decsystem10

MONITOR CALLS

POCKET REFERENCE GUIDE

(6.02 Monitor)

DEC-10-OMCRB-C-D

digital

For additional information on the monitor calls, refer to *DECsystem-10 Monitor Calls,* DEC-10-OMCMA-B-D.

List of Tables

Abbreviations

ac	=	accumulator	job#	=	job number
addr	=	address	len	=	length
arg	=	argument	logdev	=	logical device name
arglist	=	argument list	messlen	=	message length
blk#	=	block number	n	=	number
buf	=	buffer	obuf	=	output buffer
buflen	=	buffer length	ofst	=	offset
chan	=	channel	ppn	=	project-programmer number
dir	=	directory	prog#	=	programmer number
ext	=	extension	proj#	=	project number
file	=	filename	prot	=	protection code
func	=	function	secs	=	seconds
fsname	=	file structure name	stat	=	status
hpq#	=	high priority queue number	stat-blk	=	status block
ibuf	=	input buffer	udx	=	universal device index
inc	=	increment			

Table 1
Monitor Programmed Operators

Op Code	Call	Meaning
040	{ CALL ac, [SIXBIT/name/] } { name ac, }	Programmed operator extension (refer to Table 2).
041	INIT chan, stat { SIXBIT/device/ } { udx } XWD obuf,ibuf error return normal return	Initialize a device and associate it with an I/O channel (refer to Table 3).
042–046		Reserved for customer definition.
047	CALLI ac,n	Programmed operator extensions (refer to Table 2).
050	OPEN chan,addr error return normal return . . . addr: EXP stat { SIXBIT/device/ } { udx } XWD obuf,ibuf	Initialize a device and associate it with an I/O channel (refer to Table 3).
051	TTCALL ac, addr	Extend operations on job-controlling terminal (refer to Table 4).
052–054		Reserved to Digital.
055	RENAME chan, addr error return normal return . . . addr: SIXBIT/file/ SIXBIT/ext/ mode, time, date XWD proj #, prog #	Rename or delete a file on a directory device.
	addr: SIXBIT/file/ SIXBIT/ext/,,hidate 0,,lowdate	DECtape.
	addr: SIXBIT/file/ SIXBIT/ext/,,hidate,date 1 prot,mode,time,lowdate XWD proj #, prog #	disk unit.
056	IN chan, addr normal return error return	Transmit data from a file to a user's core area, skip on error or EOF.
057	OUT chan, addr normal return error return	Transmit data from user's core area to a file, skip on error or EOF.

Table 1 (Cont.)
Monitor Programmed Operators

Op Code	Call	Meaning
060	SETSTS chan, stat return	Change file status (refer to Table 5).
061	STATO chan, stat normal return skip return	Skip if any status bits are equal to one (refer to Table 5).
062	GETSTS chan, addr return	Copy file status to addr (refer to Table 5).
063	STATZ chan, stat return 1 return 2	Skips if all status bits are zero (refer to Table 5).
064	INBUF chan, n return	Set up input buffer ring with n buffers
065	OUTBUF chan, n return	Set up output buffer ring with n buffers.
066	INPUT chan, addr return	Transmit data from a file to user's core area.
067	OUTPUT chan, addr return	Transmit data from a user's core area to file.
070	CLOSE chan, option return	Terminate file operations (refer to Table 6).
071	RELEASE chan, only return	Release a device.
072	MTAPE chan, func return	Perform tape positioning operations (refer to Table 7).
073	UGETF chan, addr return	Get next free block number on DECtape.
074	USETI chan, addr return	Set next input block number on disk or DECtape.
075	USETO chan, addr return	Set next output block number on disk or DECtape.

Table 1 (Cont.)
Monitor Programmed Operators

Op Code	Call	Meaning
076	LOOKUP chan, addr error return normal return . . . addr: SIXBIT/file/ SIXBIT/ext/,,hidate,blk #	Select a file for input on a DECtape.
	addr: SIXBIT/file/ SIXBIT/ext/ 0,,0 XWD proj #, prog #	directory device.
077	ENTER chan, addr error return normal return . . . addr: SIXBIT/file/ SIXBIT/ext/	Select a file for output on a non-directory device.
	addr: SIXBIT/file/ SIXBIT/ext/,,date 0,,date	DECtape.
	addr: SIXBIT/file/ SIXBIT/ext/,,dates prot, mode, time, date XWD proj #, prog #	disk. Refer to Table 8.
100	UJEN return	Dismiss a real-time interrupt.

Table 2
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
−2,... −n	Customer defined.	Reserved for customer definition.
−1	LIGHTS ac, return	Display contents of AC in the console lights.
0	RESET ac, return	Reset an I/O device.
1	MOVEI ac, buf DDTIN ac, return	Input characters in DDT mode.
2	MOVEI ac, addr SETDDT ac, return	Set the protected DDT starting address.
3	MOVEI ac, buf DDTOUT ac, return	Output characters in DDT mode.
4	{ MOVE ac, [SIXBIT/device/] / MOVEI ac, chan / MOVEI ac, udx } DEVCHR ac, error return normal return	Get device characteristics (refer to Table 9).
5	DDTGT ac, return	No-op.
6	{ MOVE ac, [SIXBIT/device/] / MOVEI ac, chan / MOVEI ac, udx } GETCHR ac, return	Get device characteristics (refer to Table 9).
7	DDTRL ac, return	No-op.
10	WAIT chan, return	Wait until device is inactive.
11	MOVE ac, [hiaddr,,loaddr] { CORE ac, / CORE ac, 200000 } error return normal return	Allocate core.
12	EXIT function, return	Reset is performed when function is 0; job is stopped when function not equal to 0.
13	MOVEI ac, chan UTPCLR ac, return	Clear a DECtape directory.
14	DATE ac, return	Return the date.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
15[1]	MOVE ac, [—n,, addr] LOGIN ac, return	Privileged call available only to system-privileged programs. It is a no-op if executed by a job already logged in.
16	MOVEI ac, flags APRENB ac, return	Enable central processor traps (refer to Table 10).
17	LOGOUT ac,	Privileged call. It is treated like an EXIT call if executed by non-privileged programs.
20	SWITCH ac, return	Read console data switches.
21	MOVEI ac, job-number {MOVE ac+1, [SIXBIT/device/] {MOVEI ac+1, chan {MOVEI ac+1, udx REASSIGN ac, return	Reassign a device.
22	TIMER ac, return	Return time of day in jiffies.
23	MSTIME ac, return	Return time of day in milliseconds.
24	GETPPN ac, normal return alternate return	Return project-programmer number.
25	MOVE ac, [n,, addr] TRPSET ac, error return normal return . . . addr: JSR trap	Set trap for user I/O mode.
26		Reserved to Digital.
27	MOVEI ac, job-number RUNTIME ac return	Return the job's run-time in milliseconds.
30	PJOB ac, return	Return the job number.
31	MOVEI ac, secs SLEEP ac, return	Stop a job for a specified number of seconds (68 maximum).
32		Reserved to Digital.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
33	MOVEI ac, addr PEEK ac, return	Return contents of specified executive address.
34	GETLIN ac, return	Return SIXBIT physical name of the terminal to which the current job is attached.
35	MOVSI ac, inc HRRI ac, addr RUN ac, error return normal return . . . addr : SIXBIT/device/ SIXBIT/file/ SIXBIT/ext/ 0,,0 XWD proj#, prog#. XWD addr; core	Allow programs to transfer control to one another. Both the low and high segments of the user's addressing space are replaced with the program being called.
36	MOVEI ac, bits SETUWP ac, error return normal return	Set or clear user mode, write-protect bit for the high segment.
37	{MOVEI ac, addr1 {MOVE ac, [origin,,addr1]} REMAP ac, error return normal return	Remap top of low segment into the high segment.
40	MOVEI ac, addr GETSEG ac, error return normal return . . . addr: SIXBIT/device/ SIXBIT/file/ SIXBIT/ext/ 0,,0 XWD proj#, prog# 0,,0	Replace high segment in user's addressing space.
41	MOVE ac, [index,,table#] GETTAB ac, error return normal return	Return contents of monitor table or location (refer to Table 11)
42	MOVEI ac, hiaddr SPY ac, error return normal return	Make physical core assignment for examination of monitor.
43	MOVE ac, [SIXBIT/name/] SETNAM ac, return	Set program name in monitor table.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
44	MOVE ac, [code,,addr] TMPCOR ac, error return normal return . . . addr: XWD name, 0 IOWD buflen, buf	Allow temporary in-core file storage for job (refer to Table 12).
45	MOVEI ac, [len,,addr] DSKCHR ac, error return normal return . . . addr: arglist	Return disk characteristics (refer to Tables 13 and 14).

46	MOVEI ac, n
	MOVE ac, [SIXBIT/fsname/]
	SYSSTR ac,
	error return
	normal return
		Return all of the file structure names in the system.

47	MOVE ac,[len,,addr] JOBSTR ac, error return normal return . . . addr: SIXBIT/fsname/ dir-name stat-bits	Return next file structure name in job's search list (refer to Table 15).
50	MOVE ac, [n,,addr] STRUUO ac, error return normal return	Manipulate file structures (refer to Table 16).
51	{MOVEI ac,n MOVE ac, [SIXBIT/name/]} SYSPHY ac, error return normal return	Return all physical disk units.
52		Reserved to Digital.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
53	{ MOVEI ac, chan MOVE ac, [SIXBIT/device/] MOVEI ac, udx } DEVTYP ac, error return normal return	Return properties of device (refer to Table 17).
54	{ MOVEI ac, chan MOVE ac, [SIXBIT/device/] } DEVSTS ac, error return normal return	Return hardware device status word.
55	{ MOVEI ac, chan MOVE ac, [SIXBIT/device/] } DEVPPN ac, error return normal return	Return project — programmer number associated with device.
56	MOVEI ac, chan SEEK ac, return	Perform a SEEK to current selected block for software channel.
57	MOVEI ac, block RTTRP ac, error return normal return	Connect real-time devices to the priority interrupt system.
60	MOVE ac, [hicode,,locode] LOCK ac, error return normal return	Lock job in core.
61	{ MOVEI ac, chan MOVNI ac, job # } JOBSTS ac, error return normal return	Return status information about device TTY and/or controlled job (refer to Table 18).
62	{ MOVE ac, [SIXBIT/node/] MOVE ac, station # } LOCATE ac, error return normal return	Change job's logical node number.
63	{ MOVEI ac, chan MOVE ac, [SIXBIT/device/] } WHERE ac, error return normal return	Return physical node number of a device and the status of that node (refer to Table 19).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
64	{ MOVEI ac, chan MOVE ac, [SIXBIT/device]/ MOVEI ac, udx } DEVNAM ac, error return normal return	Return physical name of device obtained through generic INIT/OPEN or logical device assignment.
65	MOVEI ac, job# CTLJOB ac, error return normal return	Return job number of controlling job.
66[1]	MOVE ac, [length,,addr] GOBSTR ac, error return normal return . . . addr: job# XWD proj#, prog# {SIXBIT/name/ / −1} 0,,0 stat-bits	Return next file structure name in an arbitrary job's search list (refer to Table 15).
67–70		Reserved to Digital.
71	MOVEI ac, hpq # HPQ ac, error return normal return	Place job in high priority scheduler's run queue.
72	MOVSI ac, bits HRRI ac, sleep-time HIBER ac, error return normal return	Allow job to become dormant until the specified event occurs (refer to Table 20).
73	MOVEI ac, job# WAKE ac, error return normal return	Allow job to activate the specified dormant job.
74[1]	MOVE ac, [proj#,,prog#] CHGPPN ac, error return normal return	Change project-programmer number.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
75	MOVE ac, [func,,arg] SETUUO ac, error return normal return	Set system and job parameters (refer to Table 21).
76		Reserved to Digital.
77	OTHUSR ac, normal return alternate return	Determine if another job is logged into the same project-programmer number.
100	MOVEI ac, addr CHKACC ac, error return normal return . . . addr: byte-access,,prot dir-ppn user-ppn	Check user's access to specified file (refer to Table 22).
101	MOVEI ac, addr DEVSIZ ac, error return normal return . . . addr: EXP mode {SIXBIT/device/} {chan} {udx}	Determine buffer size for the specified device.
102	MOVE ac, [len,,addr] DAEMON ac, error return normal return . . . addr: func arglist	Request DAEMON to perform a specified task.
103[1]	MOVE ac, addr JOBPEK ac, error return normal return	Read or write another job's core.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
104	MOVE ac, [line#,,job#] ATTACH ac, error return normal return	Attach the job to the specified TTY line number.
105[1]	MOVE ac, [len,,addr] DAEFIN ac, error return normal return	Indicate that the request to DAEMON has been completed.
106[1]	MOVE ac, [len,,addr] FRCUUO ac, error return normal return	Indicate that the request to DAEMON has been completed.

107	{MOVEI ac, chan
	MOVE ac, [SIXBIT/device/]
	MOVEI ac, udx}
	MOVE ac+1, [SIXBIT/logdev/]
	DEVLNM ac,
	error return
	normal return
		Set a logical name for the specified device.

110	MOVE ac, [len,,addr] PATH. ac, error return normal return . . . addr: job#,, {func chan} switches and flags XWD proj#, prog# . . . 0,,0	Read or modify the default directory path. (Refer to Tables 23 and 24).
111	MOVE ac, [n,,addr] METER. ac, error return normal return . . . addr: func arglist	Provide performance analysis and metering of dynamic system variables (refer to Table 25).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
112	{ MOVE ac, [n,,addr] MOVE ac, [SIXBIT/device/] MOVEI ac, chan } MTCHR. ac, error return normal return	Return characteristics of magnetic tape (refer to Table 26).
113[1]	MOVE ac, [2,,addr] JBSET. ac, error return normal return . . . addr: 0,, job# func,, value	Execute the specified function of SETUUO for a particular job.
114	MOVE ac, [3,,addr] POKE. ac, error return normal return . . . addr: location old value new value	Alter the specified location in the monitor.
115	MOVEI ac, job# TRMNO. ac, error return normal return	Return the number of the terminal currently controlling the specified job.
116	MOVE ac, [n,,addr] TRMOP. ac, error return normal return . . . addr: func	Perform miscellaneous terminal functions (refer to Table 27).
117	MOVEI ac, chan RESDV. ac, error return normal return	Reset the specified channel.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
120	MOVSI ac, n HRRI ac, m UNLOK. ac, error return normal return	Unlock a locked job in core.
121	MOVE ac, [func,,addr] DISK. ac, error return normal return	Set/read a disk or file system parameter (refer to Table 28).

122[1]	{MOVE ac, chan
	MOVEI ac, [SIXBIT/device/]
	MOVE ac, udx}
	DVRST. ac,
	error return
	normal return
		Restrict the specified device to a privileged job.

123[1]	{MOVEI ac, chan
	MOVE ac, [SIXBIT/device/]
	MOVEI ac, udx}
	DVURS. ac,
	error return
	normal return
		Remove the restricted status of the specified device.

124		Reserved to Digital.
125[1]	MOVE ac, [n,,addr] CAL11. ac, error return normal return	Front-end debug monitor call.

126	{MOVE ac, [SIXBIT/device/]
	MOVEI ac, chan}
	MOVE ac+1, reelid
	MTAID. ac,
	error return
	normal return
		Associate a visual identification with a magnetic tape drive during a mount.

127	{MOVEI ac, chan MOVE ac, [SIXBIT/device/]} IONDX. ac, error return normal return	Return the universal I/O index (UDX) for a device.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
130	MOVEI ac, addr CNECT. ac, error return normal return . . . addr: op-code,chan {SIXBIT/dev/} {udx}	Connect/disconnect devices to/from MPX channel (refer to Table 29).
131	MOVEI ac, chan MOVE ac+1, [out,,in] MVHDR ac, error return normal return	Move buffer ring header between core locations.
132	MOVEI ac, addr ERLST. ac, error return normal return	Provide a list of non-operational devices connected to an MPX channel.
133	MOVE ac, [len,,addr] SENSE. ac, error return normal return	Provide information necessary for error diagnosis and recovery for a device.
134	MOVE ac, [len,,addr] CLRST. ac, error return normal return . . . addr: {udx chan SIXBIT/dev/} 0.. SETSTS-bits	Allow a device to continue after a device error condition has occurred.
135	MOVE ac, addr PIINI. ac, error return normal return	Initialize the software interrupt system.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
136	MOVE ac, [flags,,addr] PISYS. ac, error return normal return . . . addr: type ofst,, reasons 0,,0	Control the software interrupt system (refer to Table 30).
137	DEBRK. return 1 return 2	Dismiss a software interrupt.
140	MOVE ac, [len,,addr] PISAV. ac, error return normal return	Save the state of the software interrupt system.
141	MOVEI ac, addr PIRST. ac, error return normal return	Restore the state of the software interrupt system.
142	MOVE ac, [len,,addr] IPCFR. ac, error return normal return . . . addr: flags sender's pid receiver's pid mess-len,, addr sender's ppn sender's capabilities	Retrieve an IPCF packet (refer to Table 31).
143	MOVE ac, [len,, addr] IPCFS. ac, error return normal return . . . addr: flags sender's pid receiver's pid mess-len,, addr sender's ppn sender's capabilities	Send an IPCF packet (refer to Table 31).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
144	MOVE ac, [len,,addr] IPCFQ. ac, error return normal return . . . addr: flags sender's pid receiver's pid mess-len,, addr sender's ppn sender's capabilities	Obtain information about an IPCF input queue (refer to Table 31).
145	MOVE ac, [func,,addr] PAGE. ac, error return normal return . . . addr: len anglist	Manipulate pages and the data associated with these pages (refer to Table 32).
146[1]	MOVE ac, [len,,addr] SUSET. ac, error return normal return . . . addr: arg	Set next I/O block number.
147		Reserved to Digital.
150[1]	MOVE ac, [len,,addr] SCHED. ac, error return normal return . . . addr: func,, addr	Set/read scheduler parameters.
151	MOVE ac, [func,,addr] ENQ. ac, error return normal return . . . addr: #locks,,len 0,, request-id X, 0,, level# user-code size,, #requested	Place a request in the queue associated with the specified resource (refer to Table 33).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
152	MOVE ac, [func, {addr / request-id}] DEQ. ac, error return normal return . . . addr: #locks,, len 0,, request-id X,0,, level# user-code size,, #requested	Removes one or more requests from the waiting queue for a specified resource (refer to Table 34).
153	MOVE ac, [func,,loc] MOVE ac+1, stat-blk ENQC. ac, error return normal return	Return information about the current state of the queues.
154	MOVE ac, [n,,addr] TAPOP. ac, error return normal return . . . addr: func {SIXBIT/dev/ / chan / udx} arglist	Allow user program to control, examine and modify information concerning any tape unit connected to the system (refer to Table 35).
155	MOVE ac, [len,,addr] FILOP. ac, error return normal return . . . addr: X,, func mode SIXBIT/dev/ obuf,,ibuf onum,,inum 0,, addr2 len,,addr 3	Allow user programs to create, read, write, append to, or close a file, or the user program may optionally request the monitor to update a RIB file (refer to Table 36).
156—157		Reserved to Digital.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Meaning
160[1]	MOVEI ac, addr ERRPT. ac, non-skip return skip return	DAEMON uses this call to log conditions into the log file.

[1]This monitor call is system-privileged, available only to users logged in under [1, 2] or programs running with the JACCT bit set. These calls are documented in UUOPRV.

Table 3
OPEN/UNIT Status Bits

Bit	Mnemonic	Meaning
0	UU. PHS	A search is made of device names only.
1	UU. DEL	Error logging disabled.
2	UU. DER	Error retry is disabled.
3	UU. AIO	Non-blocking I/O will be performed.
4	UU. IBC	Monitor is prevented from zeroing buffers after output.
5	UU. SIE	Synchronize on an I/O error.

Table 4
TTCALL Functions

Bit	Mnemonic	Meaning
0	INCHRW	Input character and wait.
1	OUTCHR	Output character; ignore nulls.
2	INCHRS	Input character and skip.
3	OUTSTR	Output a string.
4	INCHWL	Input character, wait, line mode.
5	INCHSL	Input character, skip, line mode.
6	GETLCH	Get line characteristics (refer to Table 37).
7	SETLCH	Set line characteristics.
10	RESCAN	Reset input stream to command.
11	CLRBFI	Clear type-in buffer.
12	CLRBFO	Clear type-out buffer.
13	SKPINC	Skip if a character can be input.
14	SKPINL	Skip if a line can be input.
15	IONEOU	Output as an image character.
16–17		(Reserved for expansion.)

Table 5
File Status Bits

Bit	Mnemonic	Meaning
18	IO.IMP	Improper mode. Attempt to write on software write-locked tape or file structure, or a software detected redundancy failure occurred. Usually set by monitor. On DECtape, attempt was made to read block 0 in non-standard dump mode.
19	IO.DER	Hard device detected error other than data parity error. This is a search, power supply, or channel memory parity error. The device is in error rather than the data on the medium. However, the data read into core or written on the device is probably incorrect. Usually set by monitor.
20	IO.DTE	Hard data error. The data read or written has incorrect parity as detected by hardware (or by software on CDR, PTR). The user's data is probably non-recoverable even after the device is fixed. Usually set by monitor.
21	IO.BKT	Block too large. A block of data from a device is too large to fit in a buffer; a block number is too large for the unit the file structure (DSK) or unit (DTA) has filled; or the user's quota on the file structure has been exceeded. Usually set by monitor.
22	IO.EOF	End of file. The user program has requested data beyond the last record or block with an IN or INPUT UUO, or USETI has specified a block beyond the last data block of the file. When set, no data has been read into the input buffer. Usually set by monitor.

Table 5 (Cont.)
File Status Bits

Bit	Mnemonic	Meaning
23	IO.ACT	I/O active. The device is actively transmitting or receiving data. Always set by monitor.
24–28		Device-dependent parameters usually set by user.
29	IO.WHD	Write disk pack headers.
30	IO.SYN	Synchronous input. Stops the device after each buffer is filled. Usually set by user.
31	IO.UWC	User word count. Forces monitor to use word count in third word of output buffer. Usually set by user.
32–35	IO.MOD	Data mode.

Table 6
CLOSE Options

Option	Meaning
0	Close output side of channel (bit 35 = 0). Close input side of channel (bit 34 = 0). On output CLOSE, unwritten blocks at end of file are deallocated (bit 33 = 0). On input CLOSE, access date of file is updated (bit 32 = 0).
1	Suppress closing of the output side of channel (bit 35 = 1).
2	Inhibit closing of the input side of channel (bit 34 = 1).
4[1]	Do not deallocate unwritten blocks at the end of file (bit 33 = 1).
10[1]	Inhibit the updating of access date on input (bit 32 = 1).
20[1]	Inhibit the deletion of the NAME block and the access tables in monitor core on INPUT, if a LOOKUP was done without a subsequent INPUT.
40[1]	Inhibit deletion of original file, if an ENTER which creates or supersedes was done.
100[1]	Delete NAME block and access tables; space is returned to free core.

[1]Use of this option is meaningful only with disk files.

Table 7
MTAPE Functions

Code	Symbol	Meaning
0	MTWAT.	No operation; wait for spacing and I/O to finish.
1	MTREW.	Rewind to load point.
3	MTEOF.	Write EOF.
6	MTSKR.	Skip one record.
7	MTBSR.	Backspace record.
10	MTEOT.	Space to logical end of tape; terminates either at two consecutive EOF marks or at the end of first record beyond end of tape marker.
11	MTUNL.	Rewind and unload.
13	MTBLK.	Write 3 inches of blank tape.
16	MTSKF.	Skip one file; implemented by a series of skip record operations.
17	MTBSF.	Backspace files; implemented by a series of backspace record operations.
100	MTDEC.	Initialize for Digital-compatible 9-channel.[1]
101	MTIND.	Initialize for industry-compatible 9-channel tape.[2]
200	MTLTH.	Read next record at low threshold (TM10 only).

[1] Digital-compatible mode writes (or reads) 36 data bits in five frames of a 9-track magnetic tape. It can be any density, any parity, and is not industry compatible. This mode is in effect until a RELEAS D, or a MTIND. D, is executed.

[2] Industry-compatible 9-channel mode writes (or reads) 32 data bits per word in four frames of a 9-track magtape and ignores the low order four bits of a word. It must be 800 bits/in density, odd parity.

Table 8
Extended LOOKUP, ENTER, and
RENAME Argument Block

Rel. Loc.	Mnemonic	Arguments
0	.RBCNT	Count of arguments following.
1	.RBPPN	Directory name (project-programmer no.) or pointer.
2	.RBNAM	Filename in SIXBIT.
3	.RBEXT	File extension (LH). High order 3 bits of 15-bit creation date (bits 18–20). Access date (bits 21–35).
4	.RBPRV	Privilege (bits 0–8). Mode (bits 9–12). Creation time (bits 13–23). Low order 12 bits of 15-bit creation date (bits 24–35).
5	.RBSIZ	Length of file in data words written (+ no. words).
6	.RBVER	Octal version number (36 bits).
7	.RBSPL	Filename to be used in output spooling.
10	.RBEST	Estimated length of file (+ no. blocks).
11	.RBALC	Highest relative block number within the file allocated by user or monitor to file (not counting 2nd RIB).
12	.RBPOS	Logical block no. of first block to allocate within file structure.
13	.RBFTI	Future nonprivileged argument — reserved definition.
14	.RBNCA	Nonprivileged argument reserved for customer definition.
15	.RBMTA	Tape label if on back-up tape.
16	.RBDEV	Logical unit name on which the file is located.

Table 8 (Cont.)
Extended LOOKUP, ENTER, and
RENAME Argument Block

Rel. Loc.	Mnemonic	Arguments
17	.RBSTS	1) LH = Combined status of all files in UFD 2) RH = Status of this file.
20	.RBELB	Bad logical block within error unit.
21	.RBEUN	1) LH = Logical unit no. within F.S. of bad unit (0,,N). 2) RH = No. of consecutive blocks in bad region.
22	.RBQTF	(UFD-only) FCFS logged-in quota in blocks.
23	.RBQTO	(UFD-only) logged-out quota in blocks.
24	.RBQTR	(UFD-only) reserved logged-in quota.
25	.RBUSD	(UFD-only) no. of blocks used at last logout.
26	.RBAUT	Author project-programmer number.
27	.RBNXT	Next file structure name if file continued.
30	.RBPRD	Predecessor file structure name if file continued.
31	.RBPCA	Privileged customer — defined.
32	.RBUFD	Logical block number within file structure of the RIB of the UFD in which the name of this file appears.
33	.RBFLR	Relative block number in file of first block in RIB.
34	.RBXRA	Extended RIB address.
35	.RBTIM	Creation date in universal date-time standard.

Table 9
Device Characteristic Bits

Bit	Mnemonic	Meaning
0	DV.DRI	DECtape directory is in core. This bit is cleared by an ASSIGN or DEASSIGN command to that unit.
1	DV.DSK	Device is a disk unit.
2	DV.CDR	Device is a card processing unit. If bit 16 is also set, device is a card reader. If bit 17 is also set, device is a card punch.
3	DV.LPT	Device is a line printer.
4	DV.TTA	Device is a controlling TTY (e.g., it is controlling a job).
5	DV.TTU	Device is a TTY that is in use as a user terminal (it may be detached).
6		Reserved to Digital.
7	DV.DIS	Device is a display unit.
8	DV.LNG	Device has a long dispatch table (that is, monitor calls other than INPUT, OUTPUT, CLOSE, and RELEASE perform real actions).
9	DV.PTP	Device is a paper-tape punch.
10	DV.PTR	Device is a paper-tape reader.
11	DV.DTA	Device is a DECtape unit.
12	DV.AVL	Device is available to job issuing DEVCHR monitor call or is already assigned to this job.
13	DV.MTA	Device is a magnetic tape unit.
14	DV.TTY	Device is a TTY.
15	DV.DIR	Device is a directory device (DTA or DSK).
16	DV.IN	Device can perform input.
17	DV.OUT	Device can perform output.

Table 9 (Cont.)
Device Characteristic Bits

Bit	Mnemonic	Meaning
18	DV.ASC	Device is assigned by a console command.
19	DV.ASP	Device is assigned by program (INIT or OPEN).
Remaining Bits		If bit 35-n contains a 1, then mode n is legal for that device. The mode number (0 through 17) must be converted to decimal (e.g., mode 17 is represented by bit 35–15 or bit 30).

Table 10
APRENB Flags

Bit	Mnemonic	Trap On
18	AP.REN	Repetitive Enable
19	AP.POV	Pushdown overflow
22	AP.ILM	Memory protection violation
23	AP.NXM	Nonexistent memory flag
24	AP.PAR	Parity error
26	AP.CLK	Clock flag
29	AP.FOV	Floating-point overflow
32	AP.AOV	Arithmetic overflow

Table 11
GETTAB Tables

Table #	Name	Meaning
00	.GTSTS	Job status word; index by job or segment number.
01	.GTADR	Job relocation and protection; index by job or segment number.
02	.GTPPN	Project and programmer numbers; index by job or segment number.
03	.GTPRG	User program name; index by job or segment number.
04	.GTTIM	Total run time used in units of jiffies; index by job number.
05	.GTKCT	Kilo-Core ticks of job; index by job number.
06	.GTPRV	Privilege bits of job, index by job number.
07	.GTSWP	Swapping parameters of job; index by job or segment number.
10	.GTTTY	Terminal-to-job translation; index by job number.
11	.GTCNF	Configuration table; index by item number.
12	.GTNSW	Nonswapping data; index by item number.
13	.GTSDT	Swapping data; index by item.
14	.GTSGN	High segment table; index by job number. Bit 0 = 0, then bits 18–35 are index of high segment (if bits 18–35 = 0, then there is no high segment). Bit 0 =1 , then bits 18–35 are number of K to spy on. Bit 1 (SN%SHR) = 1 if job has a high segment that is sharable. Bit 5 (SN%LOK) = 1 if job has a high segment that is locked.
15	.GTODP	Once-only disk parameters; index by item number.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
16	.GTLDV	5-series monitor disk parameters; index by item number.
17	.GTRCT	Disk blocks read by job; used by DSK command: a. Bits 0–11 = incremental blocks b. Bits 12–35 = total blocks since start of job. Index by job number. Job 0 indicates the number of blocks swapped in.
20	.GTWCT	Disk blocks written by job: a. Bits 0–11 = incremental blocks. b. Bits 12–25 = total blocks since start of job. Index by job number. Job 0 indicates the number of blocks swapped out.
21	.GTDBS	Reserved for future.
22	.GTTDB	Reserved for future.
23	.GTSLF	Table of GETTAB addresses (GETTAB immediate); index by GETTAB table number.
24	.GTDEV	Device or file structure name of sharable high segment. Index by high segment number.
25	.GTWSN	Two-character SIXBIT names for job queues; index by item numbers.
26	.GTLOC	Job's logical station; index by job number.
27	.GTCOR	Physical core allocation. One bit per one K of core if system does not include LOCK monitor call. Two bits per entry if system includes LOCK monitor call. A nonzero entry indicates core in use.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
30	.GTCOM	Table of SIXBIT names of monitor commands.
31	.GTNM1	First half of user name in SIXBIT; index by job number.
32	.GTNM2	Last half of user name in SIXBIT; index by job number.
33	.GTCNO	Job's charge number, index by job number.
34	.GTTMP	Job's TMPCOR pointers; index by job number.
35	.GTWCH	Job's WATCH bits; index by job number.
36	.GTSPL	Job's spooling control bits; index by job number.
37	.GTRTD	Job's real-time status word; index by job number.
40	.GTLIM	Job's time limit in jiffies and Batch status; index by job number. a. Bits 1–9 (JB.LCR) = job's core limit. b. Bit 10 = 1 (JB.LBT) if a Batch job. c. Bit 11 = 1 (JB.LSY) if program comes from SYS. Set on R command or equivalent. Cleared on R command (or equivalent) or SETNAM UUO. d. Bits 12–35 (JB.LTM) = job's time limit.
41	.GTQQQ	Timesharing scheduler's queue headers.
42	.GTQJB	Timesharing scheduler's queue that job is in; index by job number.
43	.GTCM2	Table of SET command names.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
44	.GTCRS	Status of hardware taken on a crash. 0: CR.SAP=CONI APR, 1: CR.SPI=CONI PI, 2: CR.SSW=DATAI APR. The remainder of the table contains the status of the various devices.
45	.GTISC	Swapper's input scan list of queues.
46	.GTOSC	Swapper's output scan list of queues.
47	.GTSSC	Scheduler's scan list of queues.
50	.GTRSP	Response counter table. Time in jiffies when user started to wait for his job to run. This time is cleared when the job is first given to the processor by the scheduler.
51	.GTSYS	System variables which are independent of CPU.
52	.GTWHY	Operator why comments in ASCII.
53	.GTTRQ	Total time job was in run queues whether it was running or not.
54	.GTSPS	Job status word of second processor. Bit 29 (SP.SCO) = SET CPU command can be used. Bit 35 (SP.CR0) = SET CPU UUO can be used. Bits for other processors can be obtained by shifting left 1 bit per processor.
55	.GTCOC	CPU0 CDB constants; index by item number.
56	.GTCOV	CPU0 CDB variables; index by item number.
57	.GTC1C	CPU1 CDB constants; index by item number; see .GTCOC.
60	.GTC1V	CPU1 CDB variables; index by item number; see .GTCOV.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
61	.GTC2C	CPU2 CDB constants; index by item number; see .GTCOC.
62	.GTC2V	CPU2 CDB variables; index by item number; see .GTCOV.
63	.GTC3C	CPU3 CDB constants, index by item number; see .GTCOC.
64	.GTC3V	CPU3 CDB variables; index by item number; see .GTCOV.
65	.GTC4C	CPU4 CDB constants; index by item number; see .GTCOC.
66	.GTC4V	CPU4 CDB variables; index by item number; see .GTCOV.
67	.GTC5C	CPU5 CDB constants; index by item number; see .GTCOC.
70	.GTC5V	CPU5 CDB variables; index by item number; see .GTCOV.
71	.GTFET	Current setting of all features defined in F.MAC, index by item number.
72	.GTEDN	Table of ersatz device names.
73	.GTSCN	Scanner response data; index by item number.
74	.GTSND	Last send-all message; index by item number.
75	.GTCMT	SET TTY command names.
76	.GTPID	Process Communication ID (IPCF); index by item number.
77	.GTIPC	IPCF miscellaneous data; index by item number.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
100	.GTUPM	Physical page number of the user page map if indexed by job number. High order nine bits is the virtual page number where high segment starts in program's address space when indexed by high segment number.
101	.GTCMW	SET WATCH command names; index by item number.
102	.GTCVL	Current virtual limit, current physical limit, index by job number.
103	.GTMVL	Maximum virtual limit, maximum physical limit; index by job number.
104	.GTIPA	IPCF statistics per job; index by job number.
105	.GTIPP	IPCF pointers and counts; index by job number.
106	.GTIPI	PID for jobs SYSTEM INFO; index by job number.
107	.GTIPQ	IPCF flags and quotas per job; index by job number.
110	.GTDVL	Pointer to this job's logical name table; index by job number.
111	.GTABS	Address break word; index by job number.
112	.GTCMP	Reserved.
113	.GTVM	General virtual memory data; index by item number.
114	.GTVRT	Paging rate per job; index by item number.
115	.GTSST	Scheduler statistics.
116	.GTDCF	Channel use fraction.
117	.GTST2	Second job status word.

Table 11 (Cont.)
GETTAB Tables

Table #	Name	Meaning
120	.GTJTC	Job type and scheduler class.
121	.GTCQP	Scheduler class quota.
122	.GTCQJ	Scheduler class quota.
123	.GTCRT	Scheduler class runtime.
124	.GTSQH	Subqueue headers.
125	.GTSQ	Subqueue word for job.
126	.GTSID	Special PID table.
127	.GTENQ	ENQ/DEQ statistics.
130	.GTJLT	Logged in time.
131	.GTEBT	Jiffies of KL10 EBOX time.
132	.GTEBR	Jiffies remainder MOD RTUPS of 131.
133	.GTMBT	Jiffies of MBOX time.
134	.GTMBR	Jiffies remainder MOD RTUPS of 133.

Table 12
TMPCOR Codes

Code	Mnemonic	Meaning
0	.TCRFS	Obtain free space.
1	.TCRRF	Read file.
2	.TCRDF	Read and delete file.
3	.TCRWF	Write file.
4	.TCRRD	Read directory.
5	.TCRDD	Read and clear directory.

Table 13
DSKCHR Argument Block

Location	Mnemonic	Meaning
addr	.DCNAM	The argument name in SIXBIT that the user program supplies.
addr+1	.DCUFT	The number of blocks left of the logged-in job's quota before the User File Directory of the job is exhausted on the unit specified in addr.
addr+2	.DCFCT	The number of blocks on a first-come-first-serve basis left for all users on the specified file structure.
addr+3	.DCUNT	The number of blocks left for all users on the specified unit.
addr+4	.DCSNM	The file structure name to which this unit belongs.
addr+5	.DCUCH	The characteristic sizes as follows bits mnemonic meaning 0-8 DC.UCC blocks per cluster 9-17 DC.UCT blocks per track 18-35 DC.UCY blocks per cylinder
addr+6	.DCUSZ	The number of 128-word blocks on the specified unit.
addr+7	.DCSMT	The mount count for the file structure.
addr+10	.DCWPS	The number of words containing data bits per SAT block on this unit.
addr+11	.DCSPU	The number of SAT block per unit.
addr+12	.DCK4S	The number of K allocated for swapping.
addr+13	.DCSAJ	The file structure mount word.
addr+14	.DCULN	The unit's logical name.
addr+15	.DCUPN	The unit's physical name.
addr+16	.DCUID	The unit's ID.
addr+17	.DCUFS	The first logical block used for swapping on this unit.
addr+20	.DCBUM	The number of blocks per unit (including maintenance cylinders).
addr+21	.DCCYL	The current cylinder number.
addr+22	.DCBUC	The number of blocks per unit in PDP-11 compatibility mode.
addr+23	.DCLPQ	The length of the position wait queue.
addr+24	.DCLTQ	The length of the transfer wait queue.

Table 14
DSKCHR Status Bits

Bit	Mnemonic	Meaning
0	DC.RHB	The monitor must reread the home block before the next operation, to ensure that the pack ID is correct. The monitor will set this bit when a disk pack goes off-line.
1	DC.OFL	The unit is off-line.
2	DC.HWP	The unit is hardware write-protected.
3	DC.SWP	The unit belongs to a file structure that is write-protected by the software for this job.
4	DC.SAF	The unit belongs to a single-access file structure.
5	DC.ZMT	The unit belongs to a file structure with a mount count that has gone to zero (i.e., no one is using the file structure).
6		Reserved.
7-8	DC.STS	The unit status, either code mnemonic meaning 0 .DCSTP A pack is mounted. 2 .DCSTN No pack is mounted.
3	DC.STD	The unit is down.
9	DC.MSB	The unit has more than one DAT block.
10	DC.NNA	The unit belongs to a file structure for which the operator has requested no new INITs, LOOKUPs, ENTERs, or FILOP.'s; set by a privileged STRUUO function, see the STRUUO Specification in the DECsystem-10 Software Notebooks.
11	DC.AWL	The file structure is write-locked for all jobs.
12-14		Reserved.
15-17	DC.TYP	The type of argument passed to monitor in addr, either code mnemonic meaning 0 .DCTDS a generic name 1 .DCTAB a subset of file structures because of file structure abbreviation 2 .DCTFS a file structure name 3 .DCTUF a unit within a file structure 4 .DCTCN controller class name 5 .DCTCC controller class 6 .DCTPU physical unit

Table 14 (Cont.)
DSKCHR Status Bits

Bit	Mnemonic	Meaning
18-20	DC.DCN	The data channel number that the software believes the hardware is connected to; the first data channel is 0.
21-26	DC.CNT	The controller type: code mnemonic meaning 1 .DCCFH RC10 controller 2 .DCCDP RP10 controller
27-29	DC.CNN	The controller number; first controller of each type starts with 0.
30-32	DC.UNT	The unit type; a controller-dependent field used to distinguish various options of a unit on its controller. code mnemonic meaning 0 .DCUFD RD10 Burroughs disk (if bits 21-26=1). 1 .DCUFM RM10B Bryant disk (if bits 21-16=1). 2 .DCUD2 RP02 disk pack (if bits 21-26=2). 3 .DCUD3 RP03 disk pack (if bits 21-26=2).
33-35	DC.UNN	The physical unit number within the controller; first unit number is 0.

Table 15
JOBSTR/GOBSTR Status Bits

Bit	Mnemonic	Meaning
0	DF.SWL	Software write protection is in effect for this job.
1	DF.SNC	Files are not to be created on this file structure, when a multiple file structure name is specified in an INIT or OPEN monitor call. Files can be created if a specific file structure or physical unit is specified.

Table 16
STRUUO Functions

Code	Mnemonic	Meaning
0	.FSSRC	Define a new search list for this job. This is the only unprivileged function.
1	.FSDSL	Define a new search list for any job or for the system. Privileged function.
2	.FSDEF	Define a new file structure. Privileged function.
3	.FSRDF	Redefine an existing file structure. Privileged function.
4	.FSLOK	Prevent any further new INITs, ENTERs, or LOOKUPs. Privileged function.
5	.FSREM	Remove file structure from system. Privileged function.
6	.FSREM	Test and set UFD interlock. Privileged function.
7	.FSUCL	Clear UFD interlock. Privileged function.
10	.FSETS	Simulate disk hardware errors. Privileged function.

Table 17
DEVTYP Bits

Bit	Name	Meaning
0	TY.MAN	LOOKUP/ENTER mandatory.
1		Reserved for the future.
12	TY.AVL	Device is available to this job.
13	TY.SPL	Spooled on disk. (Other bits reflect properties of real device, except variable buffer size.)
14	TY.INT	Interactive device (output after each break character).
15	TY.VAR	Capable of variable buffer size (user can set his own buffer length).
16	TY.IN	Capable of input.
17	TY.OUT	Capable of output.
18–26	TY.JOB	Job number that currently has device INITed or ASSIGNed.
27–28		Reserved for the future.
29	TY.RAS	Device is a restricted device (i.e., can be assigned only by a privileged job or the MOUNT command).
30–35	TY.DEV	Device type code. Code 0 (.TYDSK) Disk of some sort Code 1 (.TYDTA) DECtape Code 2 (.TYMTA) Magnetic tape Code 3 (.TYTTY) TTY or equivalent Code 4 (.TYPTR) Paper tape reader Code 5 (.TYPTP) Paper tape punch Code 6 (.TYDIS) Display Code 7 (.TYLPT) Line printer Code 10 (.TYCDR) Card reader Code 11 (.TYCDP) Card punch Code 12 (.TYPTY) Pseudo-TTY Code 13 (.TYPLT) Plotter Code 14 (.TYEXT) External task Code 15 (.TYMPX) Software MPX Code 16 (.TYPAR) PA611R on DC44 Code 17 (.TYPCR) PC11(R) on DC44 Code 20 (.TYPAP) PA611P on DC44 Code 21 (.TYLPC) LPC-11 on DC44 Code 22 (.TYPCP) PC-11 (P) on DC44 Codes 23–57 Reserved for Digital Codes 60–77 Reserved for customer

Table 18
Job Status Bits

Bit	Mnemonic	Meaning
0	JB.UJA	Job number is assigned.
1	JB.ULI	Job is logged in.
2	JB.UML	TTY is at monitor level.
3	JB.UOA	TTY output is available.
4	JB.UDI	TTY is at user level and in input wait, or TTY is at monitor level and can accept a command. In other words, there is no command awaiting decoding or being delayed, the job is not running, and the job is not stopped waiting for operator device action.
5	JB.UJC	JACCT is set. In particular, ↑C↑C will not work.
6		Reserved for the future.
18–35	JB.UJN	Job number being checked or 0 if no job number is assigned.

Table 19
Node Status Bits

Code	Mnemonic	Meaning
10	.RMSUL	The node is loaded.
4	.RMSUG	The node is in the loading procedure.
2	.RMSUD	The node is down.
1	.RMSUN	The node is not in contact with the central site.

Table 20
HIBERnate Conditions

Bit	Mnemonic	Meaning
0	HB.SWP	Job will be swapped immediately.
10	HB.IPC	Job will be awakened on the delivery of an IPCF packet to an input queue.
11		Job will be awakened when asynchronous I/O is complete.
12	HB.RPT	Job will be awakened when PTY activity occurs.
13	HB.RTL	Job will be awakened when a line of input is ready.
14	HB.RTC	Job will be awakened when a character is ready.
15	HB.RWT	Calling job and HIBERnating job must have same project-programmer number.
16	HB.RWP	Calling job and HIBERnating job must have same program number.
17	HB.RWI	HIBERnating job can only be awakened by itself.

Table 21
SETUUO Functions

Function	Name	Meaning
0	.STCMX	CORMAX. (Priv.)
1	.STCMN	CORMIN. (Priv.)
2	.STDAY	DAYTIME. (Priv.)
3	.STSCH	SCHED. (Priv.)
4	.STCDR	CDR. Input name for this job. Three SIXBIT characters (RH of AC) are stored in left half of .GTSPL.
5	.STSPL	SPOOL for this job. Not a privileged function unless the user is unspooling devices. Bits 31—35 of .GTSPL.
6	.STWTC	WATCH for this job. Bits 1—6 of .GTWCH.
7	.STDAT	DATE. (Priv.)
10	.STOPR	OPR. (Priv.)
11	.STKSY	KSYS. (Priv.)
12	.STCLM	CORE limit. (Priv.)
13	.STTLM	TIME limit for job. (Priv.)
14	.STCPU	CPU specification for this job. Bit 35 = CPU0 . . . Bit 30 = CPU5
15	.STCRN	CPU Runnability. (Priv.)
16	.STLMX	LOGMAX. (Priv.)
17	.STBMX	BATMAX. (Priv.)
20	.STBMN	BATMIN. (Priv.)
21	.STDFL	DSKFUL for this job. An argument of 0 causes a pause, and an argument of 1 causes an error when the disk is full or the user's quota has been exceeded. The current setting can be determined by issuing an argument other than 0 or 1. The initial setting is ERROR (1).
22	.STMVM	Maximum virtual memory. (Priv.)

Table 21 (Cont.)
SETUUO Functions

Function	Name	Meaning
23	.STMVR	Maximum virtual memory rate. (Priv.)
24	.STUVM	User virtual memory maximum. (Priv.)
25	.STCVM	User current virtual memory maximum. The LH contains the current virtual page limit, the RH contains the current physical page limit.
26	.STTVM	User virtual time interrupts. Time interval between virtual time traps in milliseconds. This causes a code 5 page fault to the page fault handler each time "interval" has elapsed in virtual time.
27	.STABK	Address Break. On a normal return, the new address break conditions and the break address will have been set. Break conditions are: Bit 0 Execute Bit 1 Read Bit 2 Write Bit 3 Monitor Call
30	.STPGM	Set program to run.
31	.STDER	Set deferred spooling.

Table 22
CHKACC Access Codes

Access Codes	Mnemonic	Meaning
0	.ACCPR	Change the file's protection code.
1	.ACREN	RENAME the specified file.
2	.ACWRI	Write the specified file.
3	.ACUPD	Update the file (in old-style update mode).
4	.ACAPP	Append to the end of the file.
5	.ACRED	Read the specified file.
6	.ACEXO	Execute the file.
7	.ACCRE	Create the file in user's UFD.
10	.ACSRE	Read the directory as a file.

Table 23
PATH. Function Codes

Code	Mnemonic	Meaning
−1	.PTFRD	Read the default directory path.
−2	.PTFSD	Define the default directory path.
−3	.PTFSL	Define the additional path.
−4	.PTFRL	Return the additional path.

Table 24
PATH. Switches and Flags

Bit(s)	Mnemonic	Meaning
18–29	PT.SLT	Type of search. code mnemonic meaning 1 .PTSLJ JOB 2 .PTSLA ALL 3 .PTSLS SYS:
30	PT.IPP	Implied project-programmer number.
31	PT.LIB	Library is searched.
32	PT.SYS	System directory is searched.
33	PT.NEW	Experimental system directory is searched.
34	PT.SNW	Search /NEW.
35	PT.SSY	Search /SYS.

Table 25
METER. Function Codes

Function Code	Mnemonic	Description
0	.MEFCI	Initialize the meter channel.
1	.MEFCS	Obtain the meter channel status.
2	.MEFCR	Release the meter channel.
3	.MEFPI	Initialize meter points.
4	.MEFPS	Obtain meter point status.
5	.MEFPR	Release meter points.

Table 26
MTCHR. Characteristics

Word	Mnemonic	Meaning
1	.MTRID	SIXBIT/reelid/.
2	.MTFIL	The number of files from the beginning of the tape.
3	.MTREC	The number of records from last end-of-file.
4	.MTCRD	The number of characters read since last reload.
5	.MTCWR	The number of characters written since last reload.
6	.MTSRE	The number of soft-read errors since last reload.
7	.MTHRE	The number of hard-read errors since last reload.
10	.MTSWE	The number of soft-write errors since last reload.
11	.MTHWE	The number of hard-write errors since last reload.
12	.MTTME	The number of total media errors since last unload.
13	.MTTDE	The number of device errors since system load.
14	.MTTUN	The number of unloads since system load.
15	.MTRTY	The number of retries as a result of last error.
16	.MTCCR	Character count of last record read or written.
17	.MTPBE	The right half contains the record number; and the left half contains the position before the last error in the file.
20	.MTFES	The final error state.
21	.MTTRY	The number of retries to resolve the last error, bit 1=1 hard error.

Table 27
TRMOP. Function Codes

Code	Mnemonic	Effect
1	.TOSIP	Skip if the terminal's input buffer is not empty.
2	.TOSOP	Skip if the terminal's output buffer is not empty.
3	.TOCIB	Clear the terminal's input buffer.
4	.TOCOB	Clear the terminal's output buffer.
5	.TOOUC	Output the normal mode character in addr+2 to the terminal.
6	.TOOIC	Output the image mode character (8 bits) in addr+2 to the terminal.
7	.TOOUS	Output the ASCIZ string in addr+2 to the terminal.
10	.TOINC	Input the normal mode character from the terminal to the AC.
11	.TOIIC	Input the image mode character from the terminal to the AC.
12	.TODSE	Enable the modem for outgoing calls.
13	.TODSC	Enable and place outgoing call on a modem with a dialer. A phone number of up to 17 digits is stored in 4-bit bytes in addr+2 and addr+3. The phone number is terminated by a 17 byte. If the caller must wait for a second dial tone (e.g., after dialing 9), a 16 byte results in a 15 second wait.
14	.TODSF	Disconnect a call (i.e., hang up modem).
15	.TORSC	Set the terminal element to the element number stored in addr+2.
16	.TOELE	Perform a rescan.
17	.TOEAB	Enable automatic baud detection.
1000	.TOOIP	Output is in progress if bit 35 = 1.
1001	.TOCOM	Terminal is in monitor mode if bit 35 = 1.
1002 2002	.TOXON	Set or obtain the status of the paper-tape bit (if bit 35 = 1, the terminal is in paper-tape mode).
1003 2003	.TOLCT	Set or obtain the lower-case capabilities of the terminal (If bit 35 = 1, the terminal has no lower case capabilities.)
1004 2004	.TOSLV	Set or obtain the slave characteristic of this terminal (if bit 35 = 1, the terminal is slaved).
1005	.TOTAB	Set or obtain the TAB capabilities of the terminal (if bit 35 = 1, the terminal performs TABs).

Table 27 (Cont)
TRMOP. Function Codes

Code	Mnemonic	Effect
1006 2006	.TOFRM	Set or obtain the value of the FORM switch (if bit 35 = 1, the terminal performs formfeeds; if bit 35 = 0, the terminal performs linefeeds).
1007 2007	.TOLCP	Set or obtain the value of the local copy switch (if bit 35 contains 0, characters will not be echoed).
1010 2010	.TONFC	Set or obtain the value of the CR/LF switch (if bit 35 = 1, carriage returns/linefeeds will not be performed).
1011	.TOHPS	Read the value of the horizontal position of the carriage (a value from 0 to 377 is returned in the AC).
1012	.TOWID	Set or obtain the carriage width (this value may be set from 16 to 200).
1013 2013	.TOSND	Set or obtain the TTY GAG switch (if bit 35 = 1, NOGAG).
1014 2014	.TOHLF	Set or obtain the half-duplex characteristics of this terminal (if bit 35 = 1, the terminal is in half-duplex mode).
1015	.TORMT	Set or obtain the remote status of this terminal (if bit 35 = 1, the terminal is remote).
1016 2016	.TODIS	Set or obtain the display characteristic of this terminal (if bit 35 = 1, the terminal is a display device).
1017 2017	.TOFLC	Set or obtain the filler class code associated with this terminal. (The filler class code may be set from 0 to 3.)
1020 2020	.TOTAP	Set or obtain the status of the paper-tape (if bit 35 = 1, paper-tape has been enabled).
1021 2021	.TOPAG	Set or clear the paged display mode (if bit 35 = 1, paged display mode is cleared). Page display can also be set and cleared by the SET TTY PAGE command).
1022		Reserved to Digital.
1023	.TOPSZ	Set or obtain the number of lines to a page in the range 0 to 63. The size of a page may also be changed by the SET TTY PAGE command.
1024 2024	.TOPCT	Set or obtain the value of the page counter in the range 0 to 63.
1025	.TOBLK	Set or clear the capability to suppress blank lines on output (if bit 35 = 1, normal output is performed, if bit 35 = 0, multiple linefeeds are suppressed and vertical tabs are changed to linefeeds).
1026 2026	.TOALT	Set or clear the capability of converting ALTmodes on output (if bit 35 = 0, 175 and 176 are converted to 033; if bit 35 = 1, no conversion is performed).

Table 27 (Cont)
TRMOP. Function Codes

Code	Mnemonic	Effect
1027 2027	.TOAPL	Set or clear APL mode (if bit 35 = 1, APL mode is in effect).
1030 2030	.TORSP	Set or obtain the received speed.
1031 2031	.TOTSP	Set or obtain the transmit speed.
1032 2032	.TODBK	Set or clear debreak capabilities (if bit 35 = 1, debreak is enabled).
1033 2033	.TO274	Set or clear 2741 terminal characteristics (if bit 35 = 1, the terminal is a 2741).
1034	.TOTDY	Obtain the status of the TIDY word.
1035 2035	.TOACR	Set or clear the automatic carriage return facility. If bit 35 = 1, the first space after the specified column is automatically converted to a carriage return.
1036 2036	.TORTC	Obtain or set the status of CTRL/R and CTRL/T compatibility mode.
1037	.TOPBS	PIM mode break set (4 9-bit bytes).

[1]This is a privileged function.

Table 28
DISK. Function Codes

Function Code	Mnemonic	Meaning
0	.DUPRI	Set the priority level to that specified at addr.
1	.DUSEM[1]	Set the PDP-11 (i.e., 22-sector) mode on the RP04.
2	.DUSTM[1]	Set the PDP-10 (i.e., 20-sector) mode on the RP04.
3	.DUUNL[1]	Unload the RP04.
4	.DUOLS[1]	Specified channel/controller will be set off-line.
5	.DUOLN[1]	Specified channel/controller is off-line now.
6	.DUONL[1]	Specified channel/controller is back on-line.

[1]This is a privileged function.

Table 29
CNECT. Operation Codes

Code	Mnemonic	Meaning
1	.CNCCN	Connect the device to an MPX channel.
2	.CNCDC	Equivalent to a CLOSE and disconnect.
3	.CNCDR	Equivalent to a RESET and disconnect.

Table 30
Software Interrupt Flags

Bit	Mnemonic	Meaning
1	PS.FOF	Turn interrupt system off.
2	PS.FON	Turn interrupt system on.
3	PS.FCP	Clear all pending interrupts.
4	PS.FCS	Clear all pending interrupts for a specified device.
5	PS.FRC	Remove the specified device or condition.
6	PS.FAC	Add the specified device or condition.

Table 31
IPCF Flags

Bit	Mnemonic	Meaning
0	IP.CFB	Do not wait for message if the queue is zero.
1	IP.CFS	Use the indirect sender's PID. (PID is found at the address specified in the word 1, .IPCFS).
2	IP.CFR	Use the indirect receiver's PID. (PID is found at the address specified in word 2, .IPCFR).
3	IP.OFO	Allow one send request above the send quota. (The default send quota is two).
4	IP.CFT	Truncate the message, if it is larger than the reserved space.
5-17		Reserved.
18	IP.CFP	The packet is privileged. (This bit can be set only if the sending/receiving job is a privileged job.) If a privileged sender sets this bit, IPCFR. and IPCFQ. will return this. bit = 1 in any reply. If this bit was not set, the bit will contain 0 when the packet is placed in the receiver's queue. If this job is not privileged and this bit is set, an error code will be returned.
19	IP.CFV	The packet is a page of data (512 decimal words). Both the sender and the receiver must have virtual memory capabilities. A page must have been reserved (by using the PAGE. monitor call) before a page can be passed using IPCF.
20-23		Reserved.
24-29	IP.CFE	The error code is returned in these bits, if an error is encountered on a receive or a send.
30-32	IP.CFC	The system and sender code; this code can be set only by a privileged job. Code — Mnemonic — Meaning 1 — .IPCCC — Sent by [SYSTEM] IPCC. 2 — .IPCCF — Sent by system-wide [SYSTEM] INFO. 3 — .IPCCP — Sent by receiver's local [SYSTEM] INFO.
33-35	IP.CFM	Return the packet to the sender. Code — Mnemonic — Meaning 1 — .IPCFN — Packet in the job's input queue is one that was sent to another PID but returned to the sender due to the receiver's PID being dropped before the packet was received. This bit cannot be set by an unprivileged job; the monitor will fill it in for examination by an unprivileged job.

Table 32
PAGE. Function Codes

Code	Mnemonic	Meaning
0	.PAGIO	Swap page in/out.
1	.PAGCD	Create/destroy a page.
2	.PAGEM	Move/exchange a page.
3	.PAGAA	Clear/set access allowed.
4	.PAGWS	Get the working set.
5	.PAGGA	Get access allowed.
6	.PAGCA	Get page accessibility.
7	.PAGCH	Create a high segment.

Table 33
ENQ. Function Codes

Bit	Mnemonic	Meaning
0	.ENQBL	The request for ownership is placed in the waiting queue. The job blocks until all requests for ownership have been granted.
1	.ENQAA	If all requests for ownership specified in this argument block cannot be granted immediately, no requests are entered in the waiting queues, the error return is taken, and an error code is returned in the AC.
2	.ENQSI	Request for a software interrupt when all requests have been granted.
3	.ENQMA	Modify the access specification of a previously given ownership request.

Table 34
DEQ. Function Codes

Bit	Mnemonic	Meaning
0	.DEQDR	Dequeue the request(s) specified.
1	.DEQDA	Remove all requests from this caller from waiting queues, and dissolve all locks associated with this caller.
2	.DEQID	Remove all requests/locks associated with the specified request — i.d.

Table 35
TAPOP. Function Codes

Function Code	Mnemonic	Meaning
1	.TFWAT	Wait for I/O to stop.
2	.TFREW	Rewind the tape to the load point.
3	.TFUNL	Rewind and unload the tape.
4	.TFFSB	Skip forward 1 block.
5	.TFFSF	Skip forward 1 file.
6	.TFSLE	Skip to the logical end of the tape.
7	.TFBSB	Skip backward 1 block.
10	.TFBSF	Skip backward 1 file.
11	.TFWTM	Write a tape mark.
12	.TFWLG	Write three inches of blank tape.
13	.TFDSE	Data security erase (blank the entire tape) TX01 only.
14	.TFWLE	Write the logical end of the tape.
15[1]	.TFLBG	Get the tape label device data block.
16[1]	.TFLRL	Release the label device data block.
17[1]	.TFLSU	Swap units.
20[1]	.TFLDD	Destroy the tape label data base.
21	.TFFEV	Force the end of volume processing.
22	.TFURQ	User request for label processing.
1000	.TFTRY	Return in the AC the number of retries on the last error.
1001 2001	.TFDEN	Obtain (or set) the density indicator, either: code — mnemonic — meaning 0 — .TFD00 — unit default bpi 1 — .TFD20 — 200 bpi 2 — .TFD55 — 556 bpi

[1]Performed by tape label manager, privileged for use by label processor.

Table 35 (Cont.)
TAPOP. Function Codes

Function Code	Mnemonic	Meaning
		code mnemonic meaning 3 .TFD80 800 bpi 4 .TFD16 1600 bpi (TU70/43 only). 5-17 Reserved.
1002	.TFKTP	The controller type, either: code mnemonic meaning 0 .TFKTA TM10A(TU10/20/30/40/41) 1 .TFKTB TM10B(TU10/20/30/40/41) 2 .TFKTC TC10C(TU43) 3 .TFKTX TX01(TU70/71)
1003 2003	.TFRDB	Read backward (TX01 only).
1004 2004	.TFLTH	Read next record at low threshold (TM10 only).
1005 2005	.TFPAR	Set or obtain status of the even parity bit (7-track only).
1006 2006	.TFBSZ	Set or obtain the block size.
1007 2007	.TFMOD	Set or obtain the data mode, either: code mnemonic meaning 0 .TFMDD DEC-compatible core dump (7-track and 9-track). 1 .TFM9T Core dump format (9-track). 2 .TFM8B Industry-compatible, 8-bit mode (4 bytes/word). 3 .TFM6B 6-bit mode (9-track, TU70 only). 4 .TFM7B 7-bit mode (TU70 only). 5 .TFM7T 7-track core dump (SIXBIT).
1010 2010	.TFTRK	Set or obtain the track status bit (1=7-track, 0=9-track). It is a privileged function to set this bit.
1011	.TFWLK	The write-lock bit (set=1, off=0).
1012	.TFCNT	The character count of the last record (the actual record length).
1013 2013	.TFRID	Set or obtain the reel I.D. (bits 0-35). It is a privileged function to set this word.
1014	.TRCRC	The last Cyclic Redundancy Character (CRC) (9-track NRZI only).
1015	.TFSTS	The unit status word:

Table 35 (Cont.)
TAPOP. Function Codes

Function Code	Mnemonic	Meaning
		bit mnemonic meaning 18 TF.UNS Unit is not to be scheduled. 19 TF.BOT Beginning-of-tape mark. 20 TF.WLK Unit is write-locked. 21 TF.REW Unit is rewinding. 22-23 Reserved. 33 TF.STA Unit is started. 34 TF.SEL Unit is selected. 35 TF.OFL Unit is off-line.
1016	.TFSTA	The unit statistics to arguments 0 through 12: code mnemonic meaning 0 .TSFIL Number of files since BOT. 1 .TSREC Number of records since EOF. 2 .TSTCR Number of characters read. 3 .TSTCW Number of characters written. 4 .TSSRE Number of soft-read errors. 5 .TSHRE Number of hard-read errors. 6 .TSSWE Number of soft-write errors. 7 .TSHWE Number of hard-write errors. 10 .TSESU Total errors since unload (MOUNT). 11 .TSTDE Total device errors since system startup. 12 .TSUNL Total number of unloads.
1017	.TFIEP	Initial error pointer.
1020	.TFFEP	Final error pointer.
1021	.TFIES	Initial error status.
1022	.TFFES	Final error status.
1023	.TFFED	Final error disposition.
1024	.TFLBL	The type of label processing. code mnemonic meaning 0 .TFBLP Bypass labeled processing. 1 .TFLAL ANSI labels. 2 .TFLAU ANSI labels with user labels. 3 .TFLIL IBM labels. 4 .TFLIU IBM labels with user labels. 5 .TFLTM Leading tape mark. 6 .TFLNS Non-standard labels. 7 .TFLNL No labels.
1025	.TFPLT	The same as function code 1024 (.TFLBL) except that .TFPLT is privileged function to set 0 (.TFBLP.)
1026	.TFLTC	Label termination code.

Table 35 (Cont.)
TAPOP. Function Codes

Function Code	Mnemonic	Meaning		
		code	mnemonic	meaning
		1	.TFTCP	Continue processing.
		2	.TFTRE	Return EOF.
		3	.TFTLT	Label type error.
		4	.TFTHL	Header label error.
		5	.TFTTL	Trailer label error.
		6	.TFTVL	Volume label error.
		7	.TFTDV	Device error.
		10	.TFTDE	Data error.
		11	.TFTWL	Write-lock error.

Table 36
FILOP. Function Codes

Code	Mnemonic	Meaning
1	.FORED	The file is read only; no output will be done.
2	.FOCRE	A new file is to be created.
3	.FOWRT	The file is to be written.
4	.FOSAU	The file is to be updated in single-access mode.
5	.FOMAU	The file is to be updated in multi-access mode.
6	.FOAPP	The file is to be appended to.
7	.FOCLS	The file is to be closed.
10	.FOURB	Checkpoint the file.

Table 37
Terminal Line Characteristics

Bit	Mnemonic	Meaning
0	GT.ITY	The line is a pseudo-TTY.
1	GL.CTY	The line is a CTY.
2	GL.DSP	The line is a display console.
3	GL.DSL	The line is a dataset data line.
5	GL.HDP	The line is a half-duplex line.
6	GL.REM	The line is a remote TTY.
7	GL.RBS	The line is a remote Batch TTY.
11	GL.LIN	A line has been typed-in by the user.
13	GL.LCM	Lower case input mode is ON.
14	GL.TAB	The terminal has TAB capabilities.
15	GL.LCP	The terminal input is not echoed because the device is local-copy only.
16	GL.PTM	The CTRL/Q (paper-tape) switch is on.

Table 38
Job Data Area Locations
(for user program reference)

Octal Loc.	Name	Meaning
40	.JBUUO	User's Location 40. Used by hardware when processing calls 001 through 037.
41	.JB41	Contains beginning address of user's programmed operator service routine.
42	.JBERR	LH: Unused. RH: Accumulated error count from one program to the next.
44	.JBREL	LH: Zero. RH: The highest relative core location available to the user.
45	.JBBLT	Three consecutive locations when LINK puts a BLT instruction and a CALLI to move the program down on top of itself.
74	.JBDDT	LH: Last address of DDT. RH: Start address of DDT. If 0, DDT has not been loaded.
114	.JBPFI	All user I/O must be to locations greater than .JBPFI.
115	.JBHRL	Left half: First relative free location in the high segment (relative to the high segment origin so it is the same as the high segment length). Set by LINK-10 and subsequent GETs, even if there is no file to initialize the low segment. The left half is a relative quantity because the high segment can appear at different user origins at the same time. The SAVE command uses this quantity to know how much to write from the high segment. Right half: Highest legal user address in the high segment. Set by the monitor every time the user starts to run or does a CORE or REMAP UUO. The word is 401777 unless there is no high segment, in which case it is zero. The proper way to test if a high segment exists is to test this word for a non-zero value.
116	.JBSYM	Contains a pointer to the symbol table created by LINK-10. Left half: Negative of the length of the symbol table. Right half: Lowest address used by the symbol table.
117	.JBUSY	Contains a pointer to the undefined symbol table created by LINK-10 or defined by DDT. This location has the same format as .JBSYM. There are no undefined symbols if the contents is 0.
120	.JBSA	Left half: First free location in low segment (set by loader). Right half: Starting address of the user's program.

Table 38 (Cont.)
Job Data Area Locations
(for user program reference)

Octal Loc.	Name	Meaning
121	.JBFF	Left half: Zero. Right half: Address of the first free location following the low segment. Set to C(.JBSA) by RESET monitor call.
123	.JBPFH	Left half: The address of the page fault handler (PFH). Right half: The starting address of PFH. If the contents are zero, the program does not currently have a page fault handler. If a page fault occurs, and .JBPFH contains zero, the monitor will read SYS:PFH.VMX into the top of the program's virtual address space and setup the left and right halves of .JBPFH.
124	.JBREN	Left half: Unused. Right half: REENTER starting address. Set by user or by loader and used by REENTER command as an alternate entry point.
125	.JBAPR	Left half: Zero. Right half: Set by user program to trap address when user is enabled to handle APR traps such as illegal memory, pushdown overflow, arithmetic overflow, and clock.
126	.JBCNI	Contains state of APR as stored by CONI APR when a user-enabled APR trap occurs.
127	.JBTPC	Monitor stores PC of next instruction to be executed when a user-enabled APR trap occurs.
130	.JBOPC	The previous contents of the job's last user mode program counter are stored here by monitor on execution of a DDT, REENTER, START, or CSTART command. After a user program HALT instruction followed by a START, DDT, CSTART, or REENTER command, .JBOPC contains the address of the HALT. To proceed at the address specified by the effective address, it is necessary for the user or his program to recompute the effective address of the HALT instruction and to use this address to start. Similarly, after an error during execution of a monitor call followed by a START, DDT, CSTART, or REENTER command, .JBOPC points to the address of the monitor call.
131	.JBCHN	Left half: Zero. Right half: Pointer to header block for root link.
133	.JBCOR	Left half: Highest location in low segment loaded with non-zero data. No low file written on SAVE or SSAVE if less than 140. Set by LINK-10. Right half: User argument on last SAVE or GET command. Set by the monitor.

Table 38 (Cont.)
Job Data Area Locations
(for user program reference)

Octal Loc.	Name	Meaning
134	.JBINT	Left half: Reserved for the future. Right half: Zero or the address of the error-intercepting block.
135	.JBOPS	Reserved for all object-time systems.
136	.JBCST	Reserved for customers.
137	.JBVER	Program version number. The bits are defined as follows: Bits 0–2 The group who last modified the program 0 = Digital development group 1 = Other Digital employees 2–4 = Reserved for customers 5–7 = Reserved for customer's users Bits 3–11 Digital's major version number. Usually incremented by 1 after a release. Bits 12–17 Digital's minor version number. Usually 0 but may be used if an update is needed after work has begun on a new major version. Bits 18–35 Edit number. Increased by one after each edit. Usually not reset. The VERSION and the SET WATCH VERSION commands output the version number in standard format.
140	.JBDA	The value of this symbol is the first location available to the user.

Table 39
Vestigial Job Data Area

Octal Loc.	Symbol	Description
0	.JBHSA	Copy of .JBSA.
1	.JBH41	Copy of .JB41.
2	.JBHCR	Copy of .JBCOR.
3	.JBHRN	LH: restores LH of .JBHRL RH: restores RH of .JBREN
4	.JBHVR	Copy of .JBVER.
5	.JBHNM	High segment name on SAVE.
6	.JBHSM	Pointer to high segment symbol, if any.
7	.JBHGA	Bits 0–9 indicate the high segment origin. The monitor places the high segment at 400000 or if the segment is larger than 128K, at the first available page boundary (1K on a KA10 system) above the low segment. This 9-bit byte should always be zero on KA10-based systems. However, if the field is non-zero on KI10-based systems, it is taken as the page where the high segment is to start. The field is setup by LINK-10 and the monitor SAVE command.
10	.JBHDA	First location not used by vestigial job data area.