CP-789 UTILITY PACKAGE FUNCTION REPERTOIRE
For Use With
NAVSHIPS 0967-011-2060

ENTRIES FOR MISCELLANEOUS OPERATIONS

P-REGISTER ENTRY	FUNCTION	PARAMETER
b. adr + 0	Inspect and Change	AU = Inspection address
b. adr + 2	Store constant	Initially: AU = First address AL = Last address (or vice versa) After stop: AU = Constant to be stored
b. adr + 30	Memory Search (Pooch) Select any PROGRAM STOP for a stop on each find. Set PROGRAM SKIP 4 for no paper tape output.	Initially: AL = Last address to search AU = First address to search (or vice versa) After first stop: AL = Constant to be searched for AU = Mask After second stop: AL = Zero for flex code output AU = Nonzero for TTY code output
b. adr + 34	Change UPAK Initialization Procedure	Initially: AL = Paper tape channel (bits 0 through 2) AU = Magnetic tape channel (bits 0 through 2) After first stop: AL = Zero for NTDS computers AL = Nonzero for unmodified computers AU = Zero for the paper tape I/O bits 0 through 5 AU = Nonzero for the paper tape I/O bits 12 through 17
b. adr + 36	See fault entrance	None
b. adr = base address (normally 300₈)		

UPAK PROTECTION

All operations that change memory have UPAK protection, unless otherwise specified. UPAK protection prohibits changes to addresses within the Utility Package.

The following operations **DO NOT** function within the memory area occupied by the Utility Package. The operation can be included within the operation limits, but the operation will not be performed within the Utility Package:

1) Relative Bioctal Load (paper tape input).
2) Magnetic Tape Checkread (differences within the Utility Package are not outputted).
3) Inspect and Change (inspection is allowed).
4) Memory Search (the UPAK is not searched).
5) Store Constant (UPAK locations are not changed).

ERRORS

A. Paper Tape Errors

1) Checksum Error. AU = computed checksum, AL = tape checksum; occurs after load.
2) UPAK Protection Error. AU = AL = 070707; occurs after load. This indicates an attempt to store a word from tape into the Utility Package area; the word is not stored.
3) FLEX-TTY Error. AU = 777777, AL contains illegal character; press START-STEP to continue. The line containing the error is not processed.
4) Relative Bioctal Load Error. AU = AL = 777777 (see Operator's Manual for details).
5) Checkread Error Display. AU = memory address of error, AL = 1 in each bit where tape word and memory word differed.
6) Paper Tape Dump Error. If the first or last address specified for the dump is negative or greater than 77777, the routine will not process the request.

B. Magnetic Tape Errors

1) Communication Error. AU = AL = 777777; tape unit not operating.
2) Tape Format Error. AU = AL = 070707; block is not of correct format and is not read.
3) UPAK Protection Error. AU = AL = 070707; block being read would overwrite part of Utility Package. The block is not read.
4) Checksum Error. AU = computed checksum, AL = tape checksum.
5) Checkread Error (during write operation). AU = AL = 777777; tape does not checkread.
6) Magnetic Tape Dump Error. If the first or last address specified for the dump is negative or greater than 77777, the routine will not process the request.

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GENERAL INFORMATION

1) This UPAK is designed to operate with the RD-231 Paper Tape Unit and the RD-243 (1243) Magnetic Tape Unit.

2) All magnetic tape functions cause memory addresses 16 and 100 through 177 to be changed (to be changed to RIL instructions).

3) All I/O is done in the single channel mode.

4) Functions involving I/O terminate all I/O activities on all channels before performing the function.

5) Most functions cause the fault entrance to be set (this fault entrance changes memory addresses 00000 and 00011).

6) If zero suppressed paper tapes are used, the memory area should be cleared before reading the tape.

ENTRIES FOR PAPER TAPE OPERATIONS

P-REGISTER ENTRY	FUNCTION	PARAMETERS
b. adr + 4 b. adr + 10	ABS Bioctal load without UPAK protect	None
b. adr + 4 b. adr + 10	ABS TTY load without UPAK protect	None
b. adr + 4 b. adr + 10	ABS Flex load without UPAK protect	None
b. adr + 4	Relative Bioctal load	AU = Base address
b. adr + 24 b. adr + 26	ABS Bioctal dump with zero suppress	AU = First address or vice versa AL = Last address
b. adr + 14 b. adr + 16	ABS Flex dump with zero suppress	AU = first address or vice versa AL = Last address
b. adr + 20 b. adr + 22	ABS TTY dump with zero suppress	AU = First address or vice versa AL = Last address
b. adr + 6 b. adr + 12	Paper tape checkread with output	AU = Base address (for relative bioctal tapes) AL = Zero for flex error dump AL = Nonzero for TTY error dump
b. adr + 32	Duplicate paper tape	None

ENTRIES FOR MAGNETIC TAPE OPERATIONS

P-REGISTER ENTRY	FUNCTION	PARAMETERS
b. adr + 50	Magnetic Tape dump	Initially: $\left.\begin{array}{l}AL\\AU\end{array}\right\}$ = Tape positioning parameters* After first stop: AL = Last address to dump (or vice versa) AU = First address to dump After second stop: AL = Entrance address
b. adr + 44 b. adr + 46	Magnetic tape load without UPAK protection	$\left.\begin{array}{l}AL\\AU\end{array}\right\}$ = Tape positioning parameters*
b. adr + 52	Magnetic tape check-read; memory locations not agreeing with the data on tape are output on paper tape	Initially: $\left.\begin{array}{l}AL\\AU\end{array}\right\}$ = Tape positioning parameters* After first stop: AL = Zero for flex code output AL = Nonzero for TTY code output
b. adr + 40	Rewind	AL = transport number; set bit 0 for TT1 or bit 1 for TT2
b. adr + 42	Position tape	$\left.\begin{array}{l}AL\\AU\end{array}\right\}$ = Tape positioning parameters*

*Tape positioning parameters are as follows:

a) Set bit 0 of AL for tape transport 1.
   Set bit 1 of AL for tape transport 2.

b) To position tape to the start of a specific block before performing a particular operation, clear AL bit 17 and enter block number in AU.

c) To position tape forward or backward before performing a particular operation, set AL bit 17. Set AU = 000XXX for forward tape motion, or set AU = 400XXX for backward tape motion, where XXX = number of blocks to pass.

b. adr = base address (normally 300₈)