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decsystem10

MONITOR CALLS

REFERENCE CARD

(6.01 Monitor)
(5.07 Monitor)

digital

List of Tables

Conventions Used

{ } = alternative portions of CALL format; udx = universal device index; prot = protection code; ppn = project/programmer number; adr = address; ext = extension; ac = an accumulator; loc = location; fs = file structure; dir = directory; arg = argument; sfd = sub-file directory.

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 channel, status SIXBIT/device/ udx XWD obuf,ibuf error return normal return	Initialize a device and associate it with an I/O channel.
042–046		Reserved for installation-dependent definition.
047	CALLI ac, n	Programmed operator extension (refer to Table 2).
050	OPEN channel, spec error return normal return . . . spec: EXP status SIXBIT/device/ udx XWD obuf,ibuf	Initialize a device and associate it with an I/O channel.
051	TTCALL ac, adr	Extend operations on job-controlling terminal (refer to Table 3).
052–054		Reserved for future expansion by DEC.
055	RENAME channel, adr error return normal return . . .	Rename or delete a file on a
	adr: SIXBIT/filename/ SIXBIT/extension/	directory device.
	adr: SIXBIT/filename/ SIXBIT/extension/,,hi-date 0,,low-date	DECtape.
	adr: SIXBIT/filename/ SIXBIT/ext/,hi-date,date1 prot,mode,time,low-date2 ppn	disk unit.

Table 1 (Cont.)
Monitor Programmed Operators

Op Code	Call	Meaning
056	IN channel, adr normal return error return	Transmit data from a file to a user's core area, skip on error or EOF.
057	OUT channel, adr normal return error return	Transmit data from the user's core area to a file, skip on error or EOF.
060	SETSTS channel, status return	Change file status (refer to Table 6).
061	STATO channel, status normal return skip return	Skip if any status bits are equal to one (refer to Table 6).
062	GETSTS channel, adr return	Copy file status to adr.
063	STATZ channel, status 1 or more bits = 1 All bits = 0	Skips if all status bits are zero.
064	INBUF channel, n return	Set up input buffer ring with n buffers.
065	OUTBUF channel, n return	Set up output buffer ring with n buffers.
066	INPUT channel, adr return	Transmit data from a file to the user's core area.
067	OUTPUT channel, adr return	Transmit data from a file to the user's core area.
070	CLOSE channel, option return	Terminate file operation (refer to Table 4).
071	RELEASE channel, only return	Release a device.
072	MTAPE channel, function return	Perform tape positioning operations (refer to Table 5).
073	UGETF channel, adr only return	Get next free block number on DECtape.

Table 1 (Cont.)
Monitor Programmed Operators

Op Code	Call	Meaning
074	USETI channel, adr only return	Set next input block number on disk or DECtape.
075	USETO channel, adr only return	Set next output block number on disk or DECtape.
076	LOOKUP channel, adr error return normal return . . .	Select a file for input on a
	adr: SIXBIT/filename/ SIXBIT/ext/	non-directory device.
	adr: SIXBIT/filename/ SIXBIT/ext/,date,date prot,mode,time,date ppn	disk unit.
077	ENTER channel, adr error return normal return . . .	Select a file for output on a
	adr: SIXBIT/filename/ SIXBIT/ext/	non-directory device.
	adr: SIXBIT/file/ SIXBIT/ext/,date 0,date	DECtape.
	adr: SIXBIT/filename/ SIXBIT/ext/,date,date prot,mode,time,date ppn	disk unit.
100	UJEN only return	Dismiss a real-time interrupt.

Table 2
CALL and CALLI Monitor Operations

CALLI #	Call	Function
−2,. . . −n	Customer defined.	Reserved for customer definition.
−1	LIGHTS ac, only return	Display contents of AC in console lights.
0	RESET ac, only return	Reset an I/O device.
1	MOVEI ac, buffer DDTIN ac, only return	Input characters in DDT mode.
2	MOVEI ac, start-adr SETDDT ac, only return	Set the protected DDT starting address.
3	MOVEI ac, buffer DDTOUT ac, only return	Output characters in DDT mode.
4	MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVEI ac, udx DEVCHR ac, only return	Get device characteristics (refer to Table 8).
5	DDTGT ac,	No-op, historical UUO.
6	MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVEI ac, udx GETCHR ac, only return	Get device characteristics, same as CALLI 4 (refer to Table 8).
7	DDTRL ac,	No-op, historical UUO.
10	MOVEI ac, channel MOVEI ac, udx WAIT ac, only return	Wait until device is inactive.
11	MOVE ac, [XWD hi-adr,lo-adr] CORE ac, error return normal return	Allocate core.
12	EXIT ac, return here on continue	Reset is performed when AC = 0, job is stopped when AC ≠ 0.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
13	{ MOVEI ac, channel MOVEI ac, udx } UTPCLR ac, only return	Clear a DECtape directory.
14	DATE ac, only return	Return the date.
15[1]	MOVE ac, [XWD -n, loc] LOGIN ac, only return	Privileged UUO available only to system-privileged programs. It is a no-op if executed by a job already logged in.
16	MOVEI ac, bits APRENB ac, return	Enable central processor traps (refer to Table 13).
17[1]	LOGOUT ac, no return	Privileged UUO available only to system-privileged programs. It is treated like an EXIT UUO if executed by a non-system-privileged program.
20	SWITCH ac, return	Read console data switches.
21	MOVEI ac, job-number { MOVE ac+1, [SIXBIT/device/] MOVEI ac+1, channel } REASSIGN ac, only return	Reassign a device.
22	TIMER ac, only return	Return time of day in jiffies.
23	MSTIME ac, only return	Return time of day in milliseconds.
24	GETPPN ac, normal return alternate return	Return project-programmer number of the job.
25	MOVE ac, [XWD n, loc] TRPSET ac, error return normal return . . . loc: JSR TRAP	Set trap for user I/O mode.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
26	TRPJEN ac,	Illegal UUO; replaced by UJEN.
27	MOVEI ac, job-number MOVEI ac, 0 RUNTIM ac, only return	Return the job's running time in milliseconds. (0 indicates the current job.)
30	PJOB ac, only return	Return the job number.
31	MOVEI ac, secs to sleep SLEEP ac, only return	Stop a job for a specified number of seconds (68 maximum).
32	SETPOV ac,	Superseded by APRENB UUO.
33	MOVEI ac, adr PEEK ac, only return	Return contents of a specified executive address.
34	GETLIN ac, only return	Return SIXBIT physical name of the terminal the current job is attached to.
35	MOVSI ac, start-adr-inc HRRI ac, loc RUN ac, error return normal return . . . loc: SIXBIT/device/ SIXBIT/filename/ SIXBIT/extension/ 0 XWD ppn XWD hi-adr, core assignment	Allow programs to transfer control to one another. Both the low and the 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 for high segment.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
37	{ MOVEI ac, hi-adr in low seg } { MOVE ac,[XWD hi-seg origin, low-seg] } REMAP ac, error return normal return	Remap top of low segment into the high segment.
40	MOVEI ac, adr GETSEG ac, error return normal return . . . adr: SIXBIT/device/ SIXBIT/filename/ SIXBIT/extension/ 0 XWD ppn 0	Replace high segment in user's addressing space.
41	{ MOVSI ac, job-no. } { MOVSI ac, index-no. } HRRI ac, table-no. GETTAB ac, error return normal return	Return contents of monitor table or location (refer to Table 10).
42	MOVEI ac, hi-phys-adr SPY ac, error return normal return	Make physical core assignment for examination of monitor.
43	MOVE ac, [SIXBIT/name/] SETNAM ac, only return	Set program name in monitor table.
44	MOVE ac, [XWD code, block] TMPCOR ac, error return normal return . . . block: XWD name, 0 IOWD buflen, buffer	Allow temporary in-core file storage for job (refer to Table 14).
45	MOVEI ac, [XWD +n, loc] DSKCHR ac, error return normal return . . . loc: SIXBIT/diskname/	Return disk characteristics (refer to Table 8).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
46	{ MOVEI ac, 0 MOVE ac, [SIXBIT/fsname/] } SYSSTR ac, error return normal return	Return all of the file structure names in the system.
47	MOVE ac, [XWD n,loc] JOBSTR ac, error return normal return	Return next file structure name in job search list.
50	MOVE ac, [XWD n, loc] STRUUO ac, error return normal return ⋮ loc: function number ⋮ argn-1	Manipulate file structures (refer to Table 15).
51	{ MOVEI ac, 0 MOVE ac, [SIXBIT/last-unit-name/] } SYSPHY ac, error return normal return	Return all physical disk units.
52		Reserved for future use.
53	{ MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVEI ac, udx } DEVTYP ac, error return normal return	Return properties of device (refer to Table 9).
54	{ MOVEI ac, channel MOVE ac, [SIXBIT/device/] MOVEI ac, udx } DEVSTS ac, error return normal return	Remove hardware device status word.
55	{ MOVE ac, [SIXBIT/device/] MOVEI ac, channel } DEVPPN ac, error return normal return	Return the project-programmer number associated with a device.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
56	MOVEI ac, channel SEEK ac, return	Perform a SEEK to current selected block for software channel AC.
57	MOVEI ac, loc RTTRP ac, error return normal return	Connect real-time devices to the PI system.
60	MOVE ac, [XWD hi-seg, low-seg] MOVE ac, [XWD -n, adr] LOCK ac, error return normal return	Lock job in core.
61	MOVEI ac, channel MOVNI ac, job-no. MOVEI ac, udx JOBSTS ac, error return normal return	Return status information about device TTY and/or controlled job (refer to Table 16).
62	MOVEI ac, station no. LOCATE ac, error return normal return	Change the job's logical station number.
63	MOVEI ac, channel MOVE ac, [SIXBIT/device/] MOVEI ac, udx WHERE ac, error return normal return	Return physical station number of a device and the status of that station.
64	MOVEI ac, channel no. 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-no. CTLJOB ac, error return normal return	Return job number of controlling job.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
66	MOVE ac, [XWD n, loc] GOBSTR ac, error return normal return ⋮ loc: job number XWD ppn { SIXBIT/name/ -1 } 0 status bits	Return next file structure name in an arbitrary job's search list.
67		Reserved for future use.
70		Reserved for future use.
71	MOVEI ac, hi-pri-queue no. HPQ ac, error return normal return	Place job in high priority scheduler's run queue.
72	MOVSI ac, enable bits HRRI ac, sleep time HIBER ac, error return normal return	Allow job to become dormant until the specified event occurs.
73	MOVEI ac, job number WAKE ac, error return normal return	Allow job to activate the specified dormant job.
74[1]	MOVE ac, ppn CHGPPN ac, error return normal return	Change project-programmer number.
75	MOVE ac, [XWD function, arg] SETUUO ac, error return normal return	Set system and job parameters (refer to Table 17).
76		Reserved for future use.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
77	OTHUSR ac, non-skip return skip return	Determine if another job is logged into the same project-programmer number.
100	MOVEI ac, loc CHKACC ac, error return normal return . . . loc: access,,dir-prot,file-prot directory ppn user's ppn	Check user's access to the file specified.
101	MOVE ac, [EXP loc] DEVSIZ ac, error return normal return	Determine buffer size for the specified device.
102	MOVE ac, [XWD +length, adr] DAEMON ac, error return normal return . . . adr: function arg1 . . . argi	Request DAEMON to perform a specified task.
103[1]	MOVE ac, adr of arg block JOBPEK ac, error return normal return	Read or write another job's core.
104[1]	MOVE ac, [XWD line-no,job-no] ATTACH ac, error return normal return	Attach the job to the specified TTY line number.
105[1]	MOVE ac, [XWD +length,adr] DAEFIN ac, error return normal return	Indicate that the request to the DAEMON program has been completed.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
106[1]	MOVE ac, [XWD + length,adr] FRCUUO ac, error return normal return	Indicate that the request to the DAEMON program has been completed.
107	MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVEI ac, UDX MOVE ac+1, [SIXBIT/logical name/] DEVLNM ac, error return normal return	Set a logical name for this specified device.
110	MOVE ac, [XWD +length, adr] PATH. ac, error return normal return . . . adr: n SIXBIT/name/ scan switch ppn sfd name sfd name . . .	Read or modify the default directory path or read the current path of a file OPEN on a channel, or set and/or test the additional path (SYS, NEW, OLD).
111	MOVE ac, [XWD n+1, loc] METER. ac, error return normal return . . . loc: function code arg 1 . . . argn	Provide performance analysis and metering of dynamic system variables.
112	MOVE ac, [XWD +n, loc] MOVEI ac, channel MOVEI ac, udx MOVE ac, [SIXBIT/device/] MTCHR. ac, error return normal return	Return characteristics of a magnetic tape.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
113[1]	MOVE ac, [2,, block] JBSET. ac, error return normal return . . . block: 0,, job no. function,,value	Execute the specified function of SETUUO for a particular job.
114	MOVE ac, [3,, block] POKE. ac error return normal return . . . block: location old value new value	Alter the specified location in the monitor.
115	MOVEI ac, job no. TRMNO. ac, error return normal return	Return the number of the terminal currently controlling the specified job.
116	MOVE ac, [XWD n,adr] TRMOP. ac, error return normal return	Perform miscellaneous terminal functions.
117	{MOVEI ac, channel MOVEI ac, udx} RESDV. ac, error return normal return	Reset the specified channel.
120	{MOVSI ac, 1 MOVSI ac, 0} {HRRI ac, 1 HRRI ac, 0} UNLOK. ac, error return normal return	Unlock a locked job in core.
121	MOVE ac, [XWD function, adr] DISK. ac, error return normal return	Set or read a disk or file system parameter (e.g., set the disk priority for a channel or the job).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
122[1]	MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVEI ac, udx DVRST. ac, error return normal return	Restrict the specified device to a privileged job.
123[1]	MOVE ac, [SIXBIT/device/] MOVEI ac, channel no. MOVEI ac, udx DVURS. ac, error return normal return	Remove the restricted status of the specified device.
124		Reserved.
125	MOVE ac, [XWD n,adr] CAL11. ac, error return normal return	Front-end debug UUO.
126[1]	MOVE ac, [SIXBIT/device/] MOVEI ac, channel MOVE ac + 1, SIXBIT/reelid/ MTAID. ac, error return normal return	Associate a visual identification with a magnetic tape drive during a mount.
127	MOVEI ac, channel MOVE ac, [SIXBIT/device/] IONDX. ac, error return normal return	Return the universal I/O index for a device (UDX).
130	MOVEI ac, list CNECT. ac, error return normal return . . . list: operation-code, channel SIXBIT/device/ udx	Connect/disconnect devices to/from an MPX channel.
131	MOVEI ac, channel MOVE ac, [outadr, inadr] MVHDR. ac, error return normal return	Move a buffer ring header between core locations.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
132	MOVEI ac, block ERLST. ac, error return normal return . . . block: #words,,channel no. #devices which have errors UDX for 1st device,,GETSTS	Provide a list of non-operational devices connected to an MPX channel.
133	MOVE ac, [XWD length,adr] SENSE. ac, error return normal return	Provide information necessary for error diagnosis and recovery for a device.
134	MOVE ac, [XWD length,adr] CLRST. ac, error return normal return . . . adr: {udx channel SIXBIT/device/} 0,, SETSTS value . . .	Allow a device to continue after a device error condition has occurred.
135	MOVE ac, base-adr PIINI. ac, error return normal return	Initialize the software interrupt system.
136	MOVE ac, [flags, e] PISYS. ac, error return normal return	Control the software interrupt system (refer to Table 18).
137	DEBRK. error return	Dismiss a software interrupt.

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
140	MOVE ac, [XWD size, adr] PISAV. ac, error return normal return	Save the state of the software interrupt system.
141	MOVEI ac, adr PIRST. ac, error return normal return	Restore the state of the software interrupt system.
142	MOVE ac, [XWD n, loc] IPCFR. ac, error return normal return . . . loc: flags sender's pid receiver's pid message length, adr	Receive an IPCF packet (refer to Table 19).
143	MOVE ac, [XWD n, loc] IPCFS. ac, error return normal return . . . loc: flags sender's pid receiver's pid message length, adr	Send an IPCF packet (refer to Table 19).
144	MOVE ac, [XWD n, loc] IPCFQ. ac, error return normal return . . . loc: flags sender's pid receiver's pid message length, adr	Obtain information about an IPCF input queue (refer to Table 19).
145	MOVE ac, [XWD function, loc] PAGE. ac, error return normal return	Manipulate pages and the data associated with these pages (refer to Table 20).

Table 2 (Cont.)
CALL and CALLI Monitor Operations

CALLI #	Call	Function
146[1]	MOVE ac, [XWD n, loc] SUSET. ac, error return normal return	Set next I/O block number.
147		Reserved.
150		Reserved.

[1] This CALLI is a system-privileged UUO available only to users logged in under [1,2] or to programs running with the JACCT bit set. Complete documentation for system-privileged UUO's appears in the Specifications section (UUOPRV) of the *DECsystem-10 Software Notebooks.*

Table 3
TTCALL Functions

AC Field	Mnemonic	Action
0	INCHRW	Input character and wait.
1	OUTCHR	Output a character; ignores 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.
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 4
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 5
MTAPE Functions

Symbol	Function	Action
MTWAT.	0	No operation; wait for spacing and I/O to finish.
MTREW.	1	Rewind to load point.
MTEOF.	3	Write EOF.
MTSKR.	6	Skip one record.
MTBSR.	7	Backspace record.
MTEOT.	10	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.
MTUNL.	11	Rewind and unload.
MTBLK.	13	Write 3 in. of blank tape.
MTSKF.	16	Skip one file; implemented by a series of skip record operations.
MTBSF.	17	Backspace files; implemented by a series of backspace record operations.
MTDEC.	100	Initialize for Digital-compatible 9-channel.[1]
MTIND.	101	Initialize for industry-compatible 9-channel tape.[2]
MTLTH.	200	Reserved for future use.

[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 6
File Status Bits

Bit	Meaning
18	Improper mode (IO.IMP). Attempt to write on a software write-locked tape or file structure, or a software detected redundancy failure occurred. Usually set by monitor.
19	Hard device detected error (IO.DER), 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	Hard data error (IO.DTE). The data read or written has incorrect parity as detected by hardware (or by software on CDR, PTR). The user's data is probably nonrecoverable even after the device is fixed. Usually set by monitor.
21	Block too large (IO.BKT). 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	End of file (IO.EOF). 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.
23	I/O active (IO.ACT). The device is actively transmitting or receiving data. Always set by monitor.
24–29	Device dependent parameters usually set by user. CDP Bit 29 = ANSI CDR Bit 29 = Super image mode (IO.SIM) DSK Bit 29 = Write pack headers (IO.WHD) DTA Bit 28 = Semi-standard I/O mode (IO.SSD) Bit 29 = Nonstandard I/O mode (IO.NSD) LPT Bit 29 = Suppress Form Feeds on an OPEN or RELEASE (IO.SFF) MTA Bit 24 = Beginning of tape (IO.BOT) Bit 25 = End of tape (IO.EOT) Bit 26 = I/O parity (IO.PAR) Bits 27–28 = I/O density (IO.DEN) Bit 29 = No read check (IO.NRC) PTY Bit 24 = TTY input wait (IO.PTI) Bit 25 = TTY output wait (IO.PTO) Bit 26 = Read by monitor (IO.PTM) TTY Bit 27 = True echo (IO.TEC) Bit 28 = Suppress echo character (IO.SUP) Bit 29 = Special editor mode (IO.SEM)

Table 6 (Cont.)
File Status Bits

Bit	Meaning
30	Synchronous input (IO.SYN). Stops the device after each buffer is filled. Usually set by user.
31	User word count (IO.UWC). Forces the monitor to use the word count in the third word of the buffer (output only). The monitor normally computes the word count from the byte pointer in the buffer header. Usually set by user.
32–35	Data mode (IO.MOD). Usually set by user.
	0 ASCII. Seven bit bytes packed left-justified, five characters per word. (.IOASC)
	1 ASCII line. Same as 0, except that the buffer is terminated by a FORM, VT, LINE-FEED, or ALTMODE character. Differs from ASCII on TTY (half-duplex software) and PTR only. (.IOASL)
	2 Packed image mode. (.IOPIM)
	3–7 Unused.
	10 Image. A device dependent mode. Thirty-six bit bytes. The buffer is filled with data exactly as supplied by the device. (.IOIMG)
	11–12 Unused.
	13 Image binary. Thirty-six bit bytes. This mode is similar to binary mode, except that no automatic formatting or check-summing is done by the monitor. (.IOIBM)
	14 Binary. Thirty-six bit bytes. This is blocked format consisting of a word count, n (the right half of the first data word of the buffer), followed by n 36-bit data words. Checksum for cards and paper tape. (.IOBIN)
	15 Image dump. A device dependent dump mode. Thirty-six bit bytes. (.IOIDP)
	16 Dump as records without core buffering. Data is transmitted between any contiguous block of core and one or more standard length records on the device for each command word in the command list. Thirty-six bytes. (.IODPR)
	17 Dump one record without core buffering. Data is transmitted between any contiguous block of core and exactly one record of arbitrary length on the device for each command word in the command list. Thirty-six bit bytes. (.IODMP)

Table 7
Extended LOOKUP, ENTER, and RENAME Arguments

Rel. Loc.	Symbol	Arguments and Value
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 F.S.
13	.RBFTI	Future nonprivileged argument – reserved for DEC.
14	.RBNCA	Nonprivileged argument reserved for customer to define.
15	.RBMTA	Tape label if on backup tape.
16	.RBDEV	Logical unit name on which the file is located.
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.

Table 7 (Cont.)
Extended LOOKUP, ENTER, and RENAME Arguments

Rel. Loc.	Symbol	Arguments and Value
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 8
Device Characteristic Bits

Mnemonic	Bit	Meaning
DV.DRI	0	DECtape directory is in core. This bit is cleared by an ASSIGN or DEASSIGN command to that unit.
DV.DSK	1	Device is a disk unit.
DV.CDR	2	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.
DV.LPT	3	Device is a line printer.
DV.TTA	4	Device is a controlling TTY (e.g., it is controlling a job).
DV.TTU	5	Device is a TTY that is in use as a user terminal (it may be detached).
DV.TTB	6	Unused.
DV.DIS	7	Device is a display unit.
DV.LNG	8	Device has a long dispatch table (that is, UUO's other than INPUT, OUTPUT, CLOSE, and RELEASE perform real actions).
DV.PTP	9	Device is a paper-tape punch.
DV.PTR	10	Device is a paper-tape reader.
DV.DTA	11	Device is a DECtape unit.
DV.AVL	12	Device is available to job issuing DEVCHR UUO or is already assigned to this job.
DV.MTA	13	Device is a magnetic tape unit.
DV.TTY	14	Device is a TTY.
DV.DIR	15	Device is a directory device (DTA or DSK).
DV.IN	16	Device can perform input.
DV.OUT	17	Device can perform output.
DV.ASC	18	Device is assigned by a console command.
DV.ASP	19	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 9
DEVTYP Bits

Name	Bit	Explanation
TY.MAN	0	LOOKUP/ENTER mandatory.
	1	Reserved for the future.
TY.AVL	12	Device is available to this job.
TY.SPL	13	Spooled on disk. (Other bits reflect properties of real device, except variable buffer size.)
TY.INT	14	Interactive device (output after each break character).
TY.VAR	15	Capable of variable buffer size (user can set his own buffer length).
TY.IN	16	Capable of input.
TY.OUT	17	Capable of output.
TY.JOB	18–26	Job number that currently has device INITed or ASSIGNed.
	27–28	Reserved for the future.
TY.RAS	29	Device is a restricted device (i.e., can be assigned only by a privileged job or the MOUNT command).
TY.DEV	30–35	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 (.TYXTC) 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

Table 10
GETTAB Tables

Table Numbers (RH of AC)	Table Names	Explanation
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.
16	.GTLDV	5-series monitor disk parameters; index by item number.

Table 10 (Cont.)
GETTAB Tables

Table Numbers (RH of AC)	Table Names	Explanation
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 incidates 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 UUO. Two bits per entry if system includes LOCK UUO. A non-zero entry indicates core in use.
30	.GTCOM	Table of SIXBIT names of monitor commands.
31	.GTNM1	First half of name of user in SIXBIT; index by job number.
32	.GTNM2	Last half on name of user 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.

Table 10 (Cont.)
GETTAB Tables

Table Numbers (RH of AC)	Table Names	Explanation
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.
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.

Table 10 (Cont.)
GETTAB Tables

Table Numbers (RH of AC)	Table Names	Explanation
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.
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.

Table 10 (Cont.)
GETTAB Tables

Table Numbers (RH of AC)	Table Names	Explanation
77	.GTIPC	IPCF miscellaneous data; index by item number.
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.

Table 11
Job Data Area Locations
(for user — program reference)

Name	Octal Location	Description
.JBUUO	40	User's location 40. Used by the hardware when processing user UUO's (001 through 037) for storing op code and effective address.
.JB41	41	User's location 41. Contains the beginning address of the user's programmed operator service routine (usually a JSR or PUSHJ).
.JBERR	42	Left half: Unused. Right half: Accumulated error count from one system program to the next. System programs should be written to look at the right half only.
.JBREL	44	Left half: Zero. Right half: The highest relative core location available to the user (i.e., the contents of the memory protection register when this user is running).
.JBBLT	45	Three consecutive locations when the LINK-10 puts a BLT instruction and a CALLI UUO to move the program down on top of itself. These locations are destroyed on every executive UUO by the executive pushdown list.
.JBDDT	74	Left half: The last address of DDT. Right half: The starting address of DDT. If contents are 0, DDT has not been loaded. If the monitor contains the virtual memory option, this location contains zero; and the user types the DDT command. The monitor will attempt to read SYS:DDT.VMX into the program's virtual address space, starting at the user virtual address 700000 (octal). If successful, the left and right halves of .JBDDT are set up.
.JBPFI	114	All user I/O must be to locations greater than .JBPFI.

Table 11 (Cont)
Job Data Area Locations
(for user — program reference)

Name	Octal Location	Description
.JBHRL	115	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.
.JBSYM	116	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.
.JBUSY	117	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.
.JBSA	120	Left half: First free location in low segment (set by loader). Right half: Starting address of the user's program.
.JBFF	121	Left half: Zero. Right half: Address of the first free location following the low segment. Set to C(.JBSA) by RESET UUO.
.JBPFH	123	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.

Table 11 (Cont)
Job Data Area Locations
(for user — program reference)

Name	Octal Location	Description
.JBREN .JBAPR	124 125	Left half: Unused. Right half: REENTER starting address. Set by user or by loader and used by REENTER command as an alternate entry point.
.JBAPR	125	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.
.JBCNI	126	Contains state of APR as stored by CONI APR when a user-enabled APR trap occurs.
.JBTPC	127	Monitor stores PC of next instruction to be executed when a user-enabled APR trap occurs.
.JBOPC	130	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 UUO followed by a START, DDT, CSTART, or REENTER command, .JBOPC points to the address of the UUO. For example, in DDT to continue after a HALT, type .JBOPC/10000,,3010 JRST @ .$X
.JBCHN	131	Left half: Zero. Right half: Pointer to header block for root link.
.JBCOR	133	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.
.JBINT	134	Left half: Reserved for the future. Right half: Zero or the address of the error-intercepting block.

Table 11 (Cont)
Job Data Area Locations
(for user – program reference)

Name	Octal Location	Description
.JBOPS	135	Reserved for all object-time systems.
.JBCST	136	Reserved for customers.
.JBVER	137	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.
.JBDA	140	The value of this symbol is the first location available to the user.

NOTE: Only those JOBDAT locations of significant importance to the user are given in this table. JOBDAT locations not listed include those that are used by the monitor and those that are unused at present. User programs should not refer to any locations not listed above because such locations are subject to change.

Table 12
Vestigial Job Data Area Locations

Symbol	Octal Location	Description
.JBHSA	0	A copy of .JBSA.
.JBH41	1	A copy of .JB41.
.JBHCR	2	A copy of .JBCOR.
.JBHRN	3	LH: restores the LH of .JBHRL, RH: restores the RH of .JBREN.
.JBHVR	4	A copy of .JBVER.
.JBHNM	5	High segment name set on a SAVE.
.JBHSM	6	A pointer to the high segment symbol, if any.
.JBHGA	7	BYTE (9) 0 (9) high segment origin (18) 0 unused fields are reserved for further expansion and must contain zero, the monitor places the high segment at 400000 or at the first available page boundary (1K boundary on KA10-based systems) above the low segment, if the segment is larger than 128K. 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.
.JBHDA	10	First location not used by vestigial job data area.

[1] Relative to origin of high segment, usually .JBHGH = 400000_8.

Table 13
Trap Flags (APRENB)

AC	Bit	Trap On	Mnemonic
18	400000	Repetitive Enable	AP.REN
19	200000	Pushdown overflow	AP.POV
22	20000	Memory protection violation	AP.ILM
23	10000	Nonexistent memory flag	AP.NXM
24	4000	Parity error	AP.PAR
26	1000	Clock flag	AP.CLK
29	100	Floating-point overflow	AP.FOV
32	10	Arithmetic overflow	AP.AOV

Table 14
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 15
STRUUO Functions and Function Arguments

Function	Name	Argument
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 16
Job Status Bits

Mnemonic	Bit	Meaning
JB.UJA	0	Job number is assigned.
JB.ULI	1	Job is logged in.
JB.UML	2	TTY is at monitor level.
JB.UOA	3	TTY output is available.
JB.UDI	4	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.
JB.UJC	5	JACCT is set. In particular, C C will not work.
	6	Reserved for the future.
JB.UJN	18–35	Job number being checked or 0 if no job number is assigned.

Table 17
SETUUO Functions

Function	Name	Argument
0	.STCMX	CORMAX. Privileged function.
1	.STCMN	CORMIN. Privileged function.
2	.STDAY	DAYTIME. Privileged function (FTSEDAT).
3	.STSCH	SCHED. Privileged function.
4	.STCDR	CDR (input name for this job). Not a privileged function. Right half of AC, 3 SIXBIT characters, is stored in left half of .GTSPL (FTSPL).
5	.STSPL	SPOOL for this job. Not a privileged function unless the user is unspooling devices. Bits are 31–35 of .GTSPL (FTSPL). Bit 35 JS.PLP line printer spooling Bit 34 JS.PPL plotter spooling Bit 33 JS.PPT paper tape punch spooling Bit 32 JS.PCP card punch spooling Bit 31 JS.PCR card reader spooling
6	.STWTC	WATCH for this job. Not a privileged function. Bits are bits 1–6 of .GTWCH (FTWATCH). Bit 1 JW.WDY watch time of day Bit 2 JW.WRN watch run time Bit 3 JW.WWT watch wait time Bit 4 JW.WDR watch disk reads Bit 5 JW.WDW watch disk writes Bit 6 JW.WVR watch version numbers
7	.STDAT	DATE. Privileged function (FTSEDAT).
10	.STOPR	OPR. Privileged function.
11	.STKSY	KSYS. Privileged function (FT5UUO).
12	.STCLM	CORE limit. Privileged function (FTTLIM).
13	.STTLM	TIME limit for this job. Privileged function (FTTLIM).

Table 17 (Cont)
SETUUO Functions

Function	Name	Argument
14	.STCPU	CPU specification for this job. The following bits select the CPU on which the job is allowed to run. Bit 35 SP.CR0 CPU0 Bit 34 SP.CR1 CPU1 Bit 33 SP.CR2 CPU2 Bit 32 SP.CR3 CPU3 Bit 31 SP.CR4 CPU4 Bit 30 SP.CR5 CPU5
15	.STCRN	CPU rannability. Privileged function.
16	.STLMX	LOGMAX. Privileged function.
17	.STBMX	BATMAX. Privileged function.
20	.STBMN	BATMIN. Privileged function.
21	.STDFL	DSKFUL for this job. Not a privileged function. An argument of 0 (.DFPSE) causes a pause and an argument of (.DFERR) causes an error when the disk is full or the user's quota is exceeded. The current setting can be determined by issuing an argument other than 0 and 1. The value returned is either 0 or 1 depending on whether PAUSE or ERROR is set. The initial setting is ERROR.
22	.STMVM	Maximum virtual memory (GVPL). Privileged function.
23	.STMVR	Maximum virtual memory rate. Privileged function.
24	.STUVM	User virtual memory maximum (MVPL). Privileged function.
25	.STCVM	User current virtual memory maximum. ADR (address of the word that contains CVPL and CPPL). The left half of the word contains the current virtual page limit, the right half contains the current physical page limit. If either CVPL or CPPL is zero, the current value is unchanged.

Table 17 (Cont)
SETUUO Functions

Function	Name	Argument
26	.STTVM	User virtual time interrupts. Time interval equals the time interval between virtual time traps in milliseconds. This causes a code 5 page fault to the page fault handler each time "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. Address conditions are: Bit 0 break on execute Bit 1 break on read Bit 2 break on write Bit 3 break on MUUO Note that 1B0+1B1+1B2+1B3=0 will clear the address break. If the user is enabled for address break interrupts, the software interrupt system will interrupt when an address break occurs.

Table 18
Software Interrupt Flags

Bit	Mnemonic	Meaning
1	PS.FOF	Turn the interrupt system off.
2	PS.FON	Turn the 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 19
IPCF Packet Description Flags

Bit	Name	Meaning
0	IP.CFB	Don't block
1	IP.CFS	Indirect sender's PID
2	IP.CFR	Indirect receiver's PID
3	IP.CFO	Allows one "send" above quota
4–17	Reserved for future use (must be zero).	
18	IP.CFP	Request is privileged (*)
19	IP.CFV	Page mode-indicates the message is a page. For a receiver, this bit must be set for the top packet in the queue if it is in page mode. An error is returned on a receive if this bit is not set to the top message in the queue.
20–23	Reserved for future use. (Must be 0)	
24–29	IP.CFE	Error code field. See Table 7-5 for a list of error codes.
30–32	IP.CFC	System and sender code. (Privileged) .IPCCC 1 = Send by IPCC .IPCCF 2 = Sent by public INFO .IPCCP 3 = Sent by private INFO
33–35	IP.CFM	Special message return. (Privileged) If=1, packet not delivered. IPCFN If=0, normal delivery. If the packet is undeliverable, the packet is sent back to the sender with this field set to 1.

Table 19 describes the functions for a request to SYSTEM INFO. Unless specifically stated, the PID and job number can be used interchangeably. If the request sent to SYSTEM INFO is for action to be performed for another job, the requester must be privileged and any answer will be sent to the affected job.

All requests to INFO contain in word 1 the PID (or job number) to receive a duplicate copy of a successful answer. If word 1=0, the answer is sent only to the sender of the request.

(*) The monitor will allow the sender/receiver to set this bit only if the job has the IPCF privilege. This bit indicates that the associated packet has a privileged request. If the receiver sets this bit (and has the IPCF privilege) then IPCFR. and IPCFQ. will return the setting of the bit in any reply. If not set, then the bit will be zero when the packet is copied to the user's queue. If the job is not privileged and this bit is set, and error is returned.

Table 20
PAGE Functions

Function Code	Mnemonic	Meaning
0	.PAGIO	Swap a 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.

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

Order number DEC-10-OMCRB-B-D. For single copies of this card, contact a DEC sales office. Multiple copies can be ordered from the Software Distribution Center, DIGITAL Equipment Corporation, 200 Forest Street, Marlboro, Massachusetts, 01752. Price: $25.00/10 Cards