length in words of named common block
DBF	1	0	Dynamic block flag 0 Static 1 Dynamic
SYL	1	1-16	Symbol block length
DIL	1	17-31	Dimension block length
PL	1	32-39	Prologue length (parcel)
PEA	1	40-63	Primary entry address (parcel)
SN	2	0-63	Subroutine name
$CNAM_1$- $CNAM_n$	3,..., CML-1	0-63	Name(s) of common block(s) referenced by the named subroutine

Symbol descriptors

Words CML through CML+SYL+1 contain descriptors of local symbols. Each descriptor (figure 2.SMT-4) may be 3 through 6 words long, depending on the symbol length. In addition, a dimensioned variable symbol points to a group of words in the dimension block for its dimension information.

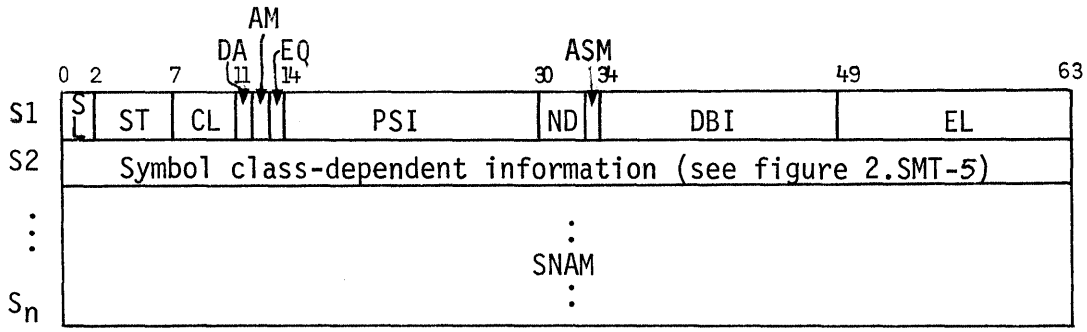


Figure 2.SMT-4. Symbol descriptor format

Field	Word	Bits	Description
SL	S1	0-1	Symbol name length-1 in words
ST	S1	2-6	Symbol type

0 Unknown
1 Program (external)
2 Entry point
3 Label
4 Integer
5 Real
6 Complex
7 Logical
8 Character
9 Bit (Boolean)
10 File
11 Pointer
12 DP integer
13 DP real
14 DP complex
15 Structure
16 Address

Field	Word	Bits	Description
CL	S1	7-10	Symbol class 0 Constant 1 Register 2 Normal 3 Stack 4 Based pointer 5 Based descriptor
DA	S1	11	Dummy argument (parameter). If non-zero, the symbol is a dummy argument.
AM	S1	12	Argument mode 0 Address 1 Value
EQ	S1	13	Equivalence. If non-zero, the symbol is equivalenced.
PSI	S1	14-29	Parent symbol index. If non-zero, the index is within SYL of the top parent.
ND	S1	30-32	Number of dimensions
ASM	S1	33	Array storage mode 0 By column 1 By row
DBI	S1	34-48	Dimension block index
EL	S1	49-63	Element length (in bits)
	S2	0-63	Symbol class-dependent information; see figure 2.SMT-5. Class — Figure 0 — 2.SMT-5a 1 — 2.SMT-5b 2-5 — 2.SMT-5c
SNAM	S3-S6	0-63	Symbol name. 1-4 words (32 character maximum) in 8-bit ASCII, left-justified, null filled to end-of-word.

Symbol class-dependent information

The contents of word S2 of the symbol descriptor are determined by the class of the symbol. Class type may be found in field CL of the subroutine table, word CML, bits 7-10. Classes are as follows:

0 Constant value
1 Register
2 Normal
3 Stack
4 Based pointer
5 Based descriptor

Figure 2.SMT-5a, b, and c describe the formats that word 2 of the symbol descriptor can take, based on the symbol class.

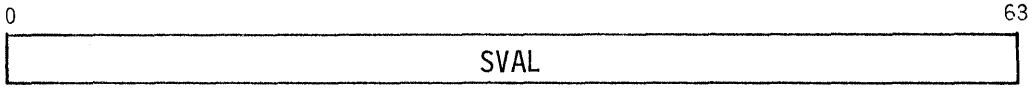


Figure 2.SMT-5a. Word CML+1 for class 0 symbols

Field	Word	Bits	Description
SVAL	CML+1	0-63	The value of the symbol

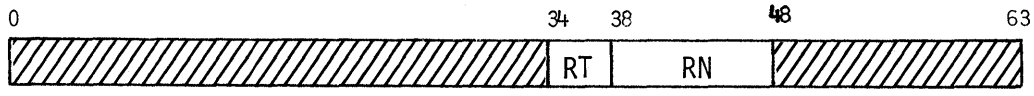


Figure 2.SMT-5b. Word CML+1 for class 1 symbols

Field	Word	Bits	Description
RT	CML+1	34-37	Register type 1 A 4 T 2 B 5 V 3 S 6 Special

Field	Word	Bits	Description
RN	CML+1	38-47	Register number or subtype. For register types 1 through 5, RN contains a register register number. For register type 6, RN contains one of the following values, right justified with zero fill: 0 Vector length register 1 Vector mask register 2-31 Channel address register 32 P register

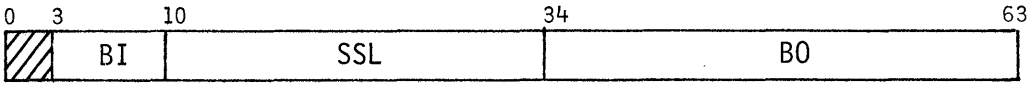


Figure 2.SMT-5c. Word CML+1 for class 2-5 symbols

Field	Word	Bits	Description
BI	CML+1	3-9	Block index
SSL	CML+1	10-33	Symbol storage length; words occupied in storage
BO	CML+1	34-63	Bit offset; offset in bits from the block base or from the parent symbol base

Dimension descriptors

The dimension descriptor portion of the subroutine or common block table contains a dimension descriptor for each dimensioned variable symbol (ND≠0). Each descriptor consists of an n-word entry, where n is the dimension of the variable. Figure 2.SMT-6 illustrates a dimension descriptor entry.

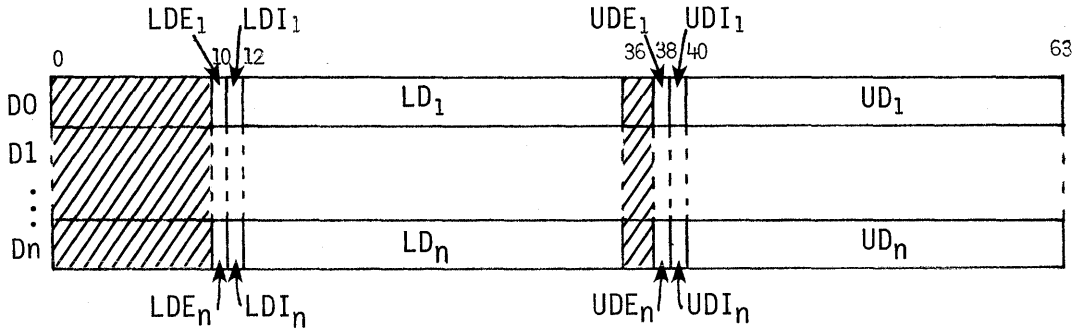
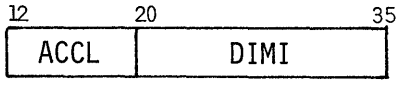


Figure 2.SMT-6. Dimension descriptor entry format

Field	Word	Bits	Description
LDE	D0,D1,...,Dn	10	Lower dimension expression. If LDE is non-zero, the lower dimension field (LD) contains an index into the dimension block of the expression definition required to evaluate the lower dimension. (See description of LD field.)
LDI	D0,D1,...,Dn	11	Lower dimension indirect. If LDI is non-zero, the lower dimension contains an index into a symbol list of the symbol that contains the lower dimension value. (See description of LD field.)
LD	D0,D1,...,Dn	12-35	Lower dimension. The contents of LD depend on the values of LDE and LDI. If LDE=0 and LDI=0 then LD is the lower dimension value. If LDE≠0†, then LD consists of the following subfields:

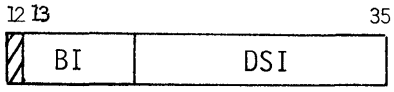


ACCL The length in half words of the access function

DIMI Index into DIL of the dimension expression

† NOTE: Cray Research software does not support LDE≠0 or UDE≠0

Field	Word	Bits	Description
			If LDI≠0†, then LD consists of the following subfields:



BI Block index

DSI Dimension symbol index

UDE	D0,D1,...,Dn	38	Upper dimension expression. (Same as LDE, for upper dimension.)
UDI	D0,D1,...,Dn	39	Upper dimension indirect. (Same as LDI, for upper dimension.)
UD	D0,D1,...,Dn	40-63	Upper dimension. The contents of UD depend on the values of UDE and UDI. The alternative formats for UD are the same as for LD.

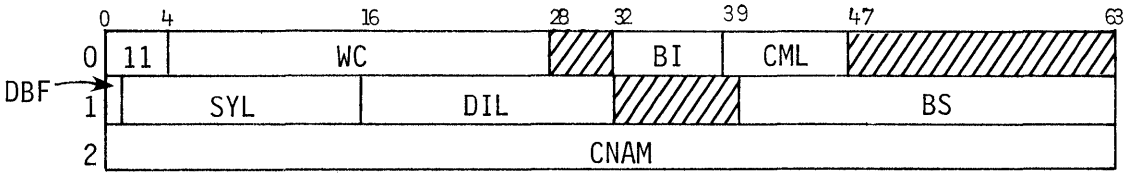


Figure 2.SMT-7. Common block table header format

Field	Word	Bits	Description
TT	0	0-3	Table type; 11
WC	0	4-27	Word count
BI	0	32-38	Block index
CML	0	39-46	Common block length
DBF	1	0	Dynamic block flag 0 Static 1 Dynamic
SYL	1	1-16	Symbol block length
DIL	1	17-31	Dimension block length
BS	1	40-63	Block size
CNAM	2	0-63	Name of common block

† NOTE: Cray Research software does not support LDI≠0 or UDI≠0

2.TXT TEXT TABLE - TXT

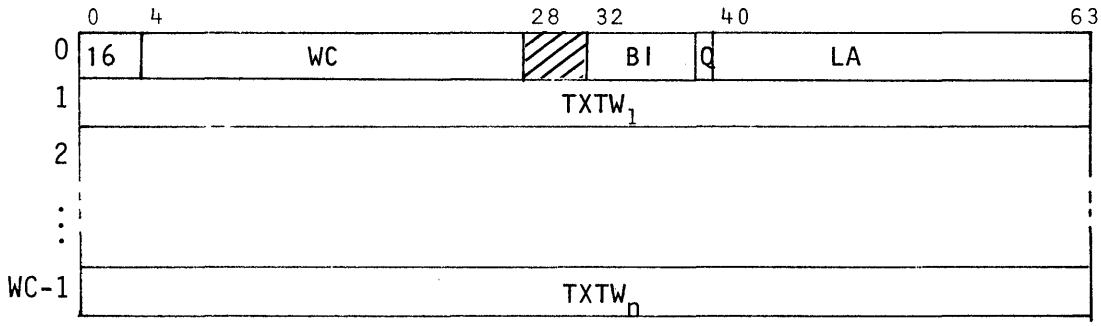


Figure 2.TXT. Text Table - TXT

Field	Word	Bits	Description
TT	0	0-3	Table type; 16
WC	0	4-27	Table word count
BI	0	32-38	Block index; specifies the block into which the text will be loaded.
Q	0	39	Relocation mode of the entry name; this field is always 0.
LA	0	40-63	Relative load address in block BI. LA is always specified as a word address.
$TXTW_{1,2...n}$	1,2...n	0-63	Text words to be loaded into the program field in contiguous locations starting at an address determined by adding LA to the base address indicated for block BI.

2.XRT EXTERNAL RELOCATION TABLE - XRT

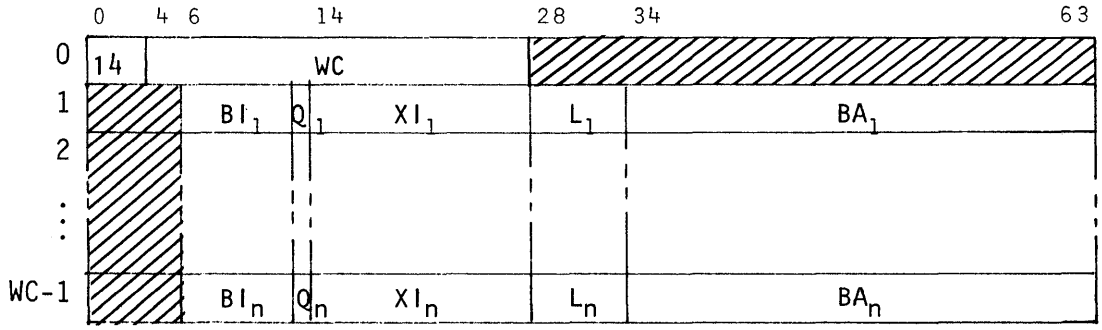


Figure 2.XRT External Relocation Table - XRT

Field	Word	Bits	Description
TT	0	0-3	Table type; 14
WC	0	4-27	Table word count
$BI_{1,2...n}$	1,2...n	6-12	Block index; defines a block address to be added to a BA in obtaining the field to be relocated (linked).
$Q_{1,2...n}$	1,2...n	13	Q flag; indicates attribute of the field to be linked. Q is set if the field requires a parcel address. Q is 0 if a word address is desired. The loader adjusts the entry values in links where the respective Q flags do not match.
$XI_{1,2...n}$	1,2...n	14-27	External index. This is an index into the externals list of the PDT. The entry value corresponding to the entry name that matches the named external in the PDT table is used to relocate the field.
$L_{1,2...}$	1,2...n	28-33	Length in bits of the relocation field. If L=0, the relocation field is assumed to be 64 bits, otherwise, it is the length specifield by L.
$BA_{1,2...n}$	1,2...n	34-63	Bit address of the low order bit in the field to be relocated. Relocation is performed in 2's complement arithmetic and relocation will span at most only one word boundary.

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