PDP-15
DECTAPE
95

IDENTIFICATION

Product Code:	MAINDEC-15-D3RA-D (D)
Product Name:	TC02 DECtape Random Exerciser
Date:	January 14, 1970
Maintainer:	Diagnostics Group
Author:	Edward P. Steinberger

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1. ABSTRACT

TC02 DECtape Random Exerciser is a program for use with the TC02 DECtape control and from 1 to 8 TU55 DECtape transports. DECtape functions are exercised by the random determination of function, direction, transport number, number of blocks and data pattern generation. Search, Read Data and Write Data are exercised in both Normal and Continuous modes; Read All is exercised in the Continuous mode; Move is exercised. During the waiting period while DECtape functions are being performed, small instruction test programs are being executed by the central processor to test the proper execution of the Data Break facility.

2. REQUIREMENTS

2.1 Equipment

Standard PDP-15 computer with a TC02 DECtape control and at least one TU55 DECtape transport (up to eight may be tested), and one standard PDP-9 Format DECtape (1100_8 Blocks, 400_8 words each) for each transport.

2.2 Storage

2.2.1 Program - Most of memory from 00000 to 04000.

2.2.2 JMS Test Area - 06000 to 06201.

2.2.3 Data Buffers - 04000 to 05577.

2.3 Preliminary Programs

TC02 Basic Exerciser

3. LOADING PROCEDURE

3.1 Method

The program is loaded from paper tape using the standard binary tape loading procedure.

a. Place tape in the reader.

b. Set the ADDRESS switches to 17700.

c. Set BANK MODE switch to 1.

d. Depress I/O RESET.

e. Depress KEY READ IN.

f. Program will be loaded into memory.

4. STARTING PROCEDURE

4.1 Control Switch Settings

The following is a table of Accumulator Switch settings and their action on the program.

AC Switch	Set As	Action
0	1	HALT ON ERROR
	0	DON'T HALT ON ERROR
1	1	DON'T PRINT ERRORS
	0	PRINT ERRORS
2	1	PRINT ONLY 4 DATA ERRORS
	0	PRINT ALL DATA ERRORS
3	1	HIT END ZONE TWICE FOR 0000 or 1077
	0	HIT END ZONE ONCE FOR 0000 or 1077
10	1	EXERCISE TRANSPORT 8
	0	
11	1	EXERCISE TRANSPORT 1
	0	
12	1	EXERCISE TRANSPORT 2
	0	
13	1	EXERCISE TRANSPORT 3
	0	
14	1	EXERCISE TRANSPORT 4
	0	
15	1	EXERCISE TRANSPORT 5

4.1 Control Switch Settings Cont.

AC Switch	Set As	Action
	0	
16	1	EXERCISE TRANSPORT 6
	0	
17	1	EXERCISE TRANSPORT 7
	0	

4.2 Starting Address

The program's starting address is 00100.

4.3 Operator Action

a. Load program per 3.1.

b. Put each TU55 to be tested ON LINE with WRITE ENABLED and a standard PDP-9 DECtape on it.

c. Set the selector dial(s) to the appropriate number(s).

d. Set AC switches per 4.1 (Normal setting is 000XXX).

e. Depress I/O RESET.

f. Depress START

5. OPERATING PROCEDURE

5.1 Operational Switch Settings

See 4.1.

5.2 Subroutine Abstract

None

5.3 Operator Action

"Bad" DECtape transports may be "deselected" at any time by setting to 0 the AC Switch for that transport.

6. ERRORS

All DECtape malfunctions detected by that program result in an error typeout (if ACS 1 is 0) and an error halt (if ACS 0 is 1). The halt will not occur until all errors pertaining to the block and operation have been typed.

The first three lines of every typeout indicate the DECtape drive, operation, direction, and mode, and the block in question.

6.1 Error Halts

6.1.1 Processor Test Error Halts

Processor test errors cause error halts only. Listed below is the location of these halts and the condition causing each. Consult the program listing for further information. These errors are non-recoverable, the program must be restarted at location 00100.

Address	Test and Cause	
02057	ISZ Test	Location 02201 should = 0
02063	ISZ Test	Location 02200 should = 1
02075	ROTATE 1 Test	Link should = 1
02102	ROTATE 1 Test	Data Failure
02113	ROTATE 2 Test	Link should = 0
02120	ROTATE 2 Test	Data failure
02130	SAD TEST	Sad Failure
02170	JMS TEST	JMS Failure

6.1.2 DECtape Test Error Halts

6.1.2.1 Selection Error

If no transports are selected by ACS 10 to 17, the computer will halt at location 00107 to allow the operator to set the ACS's and depress CONTINUE.

6.1.2.2 Read Data Error

A "Read Data" error will cause an error halt at location 00327. To recover, depress "CONTINUE".

6.1.2.3 Write Data Error

A "Write Data" error will cause an error halt at location 01064. To recover, depress "CONTINUE".

6.1.2.4 Read All Error

A "Read All" status error will cause an error halt at location 01677. To recover, depress "CONTINUE". "Read All" data errors will halt per 6.1.2.2.

6.1.2.5 Move Error

A "Move" error will cause an error halt at location 02351. To recover, depress "CONTINUE".

6.1.2.6 Search Error

A "Search" error will cause an error halt at location 02627. To recover, depress "CONTINUE".

6.2 Error Recovery (Non-Processor)

After an error typeout the processor will halt. To recover, depress "CONTINUE". For all errors, the program will attempt to repeat the same or a similar operation. If an error occurs a second time for the same operation, the typeout and halt will occur again. If "CONTINUE" is depressed this time, the drive in error will rewind and the random selections will commence at block 0 again. If, on the other hand, no error occurs, the program will continue normal operation.

6.2 Error Recovery (Non-Processor) Cont.

For read errors ("Read Data" and "Read All"), the direction of the second read operation to the original error's direction. A second error will cause another typeout and halt. Depressing "CONTINUE" will cause the drive to rewind to end zone. If no error occurs on the second pass, the block will be read a third time in the original direction. Any error will cause a typeout and halt. The end result of repeated errors is rewind to end zone and random selection starting with block 0 to prevent the same read sequence.

6.3 Error Typeouts

6.3.1 Search Errors

"Search" error typeouts contain the following information:

Drive Number

Search Direction and Mode

Block Wanted and Direction

Last Number Put in Memory by TC02

Last Block Number Found if More than Two Were Found

Number of Blocks Found Since Last Startup or Turn-Around

DECtape Status B

Example:

```
DRIVE 4
SEARCH      FORWARD
000123      BLOCK WANTED FORWARD
000070      BLOCK FOUND
000073      LAST BLOCK
000004      BLOCKS READ
000100      STATUS B
```

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6.1.2.4 Read All Error

A "Read All" status error will cause an error halt at location 01677. To recover, depress "CONTINUE". "Read All" data errors will halt per 6.1.2.2.

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```
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000004      BLOCKS READ
000100      STATUS B
```

6.3.1 Search Errors Cont.

The above example shows that the control was operating with Drive #4, searching in the forward direction for block #123. It encountered block #70 after block #73 (should have been #74). Up to this time it had read 4 blocks. DECtape status was normal. The block sequence was not consecutive, no doubt due to the loss of bit 15 of the block number.

6.3.2 Write Data Errors

"Write Data" error typeouts contain the following information:

Drive Number

Direction and Mode

DECtape Status B

Contents of Word Count Register (Location 00030).

Example:

DRIVE 1	
WRITE	DATA BACKWARD CONTINUOUS
000765	BLOCK
600000	STATUS B
777634	WC

The above example shows that a mark track error occurred while writing data backwards in the continuous mode in block #765.

6.3.3 Read Data Errors

"Read Data" error typeouts are of two types - status and data compare.

6.3.3.1 Status Error Typeouts

These typeouts contain the following information:

Drive Number

Direction and Mode

Block Being Read

DECtape Status B

Contents of WC if not 0 (Note: No data comparison if WC is not 0).

Example:

DRIVE 7

READ	DATA BACKWARD CONTINUOUS
001065	BLOCK
440000	STATUS B
777400	WC

The above example shows that an attempt to read data from block #1065 on drive #7 in the backward direction in continuous mode caused a select error. Since WC is not 0, no data comparison was made.

6.3.3.2 Data Compare Errors

These typeouts contain the following information:

Drive Number

Direction

Mode

Block Read

6.3.3.2 Data Compare Errors Cont.

Correct Data

Erroneous Data

Address of Incorrect Data

Example:

DRIVE 5	
READ	DATA FORWARD
DATA	ERROR
001074	BLOCK
400000	COR
322667	INC
010374	ADDRS OF INC
000027	COR
067365	INC
010375	ADDRS OF INC

The above example shows that an attempt to read data in the forward direction from block #1074 resulted in data errors. In the first printout: the correct data was 400000, the data from tape was 322667, the incorrect data is in location 010374.

6.3.4 Read All Errors

"Read All" error typeouts are of three types - status, data compare, Checksum.

6.3.4.1 Status Error Typeouts

Same format as "Read Data" - see 6.3.3.1.

6.3.4.2 Data Compare Error Typeouts

Same format as "Read Data" - 6.3.3.2.

6.3.4.3 Checksum Error Typeouts

These typeouts contain the following information:

Drive Number

Read All Direction and Mode

Block Number

Reverse Checksum for Tape

Data Checksum Calculated from 6-bit XOR of Data by the Program

LPB Calculated by Program (6-bit XOR of RC, DC, C above).

Example:

```
DRIVE 8
READ ALL      BACKWARD CONTINUOUS
000000        BLOCK
CKSUM         ERROR
000033        REV CHECKSUM
000022        DATA CHECKSUM CALCULATED
670000        CHECKSUM
000076        CALCULATED LPB
```

The above example shows a checksum error. The 6-bit complement XOR of the Reverse Checksum, Calculated Data Checksum and Checksum should be 000077. However, it calculated to 000076.

6.3.5 Program Interrupt Errors

The program detects 3 classes of program interrupt errors. After the P1 typeout the program forces an operation typeout so that the function being performed may be determined.

6.3.5.1 Program Interrupt and No DECtape Flag or Error Flag Skip

The following typeout will occur:

PI NO DECTAPE SKIP

6.3.5.2 No Program Interrupt or DECtape Flag or Error Flag Skip after Timeout

If no PI or DECtape hardware flags occur after 5 seconds for all functions except "MOVE" (which allows 45 seconds) the following typeout will occur:

NO PI NO DECTAPE SKIP

6.3.5.3 No Program Interrupt but DECtape Flag or Error Flag Skip after Timeout

If no PI occurs, but hardware flags do occur after timeout (5 or 45 seconds) the following typeout will occur:

NO PI DECTAPE SKIP

7. RESTRICTIONS

7.1 Starting Restrictions

None

7.2 Operating Restrictions

Do not "deselect" a transport merely to change a reel of DECtape and then reselect it. If a reel of DECtape must be changed, Stop the program, change the reel of tape, then depress I/O RESET then START with 00100 in the Address Switches.

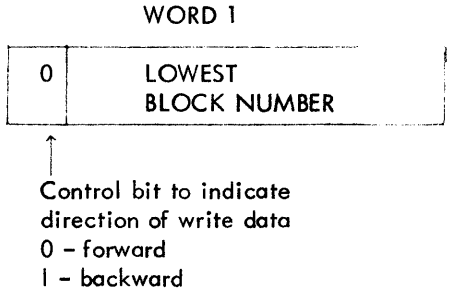
8. MISCELLANEOUS

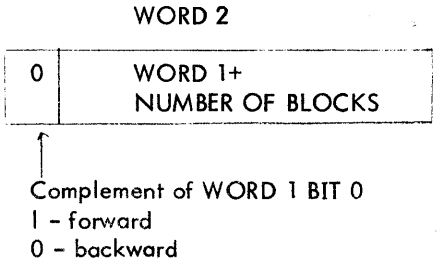
8.1 Execution Time

Program does not stop unless an error occurs.

8.2 Data Format

The data blocks written by the Random Exerciser are formatted to be bi-directional. Whether written forward or backward, they may be read in either direction on the TC02 with the resultant data looking the same. The first four words of the block contain pertinent information about the block. The first two words of each block are formatted as follows:





WORD 1 indicates the lowest numbered block in the series with bit 0 indicating the wirtten direction of the series of blocks.

WORD 2 is 1 greater than the highest numbered block in the series, bit 0 in WORD 2 is the complement of bit 0 in WORD 1.

8.2 Data Format Cont.

Ignoring bits 0 of the two words:

WORD 2 - WORD 1 = number of blocks in series.

WORD 3 and WORD 4 of the block are random numbers used to generate the rest of the data. WORD 5 of the block is WORD 3 rotated right one position using an 18-bit rotate.

WORD 6 is WORD 4 rotated right one position also using an 18-bit rotate. This process is repeated until WORD 128 is WORD 126 rotated right. WORD 129 is the complement obverse of WORD 128. WORD 130 is the complement obverse of WORD 127, etc,. until the last word of the block is complement obverse of the first word of the block.

WORD 1	400617	Block 617 to
WORD 2	000626	625 inclusive were
WORD 3	732654	written backwards using
WORD 4	201356	these two words for data pattern
WORD 5	355326	WORD 3 Right One
WORD 6	100567	WORD 4 Right One, etc.
WORD 253	124675	Complement obverse of WORD 4
WORD 254	321540	Complement obverse of WORD 3
WORD 255	151777	Complement obverse of WORD 2
WORD 256	061773	Complement obverse of WORD 1

9. PROGRAM DESCRIPTION

9.1 Discussion

TC02 DECTAPE RANDOM EXERCISER will exercise a TC02 DECtape control and any configuration of from 1 to 8 TU55 DECtape Drives. Drive, direction of operation, number of blocks, and data patterns are by random selection. First the program randomly selects a drive, then a number between 1 and 32 (decimal) for the number of blocks, then the direction. There is one possibility in four that the direction will be backward. The number of blocks is added to or subtracted from the last block position of the drive selected. If the block generated has not been written, a write operation is initiated. If the last block table indicates that the block selected has already been written, a read operation is initiated. If READ is selected, the program then generates a random number between 0 and 7. If the number is 0, the block is read in "Read All Continuous" mode; if 4, "Read Data Normal" mode; if any other number, "Read Data Continuous" mode and two blocks are read. If WRITE is selected and the

9.1 Discussion Cont.

number of blocks is a multiple of 3 (3, 6, 9, 12, etc.), the blocks are written in continuous mode. Otherwise, the blocks are written in normal mode.

```
                        .TITLE DTRE15
                        .ABS
                        /TC02 RANDOM EXERCISER - PDP-15
          004000        RANBFR=4000
          004400        BUFFRS=RANBFR+400
          000030        WC=30
          000031        CA=31
     00100              .LOC    100
     00100  707704      RANDEX          LEM
     00101  750004              LAS     /READ ACS AND
     00102  503411              AND RUBOUT
     00103  740200              SZA     /SEE IF ANY TRANSPORTS
     00104  600111              JMP .+5 /WERE SPECIFIED
     00105  203510              LAC (MESS1          /CONTROL COMES HERE
     00106  102633              JMS MSPRNT          /IF NONE
     00107  740040              XX
     00110  600100              JMP RANDEX
     00111  043453              DAC MSBITS
     00112  750001              CLA!CMA
     00113  043447              DAC FRSWAT
     00114  707554              707554  /CLEAR "B"
     00115  102207              JMS REPOSI          /PUT ALL DRIVES IN END ZONE
     00116  163451              DZM* LSTBLK         /CLEAR NUMBER OF BLOCKS
     00117  102244              JMS CHNGDR          /CHECK TO SEE IF ALL WERE CLEARED
     00120  600116              JMP .-2 /NO, THEY WEREN'T
     00121  203401              LAC ONE
     00122  043452              DAC LSTDRV
     00123  750004      RDSWCH          LAS     /THIS SEQUENCE
     00124  503411              AND RUBOUT          /ALLOWS THE OPERATOR
     00125  741200              SNA     /TO DESELECT
     00126  600105              JMP RANDEX+5        /" BAD TRANSPORTS"
     00127  043453              DAC MSBITS          /VIA THE AC SWITCHES
                            /RANDOM SELECTION OF OPERATIONS
     00130  100551      MOFPRO          JMS RANSEL          /SELECT A DRIVE
     00131  750001              CLA!CMA
     00132  043457              DAC PASFLG
     00133  203436              LAC CDRIVE          /CHECK TO SEE IF
     00134  343452              TAD LSTDRV          /THIS DRIVE WAS THE
     00135  751200              SNA!CLA /LAST ONE SELECTED
     00136  600231              JMP SAMDRV          /YES, IT WAS!
     00137  203436              LAC CDRIVE
     00140  740001              CMA
     00141  343401              TAD ONE
     00142  043452              DAC LSTDRV
     00143  750001              CLA!CMA
     00144  043474              DAC RSQFLG
                            /SELECT NUMBER OF BLOCKS FOR OPERATION (1-32)
     00145  100516      MOFPR1          JMS RAND1 /GET A RANDOM NUMBER
     00146  503424              AND TERSEV
     00147  740001              CMA     /MAKE -1 TO -32 (DEC)
     00150  043455              DAC NUMBLK
                            /SELECT DIRECTION TO GO
     00151  100527              JMS RAND2 /GET ANOTHER RANDOM
     00152  503425              AND THREE
     00153  751200              SNA!CLA
```

```
00154  740001          CMA        /SET BACKWARDS
00155  043446          DAC DIRFLG           /DIRECTION FLAG
00156  223451          LAC* LSTBLK
00157  755200          SNA!CLA!CLL          /HAS DRIVE BEEN WRITTEN ON?
00160  600721          JMP WRITE1           /NO, WRITE
00161  203446          LAC DIRFLG
                      /GENERATE BLOCK SELECT POSITION + OR - NUMBER
00162  750200          SZA!CLA
00163  744002          CLL!CML
00164  203455          LAC NUMBLK
00165  741400          SZL
00166  600171          JMP .+3
00167  740001          CMA
00170  343401          TAD ONE
00171  363467          TAD* POSITN
00172  043472          DAC RECORD
00173  741100          SPA        /- RECORD?
00174  143472          DZM RECORD           /MAKE = 0
                      /HAS BLOCK SELECTED BEEN WRITTEN
                      /IF NOT, WRITE OPERATION SELECTED
00175  203472          LAC RECORD
00176  740001          CMA
00177  363451          TAD* LSTBLK
00200  741100          SPA        /HAS BLOCK BEEN WRITTEN?
00201  600721          JMP WRITE1           /NO
00202  100540          JMS RAND3
00203  503413          AND SEVEN
00204  741200          SNA
00205  601431          JMP RALLTS
00206  503425          AND THREE
00207  750200          SZA!CLA
00210  601221          JMP RDCMOD
00211  100253    RDTAB JMS RDDATA
00212  600272          JMP REREAD
                      /BLOCK HAS BEEN READ WITHOUT PARITY ERROR
00213  203432          LAC TYTHOU
00214  707544          707544     /STOP TAPE
00215  203472          LAC RECORD
00216  063467          DAC* POSITN          /NEW POSITION
00217  203446          LAC DIRFLG
00220  063445          DAC* DIRECT          /DIRECTION READ
                      /MOVE FIRST FOUR WORDS TO REGENERATE DATA PATTERN
00221  100400          JMS PREGEN           /GENERATE DATA PATTERN
00222  777400          LAW -400
00223  100626          JMS CODATA           /COMPARE 400 WORDS
00224  004000          RANBFR     /GOOD DATA HERE
00225  004400          BUFFRS     /? DATA HERE
00226  443442          ISZ COCNTR
00227  600325          JMP REREDA           /REREAD BLOCK IF ERROR
00230  600123          JMP RDSWCH           /GO BACK, READ ACS, SELECT NEW DRIVE
                      /DRIVE SELECTED SAME AS LAST TIME, TEST FOR SERIES
00231  100516    SAMDRV          JMS RAND1 /GET A RANDOM
00232  741100          SPA        /READ THIS STRING?
00233  600146          JMP MOFPR1+1         /FIND A NEW BLOCK
00234  443474          ISZ RSQFLG
```

```
00235  600146          JMP MOFPR1+1
00236  503425          AND THREE
00237  751200          SNA!CLA   /FORWARD?
00240  740001          CMA       /NO, GO BACKWARD
00241  043446          DAC DIRFLG
00242  740001          CMA
00243  343401          TAD ONE
00244  343407          TAD RBUFST          /FORWARD GETS
00245  043472          DAC RECORD          /FIRST BLOCK
00246  203446          LAC DIRFLG          /BACKWARD GETS
00247  363472          TAD* RECORD         /LAST BLOCK
00250  503373          AND INDEP /MASK TO 10 BITS
00251  043472          DAC RECORD          /AND STORE
00252  601070          JMP RDSEQ /GO READ
                      /READ DATA SUBROUTINE (1 BLOCK)
                      /DIRFLG=777777 (BACKWARD), 0 (FORWARD)
00253  000000  RDDATA          0
00254  102353          JMS SEARCH
00255  203426          LAC TRETHO          /3000
00256  707544          707544    /CHANGE SEARCH TO READ DATA
00257  777400          LAW -400
00260  040030          DAC WC    /INITIALIZE WORD COUNT
00261  203364          LAC BF1LOC
00262  040031          DAC CA    /AND CURRENT ADDRESS
00263  101701          JMS WATINT          /WAIT FOR COMPLETION
00264  000100          100       /DTF
00265  620253          JMP* RDDATA         /STATUS ERROR EXIT
00266  200030          LAC WC
00267  751200          SNA!CLA
00270  440253          ISZ RDDATA
00271  620253          JMP* RDDATA         /NORMAL EXIT
                      /TYPE STATUS ERROR ON READ 1 BLOCK
                      /TEST FOR DATA ERRORS IF FULL READ
00272  750001  REREAD          CLA!CMA
00273  043457          DAC PASFLG
00274  102726          JMS ERSTP /STOP TAPE
00275  102754          JMS TYRDAT
00276  203472          LAC RECORD
00277  102670          JMS OPRINT          /TYPE BLOCK NUMBER
00300  203511          LAC (MESS2
00301  102633          JMS MSPRNT          /TYPE "BLOCK"
00302  707572          707572    /READ "B"
00303  102670          JMS OPRINT          /TYPE CONTENTS OF "B"
00304  203512          LAC (MESS3
00305  102633          JMS MSPRNT          /TYPE "STATUS B"
00306  200030          LAC WC
00307  741200          SNA       /SHORT BUFFER?
00310  600315          JMP .+5   /NO
00311  102670          JMS OPRINT          /TYPE C(WC)
00312  203513          LAC (MESS4
00313  102633          JMS MSPRNT          /TYPE "W.C."
00314  600325          JMP REREDA
00315  100400          JMS PREGEN          /REGENRATE PATTERN
00316  777405          LAW -373
00317  340031          TAD CA
```

```
00320  040324          DAC .+4
00321  777400          LAW -400
00322  100626          JMS CODATA
00323  004000          RANBFR
00324  004400          BUFFRS
00325  750004  REREDA  LAS
00326  751100          SPA!CLA   /HALT ON ERRORS?
00327  740040          XX        /YES
00330  443457          ISZ PASFLG
00331  600361          JMP REWDRV          /REWIND DRIVE IF NOT FIRST ERROR
00332  203446          LAC DIRFLG
00333  740001          CMA
00334  043446          DAC DIRFLG          /CHANGE TO READ IN OPPOSITE DIRECTION
00335  100253          JMS RDDATA          /READ DATA
00336  600274          JMP REREAD+2        /ERROR, AGAIN, TRY AGAIN
00337  100400          JMS PREGEN          /REGENERATE PATTERN
00340  777400          LAW -400
00341  100626          JMS CODATA          /COMPARE DATA
00342  004000          RANBFR
00343  004400          BUFFRS
00344  443442          ISZ COCNTR          /DONE ALL BLOCKS?
00345  600325          JMP REREDA          /NO
00346  203446          LAC DIRFLG
00347  740001          CMA
00350  043446          DAC DIRFLG          /CHANGE DIRECTION
00351  100253          JMS RDDATA          /READ AGAIN
00352  600274          JMP REREAD+2        /ANOTHER STATUS ERROR
00353  777400          LAW -400
00354  100626          JMS CODATA          /COMPARE DATA READ
00355  004000          RANBFR
00356  004400          BUFFRS
00357  443442          ISZ COCNTR          /DONE ALL BLOCKS?
00360  600325          JMP REREDA          /NO
00361  203410  REWDRV  LAC REWIND
00362  243506          XOR UNFUNC
00363  707545          707545    /CLEAR AND LOAD "A"
00364  101701          JMS WATINT
00365  500000          500000    /ERROR, END OF TAPE
00366  600376          JMP .+10
00367  163451          DZM* LSTBLK         /CLEAR LAST BLOCK
00370  163467          DZM* POSITN         /AND POSITION FOR DRIVE
00371  750001          CLA!CMA
00372  063445          DAC* DIRECT         /SET DIRECTION FOR DRIVE BACKWARD
00373  203401          LAC ONE
00374  043452          DAC LSTDRV          /SET LAST DRIVE TO 1
00375  600123          JMP RDSWCH          /GO BACK ALMOST TO BEGINNING
00376  102340          JMS MOVER+2
00377  600361          JMP REWDRV
                      /MOVE FIRST 4 WORDS OF BLOCK READ
                      /AND REGENERATE COMPARE PATTERN
00400  000000  PREGEN  0
00401  203405          LAC RBFLOC
00402  040010          DAC 10
00403  777774          LAW -4
00404  043440          DAC CNTR
```

```
00405  220031          LAC* CA
00406  100467          JMS MCOMOB
00407  060010          DAC* 10
00410  750001          CLA!CMA
00411  340031          TAD CA
00412  040031          DAC CA
00413  443440          ISZ CNTR
00414  600405          JMP .-7
00415  100417          JMS PATGEN
00416  620400          JMP* PREGEN
                      /GENERATE RANDOM DATA PATTERN
                      /FIRST FOUR WORDS OF PATTERN ARE IN
                      /RANDOM BUFFER WORDS 1 TO 4
00417  000000    PATGEN          0
00420  777774          LAW -4
00421  043440          DAC CNTR  /INITIALIZE A COUNTER
00422  203407          LAC RBUFST
00423  043463          DAC PNTR1 /AND TWO POINTERS
00424  203406          LAC RBUFND
00425  043464          DAC PNTR2 /FOR WORD TRANSFERS
00426  203502          LAC TEM2
00427  043501          DAC TEM1  /MOVE TEM1
00430  223463          LAC* PNTR1
00431  043502          DAC TEM2  /AND TEM2
00432  100467          JMS MCOMOB          /FORM COMPLEMENT OBVERSE
00433  063464          DAC* PNTR2          /AND STORE IN BUFFER
00434  443463          ISZ PNTR1 /INCREMENT FORWARD ADDRESS
00435  750001          CLA!CMA
00436  343464          TAD PNTR2 /DECREMENT BACKWARD
00437  043464          DAC PNTR2
00440  443440          ISZ CNTR  /DONE 4?
00441  600426          JMP .-13  /NO
00442  777604          LAW -174
00443  043440          DAC CNTR  /FOR 174 (OCT) MORE
00444  203501    GNPATR          LAC TEM1
00445  744020          CLL!RAR   /FORM NEXT WORD
00446  741400          SZL       /OF RANDOM
00447  243400          XOR MUCH0 /PATTERN
00450  043503          DAC TEM3
00451  063463          DAC* PNTR1          /STORE IN BUFFER
00452  100467          JMS MCOMOB
00453  063464          DAC* PNTR2          /STORE COMP OBVERSE
00454  203502          LAC TEM2  /MOVE
00455  043501          DAC TEM1  /A
00456  203503          LAC TEM3  /FEW
00457  043502          DAC TEM2  /WORDS
00460  443463          ISZ PNTR1 /INCREMENT FORWARD ADDRESS
00461  750001          CLA!CMA
00462  343464          TAD PNTR2 /DECREMENT BACKWARD ADDRESS
00463  043464          DAC PNTR2
00464  443440          ISZ CNTR  /DONE ALL?
00465  600444          JMP GNPATR          /NO
00466  620417          JMP* PATGEN
                      /COMPLEMENT OBVERSE SUBROUTINE
00467  000000    MCOMOB          0
```

```
00470  744001          CMA!CLL
00471  043454          DAC NUMBER
00472  143456          DZM OBVERS
00473  777772          LAW -6
00474  043477          DAC TALLY
00475  203514          LAC (SEVEN
00476  043465          DAC PNTR3
00477  203454          LAC NUMBER
00500  741000          SKP
00501  742010  LOOP    RTL
00502  742010          RTL
00503  742010          RTL
00504  043454          DAC NUMBER
00505  523465          AND* PNTR3
00506  243456          XOR OBVERS
00507  043456          DAC OBVERS
00510  443465          ISZ PNTR3
00511  203454          LAC NUMBER
00512  443477          ISZ TALLY
00513  600501          JMP LOOP
00514  203456          LAC OBVERS
00515  620467          JMP* MCOMOB
                     /RANDOM NUMBER GENERATORS
00516  000000  RAND1   0
00517  200525          LAC R1
00520  744010          RAL!CLL
00521  741400          SZL
00522  340526          TAD R1+1
00523  040525          DAC R1
00524  620516          JMP* RAND1
00525  000171  R1      171
00526  000003          3
00527  000000  RAND2   0
00530  200536          LAC R2
00531  744010          RAL!CLL
00532  741400          SZL
00533  340537          TAD R2+1
00534  040536          DAC R2
00535  620527          JMP* RAND2
00536  000015  R2      15
00537  000003          3
00540  000000  RAND3   0
00541  200547          LAC R3
00542  744010          RAL!CLL
00543  741400          SZL
00544  340550          TAD R3+1
00545  040547          DAC R3
00546  620540          JMP* RAND3
00547  000031  R3      31
00550  000003          3
                     /RANDOMLY SELECT A DRIVE
                     /STAYS IN THIS ROUTINE UNTIL A
                     /DRIVE IS FOUND AND DIRECTION AND
                     /POSITION POINTERS ARE GENERATED
00551  000000  RANSEL          0
```

```
00552   100527          JMS RAND2 /GET A RANDOM NUMBER
00553   503413          AND SEVEN /MASK OFF UNWANTED BITS
00554   043436          DAC CDRIVE          /SAVE
00555   744020          CLL!RAR
00556   742020          RTR
00557   740020          RAR
00560   043506          DAC UNFUNC          /DRIVE NUMBER
00561   203436          LAC CDRIVE
00562   740001          CMA
00563   043440          DAC CNTR
00564   203430          LAC TWOHUN          /FIND POSITION
00565   443440          ISZ CNTR  /OF
00566   741000          SKP       /BIT
00567   600572          JMP EXIST /WITH RESPECT
00570   744020          CLL!RAR   /TO
00571   600565          JMP .-4   /ACS
00572   503453  EXIST   AND MSBITS          /ASK WITH ACS
00573   741200          SNA       /DOES UNIT EXIST (TEST UNIT?)?
00574   600552          JMP RANSEL+1        /NO
00575   203436          LAC CDRIVE          /YES
00576   343403          TAD POSTBL
00577   043467          DAC POSITN          /FORM POSITION POINTER
00600   203436          LAC CDRIVE
00601   343366          TAD DIRTBL
00602   043445          DAC DIRECT          /FORM DIRECTION POINTER
00603   203436          LAC CDRIVE
00604   343374          TAD LSTTBL
00605   043451          DAC LSTBLK          /LAST BLOCK WRITTEN POINTER
00606   620551          JMP* RANSEL
                    /MOVE DATA SUBROUTINE
                    /# OF WORDS IN AC, ORIGIN JMS+1
                    /DESTINATION JMS+2
00607   000000  MVDATA          0
00610   043440          DAC CNTR
00611   750001          CLA!CMA
00612   360607          TAD* MVDATA
00613   040010          DAC 10
00614   440607          ISZ MVDATA
00615   750001          CLA!CMA
00616   360607          TAD* MVDATA
00617   040011          DAC 11
00620   440607          ISZ MVDATA
00621   220010          LAC* 10
00622   060011          DAC* 11
00623   443440          ISZ CNTR
00624   600621          JMP .-3
00625   620607          JMP* MVDATA
                    /COMPARE DATA SUBROUTINE
                    /# OF WORDS IN AC, CORRECT ADDRESS IN JMS+1
                    /QUESTIONABLE ADDRESS IN JMS+2
00626   000000  CODATA          0
00627   043440          DAC CNTR
00630   220626          LAC* CODATA         /GET CORRECT ADDRESS
00631   043463          DAC PNTR1
00632   440626          ISZ CODATA
```

```
00633  220626          LAC* CODATA          /GET QUESTIONABLE ADDRESS
00634  043464          DAC PNTR2
00635  750001          CLA!CMA
00636  043442          DAC COCNTR           /SET NO ERROR FLAG
00637  440626          ISZ CODATA
00640  223463  COLOOP          LAC* PNTR1
00641  740001          CMA
00642  343401          TAD ONE
00643  363464          TAD* PNTR2
00644  740200          SZA
00645  600653          JMP COERRO
00646  443463          ISZ PNTR1
00647  443464          ISZ PNTR2
00650  443440          ISZ CNTR
00651  600640          JMP COLOOP
00652  620626          JMP* CODATA
00653  443442  COERRO          ISZ COCNTR           /FIRST ERROR?
00654  600673          JMP COERR1           /NO
00655  102726          JMS ERSTP /STOP TAPE
00656  707552          707552    /READ "A"
00657  503402          AND ONETHO
00660  741200          SNA       /"ALL" MODE?
00661  600664          JMP .+3   /NO
00662  102765          JMS TYRALL           /YES, GO TYPE
00663  741000          SKP
00664  102754          JMS TYRDAT
00665  203515          LAC (MESS5           /TYPE "DATA ERROR"
00666  102633          JMS MSPRNT
00667  203472          LAC RECORD
00670  102670          JMS OPRINT           /TYPE BLOCK NUMBER
00671  203516          LAC (MESS2
00672  102633          JMS MSPRNT           /TYPE "BLOCK"
00673  750004  COERR1          LAS
00674  742010          RTL
00675  740100          SMA       /SHOULD ONLY 4 BE TYPED
00676  600703          JMP .+5   /NO, TYPE ALL ERRORS
00677  777774          LAW -4    /YES HAVE
00700  343442          TAD COCNTR           /4 BEEN
00701  740100          SMA       /TYPED?
00702  600646          JMP COLOOP+6         /YES, DELETE REST OF TEST
00703  102714          JMS CRLF
00704  223463          LAC* PNTR1
00705  102670          JMS OPRINT           /TYPE STANDARD
00706  203517          LAC (MESS6
00707  102633          JMS MSPRNT           /AND "COR"
00710  223464          LAC* PNTR2
00711  102670          JMS OPRINT           /TYPE INCORRECT
00712  203520          LAC (MESS7
00713  102633          JMS MSPRNT           /AND "INC"
00714  203464          LAC PNTR2
00715  102670          JMS OPRINT           /TYPE ADDRESS OF INCORRECT
00716  203521          LAC (MESS8
00717  102633          JMS MSPRNT           /TYPE "ADDR"
00720  600646          JMP COLOOP+6
                     /INITIATE WRITE OPERATIONS
```

```
                        /GENERATE PATTERN WORDS AND
                        /BLOCK NUMBERS
00721   203405  WRITE1          LAC RBFLOC
00722   040010                  DAC 10      /SET UP 10 FOR STORAGE
00723   223451                  LAC* LSTBLK
00724   060010                  DAC* 10     /SET UP FIRST WORD
00725   203455                  LAC NUMBLK
00726   740001                  CMA
00727   343401                  TAD ONE
00730   363451                  TAD* LSTBLK         /LAST BLOCK+1
00731   043472                  DAC RECORD
00732   776700                  LAW -1100
00733   343472                  TAD RECORD
00734   740100                  SMA         /REWIND UNIT?
00735   601034                  JMP REWCK /YES
00736   203472                  LAC RECORD
00737   060010                  DAC* 10
00740   100540                  JMS RAND3
00741   060010                  DAC* 10     /FIRST RANDOM WORD
00742   100516                  JMS RAND1
00743   060010                  DAC* 10     /SECOND RANDOM WORD
00744   100527                  JMS RAND2
00745   503425                  AND THREE
00746   751200                  SNA!CLA     /FORM DIRECTION
00747   740001                  CMA
00750   043446                  DAC DIRFLG          /AND STORE
00751   343407                  TAD RBUFST
00752   040010                  DAC 10
00753   040011                  DAC 11      /FORM FIRST WORD
00754   754002                  CLA:CLL:CML         /INDICATE
00755   740020                  RAR         /BACKWARD
00756   360010                  TAD* 10     /OR 2ND WORD
00757   060011                  DAC* 11     /INDICATE FORWARD
00760   100417                  JMS PATGEN          /GENERATE 256 WORD PATTERN
00761   203455                  LAC NUMBLK
00762   043475                  DAC SAVNUM          /SAVE NUMBER OF BLOCKS
00763   203455  CORT1R          LAC NUMBLK
00764   740001                  CMA
00765   043472                  DAC RECORD
00766   203446                  LAC DIRFLG
00767   740200                  SZA         /BACKWARD IS
00770   203472                  LAC RECORD          /LAST BLOCK + NUMBER OF BLOCKS
00771   363451                  TAD* LSTBLK
00772   043472                  DAC RECORD          /TO FIND FIRST BLOCK TO BE WRITTEN
                        /TEST FOR WRITE DATA CONTINUOUS MODE
                        /IF NUMBER OF BLOCKS = INC OF 3
00773   601332                  JMP WDCMOD
00774   102353                  JMS SEARCH
00775   203370  WRT1A LAC FIVTHO          /SEARCH TO WRITE DATA
00776   707544                  707544      /XOR INTO "A"
00777   777400                  LAW -400
01000   040030                  DAC WC      /SET UP WC
01001   203405                  LAC RBFLOC
01002   040031                  DAC CA      /AND CA
01003   101701                  JMS WATINT          /WAIT
```

```
01004  000100          100        /DTF
01005  601042          JMP WSTERR
01006  200030          LAC WC
01007  744200          SZA!CLL    /WC = 0?
01010  601042          JMP WSTERR          /NO
01011  203446          LAC DIRFLG
01012  343472          TAD RECORD
01013  741100          SPA
01014  754002          CLA!CLL!CML
01015  043472          DAC RECORD
01016  750400          SNL!CLA    /RECORD -1?
01017  443472          ISZ RECORD          /NO +1
01020  443455          ISZ NUMBLK          /DONE ALL BLOCKS?
01021  600776          JMP WRT1A+1         /NO, DO ANOTHER
01022  203472       WDINC LAC RECORD
01023  063467          DAC* POSITN         /NEW POSITION
01024  203446          LAC DIRFLG
01025  063445          DAC* DIRECT         /NEW DIRECTION
01026  204001          LAC RANBFR+1
01027  503373          AND INDEP
01030  063451          DAC* LSTBLK         /NEW LAST BLOCK
01031  203432          LAC TYTHOU
01032  707544          707544     /XOR INTO "A" (STOP TAPE)
01033  600123          JMP RDSWCH          /GET C(SR) THEN SELECT AGAIN
01034  100540       REWCK JMS RAND3 /GET RANDOM NUMBER
01035  741100          SPA        /+ OR - ?
01036  600361          JMP REWDRV          /(-)
01037  143472          DZM RECORD          /READ BLOCK 0
01040  143446          DZM DIRFLG          /FORWARD
01041  600211          JMP RDTAB
01042  102726       WSTERR          JMS ERSTP /STOP TAPE - LEAVE FLAGS
01043  102776          JMS TYWDAT
01044  203472          LAC RECORD
01045  102670          JMS OPRINT          /TYPE BLOCK NUMBER
01046  203522          LAC (MESS2
01047  102633          JMS MSPRNT          /TYPE "BLOCK"
01050  203475          LAC SAVNUM
01051  043455          DAC NUMBLK
01052  707572          707572     /READ "B"
01053  102670          JMS OPRINT          /PRINT C(B)
01054  203523          LAC (MESS3
01055  102633          JMS MSPRNT          /TYPE "STATUS B"
01056  200030          LAC WC
01057  102670          JMS OPRINT          /PRINT C(WC)
01060  203524          LAC (MESS4
01061  102633          JMS MSPRNT          /TYPE "WC"
01062  750004          LAS
01063  751100          SPA!CLA    /STOP ON ERROR?
01064  740040          XX         /YES
01065  443457          ISZ PASFLG          /2ND ERROR?
01066  600361          JMP REWDRV          /YES, REWIND
01067  600763          JMP CORT1R          /NO
                     /READ ENTIRE SEQUENCE OF BLOCKS
                     /AS ORIGINALLY WRITTEN
01070  204000       RDSEQ LAC RANBFR          /GET LOWEST BLOCK
```

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01071  503373          AND INDEP
01072  043472          DAC RECORD
01073  204001          LAC RANBFR+1        /GET LAST BLOCK+1
01074  503373          AND INDEP
01075  043455          DAC NUMBLK          /MAKE NUMBER OF BLOCKS
01076  203472          LAC RECORD
01077  740001          CMA
01100  343455          TAD NUMBLK
01101  043455          DAC NUMBLK          /SET UP NUMBLK
01102  100516          JMS RAND1 /GET A RANDOM
01103  755100          SPA!CLA!CLL         /READ FORWARD?
01104  740003          CMA!CML   /NO BACKWARD, AC= -0, L=1
01105  043446          DAC DIRFLG
01106  203472          LAC RECORD
01107  741400          SZL
01110  343455          TAD NUMBLK
01111  043472          DAC RECORD
01112  203455          LAC NUMBLK          /MAKE NUMBER OF BLOCKS NEGATIVE
01113  740001          CMA
01114  043455          DAC NUMBLK
01115  100253          JMS RDDATA          /READ FIRST BLOCK
01116  600272          JMP REREAD          /STATUS ERROR IN READ
01117  443455  RDBUF1          ISZ NUMBLK          /READ ALL BLOCKS?
01120  601123          JMP .+3   /NO
01121  203432          LAC TYTHOU          /GET CONSTANT TO STOP TAPE
01122  601130          JMP .+6
01123  203365          LAC BF2LOC
01124  040031          DAC CA    /SET UP CA
01125  777400          LAW -400
01126  040030          DAC WC    /AND WC
01127  750000          CLA
01130  707544          707544    /XOR INTO "A"
01131  777400          LAW -400
01132  100626          JMS CODATA          /COMPARE DATA
01133  004000          RANBFR
01134  004400          BUFFRS
01135  443442          ISZ COCNTR          /ANY DATA ERRORS?
01136  600325          JMP REREDA          /YES, READ OTHER DIRECTION
01137  203455          LAC NUMBLK
01140  741200          SNA       /DONE COMPLETE SERIES
01141  601214          JMP NDOFRD          /YES
01142  203446          LAC DIRFLG          /NO
01143  741200          SNA
01144  343401          TAD ONE
01145  343472          TAD RECORD          /LAST BLOCK +1 OR -1
01146  043472          DAC RECORD
01147  101701          JMS WATINT          /WAIT
01150  000100          100       /DTF
01151  600272          JMP REREAD          /STATUS ERROR, REREAD
01152  200030          LAC WC
01153  740200          SZA       /WC = 0?
01154  600272          JMP REREAD          /NO, REREAD
01155  443455          ISZ NUMBLK          /DONE ALL READS?
01156  601161          JMP .+3   /NO
01157  203432          LAC TYTHOU          /YES, GET READ TO
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01160   601166          JMP .+6   /STOP TAPE
01161   203364          LAC BF1LOC
01162   040031          DAC CA    /SET UP CA
01163   777400          LAW -400
01164   040030          DAC WC    /AND WC
01165   750000          CLA
01166   707544          707544    /XOR INTO A
01167   777400          LAW -400
01170   100626          JMS CODATA          /COMPARE DATA
01171   004000          RANBFR
01172   005001          BUFFRS+401
01173   443442          ISZ COCNTR          /ANY COMPARE ERRORS
01174   600325          JMP REREDA          /YES, READ OPPOSITE DIRECTION
01175   203455          LAC NUMBLK
01176   741200          SNA       /READ AND COMPARE ALL?
01177   601214          JMP NDOFRD          /YES
01200   203446          LAC DIRFLG          /NO
01201   741200          SNA
01202   343401          TAD ONE
01203   343472          TAD RECORD          /LAST BLOCK +1 OR -1
01204   043472          DAC RECORD
01205   101701          JMS WATINT          /WAIT
01206   000100          100       /DTF
01207   600272          JMP REREAD          /STATUS ERROR, REREAD
01210   200030          LAC WC
01211   740200          SZA       /WC = 0?
01212   600272          JMP REREAD          /NO, REREAD
01213   601117          JMP RDBUF1          /COMPARE FIRST BUFFER
01214   203472  NDOFRD  LAC RECORD
01215   063467          DAC* POSITN         /NEW POSITION
01216   203446          LAC DIRFLG
01217   063445          DAC* DIRECT         /NEW DIRECTION
01220   600123          JMP RDSWCH          /GO BACK FOR ANOTHER
                      /READ DATA CONTINUOUS MODE
                      /TWO BLOCKS AND COMPARE DATA READ
01221   203446  RDCMOD  LAC DIRFLG
01222   740200          SZA       /FORWARD?
01223   601232          JMP .+7   /NO
01224   203472          LAC RECORD
01225   740001          CMA
01226   363451          TAD* LSTBLK         /BLOCK +1 WRITTEN?
01227   740200          SZA
01230   601235          JMP .+5
01231   600211          JMP RDTAB /BLOCK NOT WRITTEN, READ ONLY 1
01232   203472          LAC RECORD
01233   741200          SNA
01234   600211          JMP RDTAB /BLOCK 0 BACKWARDS, READ ONLY 1
01235   102353          JMS SEARCH          /FIND FIRST BLOCK
01236   203427          LAC TRTETH          /13000
01237   707544          707544    /XOR INTO "A" (CHANGED TO READ CONT)
01240   777000          LAW -1000
01241   040030          DAC WC    /SET UP WC AND
01242   203364          LAC BF1LOC
01243   040031          DAC CA    /CA FOR 2 BLOCKS
01244   101701          JMS WATINT          /WAIT FOR END OF TRANSFER
```

```
01245  000100          100       /DTF
01246  601314          JMP RDCERR          /ERROR, SEE WHICH BLOCK
01247  200033          LAC WC
01250  740200          SZA       /WC = 0?
01251  600272          JMP REREAD          /NO
01252  203432          LAC TYTHOU          /GET "STOP"
01253  707544          707544    /XOR INTO "A"
01254  203446          LAC DIRFLG
01255  741200          SNA
01256  343401          TAD ONE
01257  343472          TAD RECORD
01260  043472          DAC RECORD
01261  100400          JMS PREGEN          /VERIFY LAST
01262  777400          LAW -400  /BLOCK
01263  100626          JMS CODATA          /FIRST
01264  004000          RANBFR
01265  005000          BUFFRS+400
01266  443442          ISZ COCNTR          /ANY DATA ERRORS
01267  600325          JMP REREDA          /YES, REREAD
01270  750001          CLA!CMA
01271  343365          TAD BF2LOC
01272  040031          DAC CA
01273  100400          JMS PREGEN
01274  203446          LAC DIRFLG
01275  741200          SNA
01276  343401          TAD ONE
01277  740001          CMA
01300  343401          TAD ONE
01301  343472          TAD RECORD
01302  043472          DAC RECORD
01303  777400          LAW -400
01304  100626          JMS CODATA
01305  004000          RANBFR
01306  004400          BUFFRS
01307  443442          ISZ COCNTR          /ANY DATA ERRORS?
01310  600325          JMP REREDA          /YES, REREAD
01311  203472          LAC RECORD          /NO, SET NEW
01312  063467          DAC* POSITN         /POSITION
01313  600123          JMP RDSWCH          /GO BACK FOR ANOTHER JOB
01314  200030  RDCERR  LAC WC
01315  741200          SNA       /ERROR IN 2ND BLOCK?
01316  601324          JMP .+6   /YES, COUNT BLOCK
01317  740001          CMA
01320  343401          TAD ONE
01321  340777          TAD WRT1A+2         /-400 (OCT)
01322  040030          DAC WC
01323  600272          JMP REREAD          /TYPE STATUS ERROR
01324  203446          LAC DIRFLG
01325  741200          SNA       /BACKWARD (-1)
01326  343401          TAD ONE   /FORWARDS (+1
01327  343472          TAD RECORD
01330  043472          DAC RECORD
01331  600272          JMP REREAD
                     /WRITE DATA CONTINUOUS MODE IF
                     /NUMBER OF BLOCKS IS AN INCREMENT OF 3
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01332  143505  WDCMOD          DZM TRECTR
01333  203455          LAC NUMBLK
01334  343425          TAD THREE
01335  741200          SNA         /AN INCREMENT OF 3?
01336  601343          JMP SWCMOD          /YES, WRITE CONT.
01337  740100          SMA         /GONE PAST 0?
01340  600774          JMP WRT1A-1         /YES, NOT INC. OF 3
01341  443505          ISZ TRECTR          /NO, COUNT 1
01342  601334          JMP WDCMOD+2        /AND REPEAT
01343  203505  SWCMOD          LAC TRECTR
01344  740001          CMA
01345  043505          DAC TRECTR
01346  777000          LAW -1000 /MAKE PATTERN
01347  100607          JMS MVDATA          /3 BUFFERS
01350  004000          RANBFR      /LONG
01351  004400          BUFFRS
01352  102353          JMS SEARCH
01353  203367          LAC FIFTHO          /15000 (SEARCH TO WRITE CONT)
01354  707544  SWCMDL          707544      /XOR INTO "A"
01355  776400          LAW -1400 /SET UP WC
01356  040030          DAC WC      /FOR 3 BLOCKS
01357  203405          LAC RBFLOC
01360  040031          DAC CA      /AND CA
01361  101701          JMS WATINT          /WAIT
01362  000100          100         /DTF
01363  601405          JMP WDCERR          /NOT NORMAL INTERRUPT
01364  200030          LAC WC
01365  740200          SZA         /WC = 0?
01366  601405          JMP WDCERR          /NO
01367  203446          LAC DIRFLG
01370  754200          SZA!CLA!CLL         /FORWARD?
01371  740002          CML         /NO, SET LINK
01372  343425          TAD THREE /GET 3
01373  740400          SNL         /BACKWARD
01374  601377          JMP .+3     /NO
01375  740001          CMA         /YES, -3
01376  343401          TAD ONE
01377  343472          TAD RECORD
01400  043472          DAC RECORD
01401  750000          CLA
01402  443505          ISZ TRECTR          /DONE ALL
01403  601354          JMP SWCMDL          /NO, DO NEXT 3
01404  601022          JMP WDINC /YES
01405  143505  WDCERR          DZM TRECTR
01406  200030          LAC WC
01407  740001          CMA
01410  343401          TAD ONE     / -WC
01411  340777          TAD WRT1A+2         / -400 (OCT)
01412  741100          SPA
01413  601416          JMP .+3
01414  443505          ISZ TRECTR
01415  601411          JMP .-4
01416  203446          LAC DIRFLG
01417  754200          SZA!CLA!CLL         /FORWARD?
01420  740002          CML         /NO, BACKWARD, MAKE -1 OR -2
```

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01421   203505          LAC TRECTR
01422   740400          SNL
01423   601426          JMP .+3
01424   740001          CMA
01425   343401          TAD ONE
01426   343472          TAD RECORD
01427   043472          DAC RECORD          /BLOCK IN ERROR
01430   601042          JMP WSTERR          /TYPE OUT WRITE ERROR
                    /READ ALL ROUTINE
                    /REV CKSM, DATA, AND CKSM ARE READ
                    /CKSMS ARE GENERATED AND TESTED
01431   203446    RALLTS    LAC DIRFLG
01432   741200          SNA         /BACKWARDS?
01433   343401          TAD ONE     /NO, FORWARD
01434   740001          CMA
01435   343401          TAD ONE     /+1 FOR BACKWARD, -1 FOR FORWARD
01436   343472          TAD RECORD
01437   043472          DAC RECORD
01440   741100          SPA
01441   600123          JMP RDSWCH          /CAN'T DO 0
01442   343376          TAD MBLOCK
01443   750100          SMA!CLA
01444   600145          JMP MOFPR1          /OR 1100
                    /FIND THE BLOCK AND CHANGE TO READ ALL
                    /CLEAR READ ALL ERROR FLAG
01445   143471          DZM RAEFLG          /CLEAR READ ALL ERROR FLAG
01446   102353          JMS SEARCH          /FIND BLOCK
01447   707554          707554      /CLEAR DTF AND EF
01450   203446          LAC DIRFLG
01451   741200          SNA
01452   343401          TAD ONE
01453   343472          TAD RECORD
01454   043472          DAC RECORD
01455   707561          707561      /SKIP ON ERROR FLAG
01456   741000          SKP
01457   601556          JMP RASERR          /DECTAPE ERROR
01460   707601          707601      /SKIP ON DECTAPE FLAG
01461   601455          JMP .-4     /NO FLAGS, CHECK AGAIN
01462   203435          LAC BLKFND          /GET CURRENT DECTAPE BLOCK NUMBER
01463   740001          CMA
01464   343401          TAD ONE
01465   343472          TAD RECORD
01466   750200          SZA!CLA     /IS IT THE ONE WE ARE LOOKING FOR?
01467   601556          JMP RASERR          /NO, ERROR
                    /CHANGE TO RFAD ALL CONTINUOUS
01470   203431          LAC TWVTHO          /SEARCH TO READ ALL CONT
01471   707544          707544      /XOR INTO "A"
01472   777374          LAW -404
01473   040030          DAC WC      /SET WC FOR 404 WORDS
01474   203364          LAC BF1LOC
01475   040031          DAC CA      /SET CA
01476   101701          JMS WATINT          /WAIT
01477   000100          100         /DTF
01500   601657          JMP ERRRAR          /READ ALL STATUS ERROR
01501   200030          LAC WC
```

```
01502   740200          SZA         /WC = 0?
01503   601657          JMP ERRRAR              /NO
01504   203432          LAC TYTHOU              /STOP TAPE
01505   707544          707544      /XOR INTO "A"
                      /GENERATE CKSMS AND TEST SUM = 00
01506   203404          LAC RADLOC
01507   040010          DAC 10      /SETUP 10
01510   777400          LAW -400
01511   043440          DAC CNTR    /AND COUNTER FOR
01512   143437          DZM CKSUMR              /PROCESSING, ZERO CHECKSUM
01513   204402          LAC BUFFRS+2
01514   503421          AND SEVSEV
01515   043473          DAC REVCHK              /SAVE REVERSE CHECK
01516   220010          LAC* 10     /GET NEXT DATAWORD
01517   101560          JMS XORSUM              /XOR INTO CHECKSUM
01520   443440          ISZ CNTR    /DONE?
01521   601516          JMP .-3     /NO
01522   203437          LAC CKSUMR              /YES, GET FINAL
01523   503421          AND SEVSEV              /MASK
01524   043444          DAC DATASM              /AND SAVE
01525   770000          LAW 10000 /LOAD AC WITH 770000
01526   520010          AND* 10     /COMBINE WITH FORWARD CKSM
01527   043450          DAC FWDCHK              /AND SAVE
01530   101560          JMS XORSUM                      /COMBINE FWDCHK AND DATASM
01531   203473          LAC REVCHK
01532   101560          JMS XORSUM              /COMBINE WITH REVCHK
01533   203437          LAC CKSUMR
01534   740001          CMA
01535   503421          AND SEVSEV
01536   740200          SZA         /IS RESULT 0?
01537   601602          JMP ERRCKS              /NO, ERROR
01540   203472  RADCHK          LAC RECORD
01541   063467          DAC* POSITN             /UPDATE POSITION TABLE
01542   750001          CLA!CMA
01543   340031          TAD CA
01544   040031          DAC CA      /SUBTRACT 1 FROM CA
01545   100400          JMS PREGEN              /GENERATE PATTERN
01546   777400          LAW -400    /COMPARE AGAINST
01547   100626          JMS CODATA              /PATTERN OBTAINED
01550   004000          RANBFR      /FROM TAPE
01551   004403          BUFFRS+3
01552   443471          ISZ RAEFLG              /ANY READ ALL ERRORS
01553   443442          ISZ COCNTR              /NO, ANY DATA ERRORS
01554   600325          JMP REREDA              /YES, YES
01555   600121          JMP RDSWCH-2            /NO, GO BACK
01556   143457  RASERR          DZM PASFLG
01557   602562          JMP SRHERR
                      /TC02 RANDOM EXERCISER - TAPE 2
                      /FORM 6-BIT XOR OF AC AND CKSUMR
                      /SAVE RESULTS IN CKSUMR
01560   000000  XORSUM          0
01561   740001          CMA
01562   043501          DAC TEM1
01563   777775          LAW -3
01564   043477          DAC TALLY
```

```
01565  203501          LAC TEM1
01566  744010          RAL!CLL
01567  742010          RTL
01570  742010          RTL
01571  742010          RTL
01572  043501          DAC TEM1
01573  503421          AND SEVSEV
01574  243437          XOR CKSUMR
01575  043437          DAC CKSUMR
01576  203501          LAC TEM1
01577  443477          ISZ TALLY
01600  601567          JMP .-11
01601  621560          JMP* XORSUM
                      /CHECKSUM ERROR TYPEOUT
01602  102765     ERRCKS       JMS TYRALL          /TYPE OUT HEADER
01603  203472          LAC RECORD
01604  102670          JMS OPRINT          /TYPE OUT BLOCK NUMBER
01605  203525          LAC (MESS2
01606  102633          JMS MSPRNT          /TYPE "BLOCK"
01607  203526          LAC (MESS9
01610  102633          JMS MSPRNT          /TYPE "CKSUM ERROR"
01611  102714          JMS CRLF
01612  203473          LAC REVCHK
01613  102670          JMS OPRINT          /TYPE OUT REVCHECK
01614  203527          LAC (MESS10
01615  102633          JMS MSPRNT          /TYPE "REV"
01616  101647          JMS CKSTYP          /TYPE "CHKSUM"
01617  102714          JMS CRLF
01620  203444          LAC DATASM
01621  102670          JMS OPRINT          /TYPE DATA SUM
01622  760240          LAW 240
01623  102661          JMS TYPE
01624  103030          JMS TYDATA
01625  101647          JMS CKSTYP          /TYPE "CHKSUM"
01626  101653          JMS CALCTY
01627  102714          JMS CRLF
01630  203450          LAC FWDCHK
01631  102670          JMS OPRINT          /TYPE FORWARD CHECKSUM
01632  101647          JMS CKSTYP          /TYPE "CHKSUM"
01633  102714          JMS CRLF
01634  203437          LAC CKSUMR
01635  740001          CMA
01636  503421          AND SEVSEV
01637  043437          DAC CKSUMR
01640  102670          JMS OPRINT          /TYPE CALCULATED CKSM
01641  101653          JMS CALCTY
01642  203530          LAC (MESS11
01643  102633          JMS MSPRNT          /TYPE "L.P.B."
01644  750001          CLA!CMA
01645  043471          DAC RAEFLG
01646  601540          JMP RADCHK
01647  000000     CKSTYP       0
01650  203531          LAC (MESS12
01651  102633          JMS MSPRNT
01652  621647          JMP* CKSTYP
```

```
01653  000000      CALCTY          0
01654  203532            LAC (MESS13
01655  102633            JMS MSPRNT
01656  621653            JMP* CALCTY
                       /READ ALL STATUS ERROR TYPEOUT
01657  102726      ERRRAR          JMS ERSTP /STOP TAPE
01660  102765            JMS TYRALL        /TYPE HEADER
01661  203472            LAC RECORD
01662  102670            JMS OPRINT        /TYPE OUT BLOCK NUMBER
01663  203533            LAC (MESS2
01664  102633            JMS MSPRNT        /TYPE "BLOCK"
01665  707572            707572    /READ "B"
01666  102670            JMS OPRINT        /TYPE OUT B
01667  203534            LAC (MESS3
01670  102633            JMS MSPRNT        /TYPE "STATUS B"
01671  200030            LAC WC
01672  102670            JMS OPRINT        /TYPE OUT WORD COUNT
01673  203535            LAC (MESS4
01674  102633            JMS MSPRNT        /TYPE "W.C."
01675  750004            LAS
01676  751100            SPA!CLA   /STOP ON ERROR?
01677  740040            XX        /YES
01700  600361            JMP REWDRV
                       /WAIT FOR INTERRUPT ROUTINE
                       /SYNCHRONIZE PROCESSOR TESTS
01701  000000      WATINT          0
01702  203536            LAC (JMP IRECD
01703  040001            DAC 1
01704  777774            LAW -4
01705  043507            DAC WTCNTR        /INITIALIZE COUNTER FOR 5 SECONDS
01706  707552            707552    /READ "A"
01707  503416            AND SEVEN+3       /7000
01710  740200            SZA       /IS FUNCTION "MOVE"
01711  601714            JMP .+3   /NO, 5 SEC. OK
01712  777750            LAW -30   /CHANGE COUNTER
01713  043507            DAC WTCNTR        /TO 45 SEC.
01714  443447            ISZ FRSWAT        /FIRST PROGRAM WAIT?
01715  601721            JMP RESETD        /NO, RESTORE AC AND L
01716  102015            JMS SETIDX        /YES, SET UP
01717  700042            ION       /TURN ON PI
01720  602046            JMP ISZTST        /GO TO FIRST TEST
01721  143447      RESETD          DZM FRSWAT        /INDICATE NOT FIRST WAIT
01722  443460            ISZ PICNTR        /COUNT PI COUNTER
01723  741000            SKP       /NOT ZERO
01724  102015            JMS SETIDX        /ZERO
01725  200000            LAC 0
01726  063461            DAC* PIDEX1       /SAVE OLD PC
01727  443461            ISZ PIDEX1
01730  200000            LAC 0
01731  740010            RAL       /RESTORE LINK
01732  203433            LAC ACCUM /RESTORE AC
01733  700042            ION       /TURN ON PI
01734  620000            JMP* 0    /EXIT
                       /INTERRUPT RETURNS HERE
01735  043433      IRECD DAC ACCUM /SAVE AC
```

```
01736  707601          707601    /SKIP ON DTF
01737  741000          SKP       /NONE
01740  601743          JMP .+3   /DECTAPE FLAG
01741  707561          707561    /SKIP ON ERROR FLAG
01742  601762          JMP NDTSKP          /NO DECTAPE FLAGS
01743  707572          707572    /READ "B"
01744  043476          DAC SBRECD          /SAVE B
01745  221701          LAC* WATINT
01746  740001          CMA       /COMPARE FLAGS SET
01747  503476          AND SBRECD          /AGAINST FLAGS ALLOWED
01750  741200          SNA       /ANY ILLEGAL?
01751  441701          ISZ WATINT          /NO, INCREMENT TWICE
01752  441701          ISZ WATINT          /YES, INCREMENT ONCE
01753  201701          LAC WATINT
01754  063462          DAC* PIDEX2         /SAVE C(WATINT)
01755  443462          ISZ PIDEX2          /MORE POINTER
01756  203435          LAC BLKFND                    /CLEAN UP
01757  503373          AND INDEP           /BLOCK NUMBER
01760  043435          DAC BLKFND                    /FROM TAPE
01761  621701          JMP* WATINT         /EXIT
                       .EJECT
```

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01762   102726      NOTSKP          JMS ERSTP /STOP TAPE
01763   203537            LAC (MESS14
01764   102633            JMS MSPRNT          /TYPE "PI"
01765   602005            JMP PTSTNS
01766   000000      PTSTND          0
01767   443507            ISZ WTCNTR          /WAITED LONG ENOUGH?
01770   621766            JMP* PTSTND         /NO, DO NEXT TEST
01771   700012            IOF+10    /YES, TURN OFF PI
01772   707601            707601    /SKIP ON DTF
01773   741000            SKP
01774   601777            JMP .+3
01775   707561            707561    /SKIP ON ERROR FLAG
01776   740001            CMA       /NO FLAGS, STORE -1
01777   043476            DAC SBRECD          /OR 0 IF ANY FLAG
02000   102726            JMS ERSTP /STOP TAPE
02001   203540            LAC (MESS15
02002   102633            JMS MSPRNT          /TYPE "NO PI"
02003   443476            ISZ SBRECD          /ANY DECTAPE FLAGS
02004   602007            JMP PTSTNS+2        /YES
02005   203541      PTSTNS          LAC (MESS16
02006   102633            JMS MSPRNT          /TYPE "NO"
02007   203542            LAC (MESS17
02010   102633            JMS MSPRNT          /TYPE "DECTAPE SKIP"
02011   441701            ISZ WATINT
02012   750001            CLA!CMA
02013   043447            DAC FRSWAT
02014   621701            JMP* WATINT
02015   000000      SETIDX          0
02016   777772            LAW -6
02017   043460            DAC PICNTR
02020   202025            LAC PITBL
02021   043461            DAC PIDEX1
02022   202045            LAC PIRTBL
02023   043462            DAC PIDEX2
02024   622015            JMP* SETIDX
02025   002026      PITBL .+1
02045                     .LOC      PITBL+20
02045   002035      PIRTBL          .-10
                        /PROCESSOR TESTS, RUN WHILE WAITING FOR INTERRUPT
                        /ISZ TEST - 2.6 SECONDS
02046   750001      ISZTST          CLA!CMA
02047   042204            DAC TEST5
02050   142201            DZM TEST2
02051   142200            DZM TEST1
02052   442200            ISZ TEST1
02053   442201            ISZ TEST2
02054   602052            JMP .-2
02055   202201            LAC TEST2
02056   740200            SZA
02057   740040            XX
02060   750001            CLA!CMA
02061   342200            TAD TEST1
02062   740200            SZA
02063   740040            XX
02064   442204            ISZ TEST5
```

```
02065   741000          SKP
02066   602051          JMP ISZTST+3
02067   101766          JMS PTSTND
                       /ROTATE 1 TEST - 3.9 SECONDS
02070   202201      ROT1TS          LAC TEST2
02071   744002          CLL!CML
02072   740020          RAR
02073   740010          RAL
02074   740400          SNL
02075   740040          XX
02076   740001          CMA
02077   343401          TAD ONE
02100   342201          TAD TEST2
02101   740200          SZA
02102   740040          XX
02103   442201          ISZ TEST2
02104   602070          JMP ROT1TS
02105   101766          JMS PTSTND
                       /ROTATE 2 TEST - 3.9 SECONDS
02106   202201      ROT2TS          LAC TEST2
02107   744000          CLL
02110   742010          RTL
02111   742020          RTR
02112   741400          SZL
02113   740040          XX
02114   740001          CMA
02115   343401          TAD ONE
02116   342201          TAD TEST2
02117   740200          SZA
02120   740040          XX
02121   442201          ISZ TEST2
02122   602106          JMP ROT2TS
02123   101766          JMS PTSTND
                       /SAD TEST - 2.1 SECONDS
02124   142203      SADTST          DZM TEST4
02125   202203          LAC TEST4
02126   542203          SAD TEST4
02127   741000          SKP
02130   740040          XX
02131   442203          ISZ TEST4
02132   602125          JMP SADTST+1
02133   101766          JMS PTSTND
                       /JMS TEST - 3 SECONDS
02134   776200      JMSTST          LAW -1600
02135   042200          DAC TEST1 /1600 LOOPS
02136   777600          LAW -200
02137   042201          DAC TEST2 /200 JMS .
02140   203543          LAC (6000
02141   042202          DAC TEST3 /FIRST ADDRESS OF JMS
02142   202205          LAC JMSCON
02143   042203          DAC TEST4
02144   745000          SKP!CLL
02145   202203          LAC TEST4
02146   062202          DAC* TEST3
02147   442203          ISZ TEST4
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02150  442202          ISZ TEST3
02151  442201          ISZ TEST2
02152  602145          JMP .-5
02153  202206          LAC RETJMP
02154  062202          DAC* TEST3
02155  606000          JMP 6000
02156  777600  JMPRET          LAW -200
02157  042201          DAC TEST2
02160  402140          XCT JMSTST+4
02161  042202          DAC TEST3
02162  741000          SKP
02163  202202          LAC TEST3
02164  740001          CMA
02165  362202          TAD* TEST3
02166  503375          AND MASK
02167  740200          SZA
02170  740040          XX
02171  442202          ISZ TEST3
02172  442201          ISZ TEST2
02173  602163          JMP .-10
02174  442200          ISZ TEST1
02175  602136          JMP JMSTST+2
02176  101766          JMS PTSTND
02177  602046          JMP ISZTST
02200  000000  TEST1 0
02201  000000  TEST2 0
02202  000000  TEST3 0
02203  000000  TEST4 0
02204  000000  TEST5 0
02205  106000  JMSCON          JMS 6000
02206  602156  RETJMP          JMP JMPRET
                    /REWIND ALL SELECTED DRIVES TO REVERSE END ZONE
02207  000000  REPOSI          0
02210  102225          JMS RSFDRV          /RESET POINTERS FOR FIRST DRIVE
02211  203377          LAC MOVBAK          /GET MORE BACKWARDS
02212  243506          XOR UNFUNC          /COMBINE WITH UNIT NUMBER
02213  707545          707545    /CLEAR AND LOAD A
02214  101701          JMS WATINT          /WAIT
02215  500000          500000    /EXPECT END ZONE AND EF
02216  602336          JMP MOVER /MOVE ERROR (INCORRECT STATUS)
02217  750001          CLA!CMA
02220  063467          DAC* POSITN         /INDICATE END ZONE
02221  063445          DAC* DIRECT         /AND BACKWARDS
02222  102244          JMS CHNGDR          /SET UP NEXT DRIVE
02223  602211          JMP REPOSI+2        /REWIND NEXT DRIVE
02224  622207          JMP* REPOSI         /ALL DRIVES IN END ZONE, EXIT
                   /RESET CURRENT DRIVE POINTER TO FIRST DRIVE SELECTED
02225  000000  RSFDRV          0
02226  143436          DZM CDRIVE          /ZERO CURRENT DRIVE
02227  203430          LAC TWOHUN
02230  043443          DAC COMBIT          /SET UP COMBIT
02231  203453          LAC MSBITS
02232  503443          AND COMBIT
02233  750200          SZA!CLA   /IS THIS DRIVE SELECTED
02234  602242          JMP RSFDR1          /YES, SET POINTER
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02235   203443          LAC COMBIT
02236   744020          CLL!RAR   /MOVE DRIVE BIT RIGHT
02237   043443          DAC COMBIT
02240   443436          ISZ CDRIVE          /INCREMENT DRIVE NUMBER
02241   602231          JMP RSFDRV+4
                      /HAVE FOUND FIRST DRIVE SELECTED
02242   102263      RSFDR1      JMS GNPTRS          /GENERATE CONTROL POINTERS
02243   622225          JMP* RSFDRV         /EXIT
                      /SELECT NEXT DRIVE OR RESET TO FIRST AND SKIP
02244   000000      CHNGDR      0
02245   203443          LAC COMBIT          /GET DRIVE BIT
02246   744020          CLL!RAR   /MOVE RIGHT
02247   740400          SNL       /CHECKED ALL DRIVES
02250   602254          JMP .+4   /NO
02251   102225          JMS RSFDRV          /YES RESET TO FIRST
02252   442244          ISZ CHNGDR          /INCREMENT
02253   622244          JMP* CHNGDR         /AND EXIT
02254   043443          DAC COMBIT
02255   443436          ISZ CDRIVE
02256   503453          AND MSBITS
02257   751200          SNA!CLA   /THIS DRIVE SELECTED?
02260   602245          JMP CHNGDR+1        /NO
02261   102263          JMS GNPTRS          /GENERATE DRIVE POINTERS
02262   622244          JMP* CHNGDR         /EXIT
                      /GENERATE LAST RECMRD, DIRECTION AND UNIT NUMBER
                      /POINTERS FOR DECTAPE FUNCTIONS
02263   000000      GNPTRS      0
02264   203436          LAC CDRIVE          /GET DRIVE NUMBER
02265   744020          CLL!RAR
02266   740020          RAR
02267   742020          RTR       /REPOSITION FOR STORAGE
02270   043506          DAC UNFUNC          /IN UNIT FUNCTION REGISTER
02271   203436          LAC CDRIVE
02272   342303          TAD PNTRS
02273   043467          DAC POSITN          /SET UP POSITION
02274   203436          LAC CDRIVE
02275   342314          TAD PNTRS+11
02276   043445          DAC DIRECT          /DIRECTION AND
02277   203436          LAC CDRIVE
02300   342325          TAD PNTRS+22
02301   043451          DAC LSTBLK          /LAST BLOCK BLOCK POINTERS
02302   622263          JMP* GNPTRS
02303   002304      PNTRS .+1
02314                   .LOC      .+10
02314   002315          .+1
02325                   .LOC      .+10
02325   002326          .+1
02336                   .LOC      .+10
                      /MOVE ERROR
02336   102340      MOVER JMS .+2
02337   602211          JMP REPOSI+2
02340   000000          0
02341   102726          JMS ERSTP /STOP TAPE
02342   102734          JMS TYMOVE          /TYPE OUT HEADER
02343   707572          707572    /READ "B"
```

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02344  102670          JMS OPRINT          /TYPE OUT B
02345  203544          LAC (MESS3
02346  102633          JMS MSPRNT          /TYPE "STATUS B"
02347  750004          LAS
02350  751100          SPA!CLA
02351  740040          XX
02352  622340          JMP* MOVER+2
                      /SEARCH ROUTINE - FIND BLOCK INDICATED
                      /BY THE CONTENTS OF "RECORD" IN THE DIRECTION
                      /INDICATED BY "DIRFLG", 0-FWD, -1-BKWD
02353  000000    SEARCH          0
02354  203446          LAC DIRFLG
02355  754200          SZA!CLA!CLL         /FORWARD?
02356  740002          CML         /NO, BACKWARD
02357  203425          LAC THREE /COMPUTE
02360  741400          SZL         /TURN
02361  602364          JMP .+3     /AROUND
02362  740001          CMA         /POINT
02363  343401          TAD ONE     /FOR
02364  343472          TAD RECORD          /DECTAPE
02365  740001          CMA         /SEARCH
02366  343401          TAD ONE     /AND
02367  043500          DAC TAPONT          /STORE
02370  203446          LAC DIRFLG
02371  751200          SNA!CLA     /FWD OR BKWD?
02372  203371          LAC FTYTHO          /BKWD (40,000)
02373  343412          TAD SEAFOR          /SEARCH FORWARD
02374  343506          TAD UNFUNC          /COMBINE IN UNIT NUMBER
02375  707545          707545      /CLEAR AND LOAD "A"
02376  203372          LAC IDCON /BLKFND
02377  040031          DAC CA      /SET UP CA
02400  750001          CLA!CMA
02401  043434          DAC BLKFLG          /SET UP BLKFLG
02402  101701          JMS WATINT
02403  000100          100         /DTF
02404  602503          JMP SREZTS          /ERROR, SEE IF END ZONE
02405  102441          JMS SRCONT
02406  602412          JMP SRTARN          /BLOCK = BLOCK FOUND
02407  602412          JMP SRTARN          /GONE PAST BLOCK
02410  707554          707544+10 /CLEAR AC, XOR A
02411  602402          JMP .-7     /HAVEN'T REACHED BLOCK YET
02412  707552    SRTARN          707552      /READ "A"
02413  740001          CMA
02414  503432          AND TYTHOU          /MOTION BIT
02415  343371          TAD FTYTHO          /40,000
02416  707544          707544      /XOR "A" (TURN AROUND)
02417  203472          LAC RECORD
02420  740001          CMA
02421  343401          TAD ONE
02422  043500          DAC TAPONT          /SET UP TAPONT
02423  750001          CLA!CMA
02424  043434          DAC BLKFLG          /AND BLKFLG
02425  101701          JMS WATINT          /WAIT
02426  000100          100         /DTF
02427  602562          JMP SRHERR          /ERROR
```

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02430  102441          JMS SRCONT          /CHECK RELATION OF BLOCK
02431  622353          JMP* SEARCH         /FOUND BLOCK, EXIT
02432  602562          JMP SRHERR
02433  750001          CLA!CMA
02434  343434          TAD BLKFLG
02435  751200          SNA!CLA   /READ 2 BLOCK NUMBERS
02436  602533          JMP SRCMOD          /YES, CHANGE TO CONTINUOUS MODE
02437  707544          707544    /XOR INTO "A" (CLEAR FLAGS)
02440  602425          JMP .-13
                      /FIND RELATION OF BLOCK FOUND TO BLOCK
                      /SOUGHT AND TEST BLOCK NUMBERS TO BE CONSECUTIVE
02441  000000  SRCONT  0
02442  443434          ISZ BLKFLG          /FIRST BLOCK NUMBER?
02443  741000          SKP       /NOT FIRST
02444  602461          JMP SRFBLK          /FIRST, JUST SAVE IT
02445  707552          707552    /READ "A"
02446  503371          AND FTYTHO          /40,000
02447  750200          SZA!CLA   /BACKWARDS
02450  740001          CMA       /YES, -1
02451  741200          SNA
02452  343401          TAD ONE   /FORWARD, +1
02453  343470          TAD PREBLK          /LAST BLOCK +1 OR -1
02454  740001          CMA
02455  343401          TAD ONE
02456  343435          TAD BLKFND
02457  750200          SZA!CLA   /BLOCKS CONSECUTIVE
02460  602562          JMP SRHERR          /NO, ERROR
02461  203435  SRFBLK  LAC BLKFND
02462  043470          DAC PREBLK
02463  343500          TAD TAPONT
02464  741200          SNA       /FOUND BLOCK?
02465  622441          JMP* SRCONT         /YES
02466  442441          ISZ SRCONT
02467  755100          SPA!CLA!CLL         /BLKFND GREATER
02470  740002          CML       /NO, LESS
02471  707552          707552    /READ A
02472  503371          AND FTYTHO          /40,000
02473  741400          SZL
02474  602500          JMP .+4
02475  750200          SZA!CLA   /IF FORWARD HAVE GONE PAST
02476  442441          ISZ SRCONT          /BACKWARD
02477  622441          JMP* SRCONT
02500  751200          SNA!CLA
02501  442441          ISZ SRCONT
02502  622441          JMP* SRCONT
02503  707572  SREZTS  707572    /READ "B"
02504  742010          RTL       /MOVE EZ BIT INTO 0
02505  754100          SMA!CLA!CLL         /END ZONE INTERRUPT?
02506  602562          JMP SRHERR          /NO, SOME OTHER
02507  203500          LAC TAPONT
02510  740100          SMA       /BLOCK 0 OR 1
02511  602515          JMP .+4
02512  343376          TAD MBLOCK
02513  750100          SMA!CLA   /BLOCK 1077 OR 1100?
02514  602530          JMP .+14  /NO, TURN AROUND
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02515   750004          LAS
02516   742010          RTL
02517   740010          RAL
02520   750100          SMA!CLA   /NEW FORMAT TAPE?
02521   602412          JMP SRTARN          /YES, TURN AROUND
02522   203432          LAC TYTHOU          /20,000
02523   707544          707544    /XOR INTO "A" (GO AGAIN)
02524   101701          JMS WATINT          /WAIT FOR EZ
02525   500000          500000    /ERROR, END ZONE
02526   602562          JMP SRHERR
02527   602412          JMP SRTARN
02530   443434          ISZ BLKFLG          /NOT FIRST INTERRUPT
02531   602562          JMP SRHERR          /EZ IS ERROR
02532   602412          JMP SRTARN          /TURN AROUND
02533   203435  SRCMOD          LAC BLKFND          /FIND DIFFERENCE
02534   740001          CMA       /IN NUMBER
02535   343401          TAD ONE   /OF
02536   343472          TAD RECORD          /BLOCKS
02537   741100          SPA
02540   602543          JMP .+3
02541   740001          CMA       /MAKE NEGATIVE
02542   343401          TAD ONE
02543   040030          DAC WC    /FOR WORD COUNT
02544   203423          LAC TENTHO          /10,000 (CONTINUOUS)
02545   707544          707544    /XOR INTO "A"
02546   101701          JMS WATINT
02547   000100          100       /DTF
02550   602562          JMP SRHERR          /NOT NORMAL INTERRUPT
02551   203435          LAC BLKFND
02552   740001          CMA
02553   343401          TAD ONE
02554   343472          TAD RECORD
02555   750200          SZA!CLA   /CORRECT BLOCK?
02556   602562          JMP SRHERR          /NO, ERROR
02557   203423          LAC TENTHO          /10,000
02560   707544          707544    /XOR INTO "A" (CLEAR CONT)
02561   622353          JMP* SEARCH
                      /SEARCH ERROR TYPEOUT
02562   102726  SRHERR          JMS ERSTP /STOP TAPE
02563   102743          JMS TYSRCH          /TYPE HEADER
02564   203472          LAC RECORD
02565   102670          JMS OPRINT          /TYPE BLOCK NUMBER
02566   203545          LAC (MESS18
02567   102633          JMS MSPRNT          /TYPE "BLOCK WANTED
02570   203446          LAC DIRFLG
02571   751200          SNA!CLA
02572   602575          JMP .+3
02573   103100          JMS TYBKW /TYPE BACKWARDS
02574   741000          SKP
02575   103104          JMS TYFWD /TYPE FORWARD
02576   102714          JMS CRLF
02577   203435          LAC BLKFND
02600   102670          JMS OPRINT          /TYPE BLOCK FOUND
02601   203546          LAC (MESS19
02602   102633          JMS MSPRNT          /TYPE "BLOCK FOUND!
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02603   750001          CLA!CMA
02604   343434          TAD BLKFLG
02605   751100          SPA!CLA
02606   602613          JMP .+5
02607   203470          LAC PREBLK
02610   102670          JMS OPRINT          /TYPE PREVIOUS BLOCK
02611   203547          LAC (MESS20
02612   102633          JMS MSPRNT          /TYPE "LAST BLOCK"
02613   443434          ISZ BLKFLG
02614   740000          NOP
02615   203434          LAC BLKFLG
02616   102670          JMS OPRINT          /TYPE OUT QUANTITY OF BLOCKS
02617   203550          LAC (MESS21
02620   102633          JMS MSPRNT          /TYPE "BLOCKS READ"
02621   707572          707572    /READ "B"
02622   102670          JMS OPRINT          /TYPE OUT B
02623   203551          LAC (MESS3
02624   102633          JMS MSPRNT          /TYPE "STATUS B"
02625   750004          LAS
02626   751100          SPA!CLA   /HALT ON ERROR?
02627   740040          XX        /YES
02630   443457          ISZ PASFLG          /SECOND ERROR?
02631   602361          JMP REWDRV          /YES, REWIND DRIVE
02632   602354          JMP SEARCH+1        /NO, SEARCH AGAIN
                      /TYPE TEXT ROUTINE
02633   000000    MSPRNT          0
02634   503552          AND (7777
02635   043466          DAC PNTR4
02636   750004          LAS
02637   740010          RAL
02640   751100          SPA!CLA
02641   622633          JMP* MSPRNT
02642   223466          LAC* PNTR4
02643   742020          RTR
02644   742020          RTR
02645   742020          RTR
02646   742020          RTR
02647   740020          RAR
02650   102661          JMS TYPE
02651   543411          SAD RUBOUT
02652   622633          JMP* MSPRNT
02653   223466          LAC* PNTR4
02654   102661          JMS TYPE
02655   543411          SAD RUBOUT
02656   622633          JMP* MSPRNT
02657   443466          ISZ PNTR4
02660   602636          JMP MSPRNT+3
02661   000000    TYPE  0
02662   503411          AND RUBOUT
02663   700406          TLS
02664   700401          TSF
02665   602664          JMP .-1
02666   700402          TCF
02667   622661          JMP* TYPE
                      /TYPE OUT CONTENTS OF AC IN OCTAL
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02670   000000      OPRINT          0
02671   043504              DAC TEM4
02672   750004              LAS
02673   740010              RAL
02674   751100              SPA!CLA
02675   622670              JMP* OPRINT
02676   777772              LAW -6
02677   043441              DAC CNTR1
02700   203504              LAC TEM4
02701   744010              RAL!CLL
02702   740010              RAL
02703   742010              RTL
02704   043504              DAC TEM4
02705   503413              AND SEVEN
02706   243363              XOR ASCII
02707   102661              JMS TYPE
02710   203504              LAC TEM4
02711   443441              ISZ CNTR1
02712   602702              JMP .-10
02713   622670              JMP* OPRINT
02714   000000      CRLF    0
02715   750004              LAS
02716   740010              RAL
02717   751100              SPA!CLA
02720   622714              JMP* CRLF
02721   760215              LAW 215
02722   102661              JMS TYPE
02723   760212              LAW 212
02724   102661              JMS TYPE
02725   622714              JMP* CRLF
                        /STOP TAPE ON ERROR, LEAVE FLAGS SET
02726   000000      ERSTP   0
02727   707552              707552      /READ "A"
02730   503432              AND TYTHOU          /STOP
02731   343411              TAD RUBOUT          /DON'T CLEAR DTF AND EF
02732   707544              707544      /XOR INTO "A"
02733   622726              JMP* ERSTP
                        /TYPE "MOVE" AND DIRECTION
02734   000000      TYMOVE          0
02735   103040              JMS TYDRV
02736   203553              LAC (MESS22
02737   102633              JMS MSPRNT
02740   103056              JMS TYDIR
02741   102714              JMS CRLF
02742   622734              JMP* TYMOVE
                        /TYPE SEARCH DIRECTION AND MODE
02743   000000      TYSRCH          0
02744   103040              JMS TYDRV
02745   102714              JMS CRLF
02746   203554              LAC (MESS23
02747   102633              JMS MSPRNT
02750   103056              JMS TYDIR
02751   103070              JMS TYMODE
02752   102714              JMS CRLF
02753   622743              JMP* TYSRCH
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                        /TYPE "READ DATA" DIRECTION AND MODE
02754   000000      TYRDAT          0
02755   103040              JMS TYDRV
02756   102714              JMS CRLF
02757   103020              JMS TYREAD
02760   103030              JMS TYDATA
02761   103056              JMS TYDIR
02762   103070              JMS TYMODE
02763   102714              JMS CRLF
02764   622754              JMP* TYRDAT
                        /TYPE "READ ALL" DIRECTION AND MODE
02765   000000      TYRALL          0
02766   103040              JMS TYDRV
02767   102714              JMS CRLF
02770   103020              JMS TYREAD
02771   103034              JMS TYALL
02772   103056              JMS TYDIR
02773   103070              JMS TYMODE
02774   102714              JMS CRLF
02775   622765              JMP* TYRALL
                        /TYPE "WRITE DATA" DIRECTION AND MODE
02776   000000      TYWDAT          0
02777   103040              JMS TYDRV
03000   102714              JMS CRLF
03001   103024              JMS TYWRIT
03002   103030              JMS TYDATA
03003   103056              JMS TYDIR
03004   103070              JMS TYMODE
03005   102714              JMS CRLF
03006   622776              JMP* TYWDAT
                        /TYPE "WRITE ALL" DIRECTION AND MODE
03007   000000      TYWALL          0
03010   103040              JMS TYDRV
03011   102714              JMS CRLF
03012   103024              JMS TYWRIT
03013   103034              JMS TYALL
03014   103056              JMS TYDIR
03015   103070              JMS TYMODE
03016   102714              JMS CRLF
03017   623007              JMP* TYWALL
                        /TYPE "READ"
03020   000000      TYREAD          0
03021   203555              LAC (MESS24
03022   102633              JMS MSPRNT
03023   623020              JMP* TYREAD
                        /TYPE "WRITE"
03024   000000      TYWRIT          0
03025   203556              LAC (MESS25
03026   102633              JMS MSPRNT
03027   623024              JMP* TYWRIT
                        /TYPE "DATA"
03030   000000      TYDATA          0
03031   203557              LAC (MESS26
03032   102633              JMS MSPRNT
03033   623030              JMP* TYDATA
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                        /TYPE "ALL"
03034   000000  TYALL 0
03035   203560        LAC (MESS27
03036   102633        JMS MSPRNT
03037   623034        JMP* TYALL
                      /TYPE DRIVE AND NUMBER
03040   000000  TYDRV 0
03041   750004        LAS
03042   740010        RAL
03043   751100        SPA!CLA
03044   623040        JMP* TYDRV
03045   203561        LAC (MESS28
03046   102633        JMS MSPRNT
03047   203436        LAC CDRIVE
03050   741200        SNA
03051   343422        TAD TEN
03052   243363        XOR ASCII
03053   102661        JMS TYPE
03054   102714        JMS CRLF
03055   623040        JMP* TYDRV
                      /TYPE "FORWARD" OR "BACKWARD"
03056   000000  TYDIR 0
03057   707552        707552    /READ "A"
03060   503371        AND FTYTHO          /400000
03061   741200        SNA
03062   603065        JMP .+3
03063   203562        LAC (MESS29         /BACKWARD
03064   741000        SKP
03065   203563        LAC (MESS30         /FORWARD
03066   102633        JMS MSPRNT
03067   623056        JMP* TYDIR
                      /TYPE "CONTINUOUS" IF NOT NORMAL MODE
03070   000000  TYMODE          0
03071   707552        707552    /READ "A"
03072   503423        AND TENTHO          /10000
03073   741200        SNA
03074   623070        JMP* TYMODE
03075   203564        LAC (MESS31
03076   102633        JMS MSPRNT          /TYPE "CONTINUOUS"
03077   623070        JMP* TYMODE
                      /TYPE "BACKWARD"
03100   000000  TYBKW 0
03101   203565        LAC (MESS29
03102   102633        JMS MSPRNT
03103   623100        JMP* TYBKW
                      /TYPE "FORWARD"
03104   000000  TYFWD 0
03105   203566        LAC (MESS30
03106   102633        JMS MSPRNT
03107   623104        JMP* TYFWD
03110   215212  MESS1 215212    /CR,LF
03111   316317        316317    /N,O
03112   240324        240324    /SP,T
03113   322301        322301    /R,A
03114   316323        316323    /N,S
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03115  320317          320317   /P,O
03116  322324          322324   /R,T
03117  323240          323240   /S,SP
03120  323305          323305   /S,E
03121  314305          314305   /L,E
03122  303324          303324   /C,T
03123  305304          305304   /E,D
03124  215212          215212   /CR,LF
03125  377000          377000   /R.O.
03126  240302  MESS2    240302   /SP,B
03127  314317          314317   /L,O
03130  303313          303313   /C,K
03131  215212          215212   /CR,LF
03132  377000          377000   /R.O.
03133  240323  MESS3    240323   /SP,S
03134  324301          324301   /T,A
03135  324325          324325   /T,U
03136  323240          323240   /S,SP
03137  302215          302215   /B,CR
03140  212377          212377   /LF,R.O.
03141  240327  MESS4    240327   /SP,W
03142  256303          256303   /,C
03143  256215          256215   /,CR
03144  212377          212377   /LF,RO
03145  304301  MESS5    304301   /D,A
03146  324301          324301   /T,A
03147  240305          240305   /SP,E
03150  322322          322322   /R,R
03151  317322          317322   /O,R
03152  215212          215212   /CR,LF
03153  377000          377000   /RO
03154  240303  MESS6    240303   /SP,C
03155  317322          317322   /O,R
03156  215212          215212   /CR,LF
03157  377000          377000   /RO
03160  240311  MESS7    240311   /SP,1
03161  316303          316303   /N,C
03162  215212          215212   /CR,LF
03163  377000          377000   /RO
03164  240301  MESS8    240301   /SP,A
03165  304304          304304   /D,D
03166  322323          322323   /R,S
03167  240317          240317   /SP,O
03170  306240          306240   /F,SP
03171  311316          311316   /1,N
03172  303215          303215   /C,CR
03173  212377          212377   /LF,RO
03174  303313  MESS9    303313   /C,K
03175  323325          323325   /S,U
03176  315240          315240   /M,SP
03177  305322          305322   /E,R
03200  322317          322317   /R,O
03201  322215          322215   /R,CR
03202  212377          212377   /LF,RO
03203  240322  MESS10           240322   /SP,R
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03204   305326          305326    /E,V
03205   240377          240377    /SP,R0
03206   240314  MESS11          240314    /SP,L
03207   256320          256320    /.,P
03210   256302          256302    /.,B
03211   256215          256215    /.,CR
03212   212377          212377    /LF,R0
03213   240303  MESS12          240303    /SP,C
03214   310305          310305    /H,E
03215   303313          303313    /C,K
03216   240323          240323    /SP,S
03217   325315          325315    /U,M
03220   377000          377000    /R0
03221   240303  MESS13          240303    /SP,C
03222   301314          301314    /A,L
03223   303325          303325    /C,U
03224   314301          314301    /L,A
03225   324305          324305    /T,E
03226   304377          304377    /D,R0
03227   215212  MESS14          215212    /CR,LF
03230   320256          320256    /P,.
03231   311256          311256    /I,.
03232   240377          240377    /SP,R0
03233   215212  MESS15          215212    /CR,LF
03234   316317          316317    /N,O
03235   240320          240320    /SP,P
03236   256311          256311    /.,I
03237   256377          256377    /.,R0
03240   240316  MESS16          240316    /SP,N
03241   317377          317377    /O,R0
03242   240304  MESS17          240304    /SP,D
03243   305303          305303    /E,C
03244   324301          324301    /T,A
03245   320305          320305    /P,E
03246   240323          240323    /SP,S
03247   313311          313311    /K,I
03250   320215          320215    /P,CR
03251   212377          212377    /LF,R0
03252   240302  MESS18          240302    /SP,B
03253   314317          314317    /L,O
03254   303313          303313    /C,K
03255   240327          240327    /SP,W
03256   301316          301316    /A,N
03257   324305          324305    /T,E
03260   304377          304377    /D,R0
03261   240302  MESS19          240302    /SP,B
03262   314317          314317    /L,O
03263   303313          303313    /C,K
03264   240306          240306    /SP,F
03265   317325          317325    /O,U
03266   316304          316304    /N,D
03267   215212          215212    /CR,LF
03270   377000          377000    /R0
03271   240314  MESS20          240314    /SP,L
03272   301323          301323    /A,S
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03273  324240            324240    /T,SP
03274  302314            302314    /B,C
03275  317303            317303    /O,C
03276  313215            313215    /K,CR
03277  212377            212377    /LF,CR
03300  240302  MESS21              240302    /SP,B
03301  314317            314317    /L,O
03302  303313            303313    /C,K
03303  323240            323240    /S,SP
03304  322305            322305    /R,E
03305  301304            301304    /A,D
03306  215212            215212    /CR,LF
03307  377000            377000    /RO
03310  215212  MESS22              215212    /CR,LF
03311  315317            315317    /M,O
03312  326305            326305    /V,E
03313  240377            240377    /SP,RO
03314  323305  MESS23              323305    /S,E
03315  301322            301322    /A,R
03316  303310            303310    /C,H
03317  240377            240377    /SP,RO
03320  322305  MESS24              322305    /R,E
03321  301304            301304    /A,D
03322  240377            240377    /SP,RO
03323  327322  MESS25              327322    /W,R
03324  311324            311324    /I,T
03325  305240            305240    /E,SP
03326  377000            377000    /RO
03327  304301  MESS26              304301    /D,A
03330  324301            324301    /T,A
03331  240377            240377    /SP,RO
03332  301314  MESS27              301314    /A,L
03333  314240            314240    /L,SP
03334  377000            377000    /RO
03335  215212  MESS28              215212    /CR,LF
03336  215212            215212    /CR,LF
03337  304322            304322    /D,R
03340  311326            311326    /I,V
03341  305240            305240    /E,SP
03342  240377            240377    /SP,RO
03343  302301  MESS29              302301    /B,A
03344  303313            303313    /CK
03345  327301            327301    /W,A
03346  322304            322304    /R,D
03347  240377            240377    /SP,RO
03350  306317  MESS30              306317    /F,O
03351  322327            322327    /R,W
03352  301322            301322    /A,R
03353  304240            304240    /D,SP
03354  377000            377000    /RO
03355  303317  MESS31              303317    /C,O
03356  316324            316324    /N,T
03357  311316            311316    /I,N
03360  325317            325317    /U,O
03361  325323            325323    /U,S
```

```
03362  240377          240377    /SP,R0
                     /CONSTANTS
03363  000260     ASCII 260
03364  004377     BF1LOC          BUFFRS-1  /CONSTANT FOR DATA STORE
03365  005000     BF2LOC          BUFFRS+400          /ADDRESS OF SECOND BUFFER
03366  002315     DIRTBL          PNTRS+12  /DIRECTION TABLE
03367  015000     FIFTHO          15000     /SEARCH TO WRITE CONT
03370  005000     FIVTHO          5000
03371  040000     FTYTHO          40000     /BACKWARD
03372  003435     IDCON BLKFND
03373  001777     INDEP 1777      /MASK FOR BLOCK NUMBER
03374  002326     LSTTBL          PNTRS+23  /LAST BLOCK WRITTEN TABLE
03375  017777     MASK  17777
03376  776700     MBLOCK          -1-1100+1 /-NUMBER OF BLOCKS
03377  060400     MOVBAK          060400    /MOVE BACKWARDS
03400  400000     MUCH0 400000
03401  000001     ONE   1
03402  001000     ONETHO          1000
03403  002304     POSTBL          PNTRS+1   /DRIVE POSITION TABLE
03404  004402     RADLOC          BUFFRS+2  /LOCATION -1 OF FIRST DATA WORD (READ ALL)
03405  003777     RBFLOC          RANBFR-1
03406  004377     RBUFND          RANBFR+377
03407  004000     RBUFST          RANBFR
03410  060400     REWIND          060400
03411  000377     RUBOUT          377       /MASK FOR 10-17
03412  021400     SEAFOR          021400
03413  000007     SEVEN 7
03414  000070           70
03415  000700           700
03416  007000           7000
03417  070000           70000
03420  700000           700000
03421  000077     SEVSEV          77        /MASK
03422  000010     TEN   10
03423  010000     TENTHO          10000     /CONTINUOUS
03424  000037     TERSEV          37        /MASK
03425  000003     THREE 3
03426  003000     TRETHO          3000      /SEARCH TO READ
03427  013000     TRTETH          13000     /SEARCH TO READ CONTINUOUS
03430  000200     TWOHUN          200
03431  012000     TWVTHO          12000     /SEARCH TO READ ALL CONTINUOUS
03432  020000     TYTHOU          20000     /GO, STOP
                     /VARIABLES
03433  000000     ACCUM 0         /AC AT P.I
03434  000000     BLKFLG          0
03435  000000     BLKFND          0         /NUMBER OF BLOCK FOUND
03436  000000     CDRIVE          0         /CURRENT DRIVE NUMBER
03437  000000     CKSUMR          0         /CALCULATED CHECKSUM
03440  000000     CNTR  0         /EXTRANEOUS COUNTER
03441  000000     CNTR1 0         /COUNTER FOR OPRINT
03442  000000     COCNTR          0         /COMPARE ERROR FLAG
03443  000000     COMBIT          0         /BIT POSITION FOR TEST AGAINST S.R.
03444  000000     DATASM          0         /SAVED DATA SUM
03445  000000     DIRECT          0         /CONTAINS DIRECTION READ
03446  000000     DIRFLG          0         /INDICATES DIRECTION TO GO
```

```
03447  000000  FRSWAT          0
03450  000000  FWDCHK          0          /FORWARD CHECKSUM
03451  000000  LSTBLK          0          /LAST BLOCK WRITTEN POINTER
03452  000000  LSTDRV          0          /NEGATIVE OF LAST DRIVE SELECTED
03453  000000  MSBITS          0          /HOLD UNIT BITS
03454  000000  NUMBER          0          /STORE FOR MCOMOB
03455  000000  NUMBLK          0          /NUMBER OF BLOCKS WITH WHICH TO OPERATE
03456  000000  OBVERS          0          /OBVERSE NUMBER
03457  000000  PASFLG          0
03460  000000  PICNTR          0          /PI COUNTER
03461  000000  PIDEX1          0          /PI POINTER
03462  000000  PIDEX2          0          /PI POINTER
03463  000000  PNTR1 0        /EXTRANEOUS POINTER
03464  000000  PNTR2 0        /EXTRANEOUS POINTER
03465  000000  PNTR3 0        /POINTER FOR MCOMOB
03466  000000  PNTR4 0        /POINTER FOR MSPRNT
03467  000000  POSITN          0
03470  000000  PREBLK          0
03471  000000  RAEFLG          0          /READ ALL ERROR FLAG
03472  000000  RECORD          0
03473  000000  REVCHK          0          /REVERSE CHECK FROM TAPE
03474  000000  RSQFLG          0
03475  000000  SAVNUM          0          /STORE NUMBER OF BLOCKS
03476  000000  SBRECD          0          /STATUS OF B
03477  000000  TALLY 0        /TALLY FOR MCOMOB
03500  000000  TAPONT          0          /TURN AROUND POINT FOR SEARCH
03501  000000  TEM1  0        /TEMP STORAGE
03502  000000  TEM2  0        /FOR PATGEN
03503  000000  TEM3  0        /SUBROUTINE
03504  000000  TEM4  0        /STORAGE FOR OPRINT
03505  000000  TRECTR          0          /COUNTER FOR WRITE DATA CONTINUOUS
03506  000000  UNFUNC          0          /UNIT NUMBER
03507  000000  WTCNTR          0          /WAIT COUNTER
       000000          .END
         03510  003110   *L
         03511  003126   *L
         03512  003133   *L
         03513  003141   *L
         03514  003413   *L
         03515  003145   *L
         03516  003126   *L
         03517  003154   *L
         03520  003160   *L
         03521  003164   *L
         03522  003126   *L
         03523  003133   *L
         03524  003141   *L
         03525  003126   *L
         03526  003174   *L
         03527  003203   *L
         03530  003206   *L
         03531  003213   *L
         03532  003221   *L
         03533  003126   *L
         03534  003133   *L
```

```
03535   003141   *L
03536   601735   *L
03537   003227   *L
03540   003233   *L
03541   003240   *L
03542   003242   *L
03543   006000   *L
03544   003133   *L
03545   003252   *L
03546   003261   *L
03547   003271   *L
03550   003300   *L
03551   003133   *L
03552   007777   *L
03553   003310   *L
03554   003314   *L
03555   003320   *L
03556   003323   *L
03557   003327   *L
03560   003332   *L
03561   003335   *L
03562   003343   *L
03563   003350   *L
03564   003355   *L
03565   003343   *L
03566   003350   *L
      SIZE=03567     NO ERROR LINES
```

```
ACCUM    03433
ASCII    03363
BF1LOC   03364
BF2LOC   03365
BLKFLG   03434
BLKFND   03435
BUFFRS   004400
CA       000031
CALCTY   01653
CDRIVE   03436
CHNGDR   02244
CKSTYP   01647
CKSUMR   03437
CLOF     700004
CLON     700044
CLSF     700001
CNTR     03440
CNTR1    03441
COCNTR   03442
CODATA   00626
COERRO   00653
COERR1   00673
COLOOP   00640
COMBIT   03443
CORT1R   00763
CRLF     02714
DATASM   03444
DIRECT   03445
DIRFLG   03446
DIRTBL   03366
EEM      707702
ERRCKS   01602
ERRRAR   01657
ERSTP    02726
EXIST    00572
FIFTHO   03367
FIVTHO   03370
FRSWAT   03447
FTYTHO   03371
FWDCHK   03450
GNPATR   00444
GNPTRS   02263
IDCON    03372
INDEP    03373
IRECD    01735
ISZTST   02046
JMPRET   02156
JMSCON   02205
JMSTST   02134
KRB      700312
KSF      700301
LEM      707704
LOOP     00501
LSTBLK   03451
LSTDRV   03452
```

```
LSTTBL   03374
MASK     03375
MBLOCK   03376
MCOMOR   00467
MESS1    03110
MESS10   03203
MESS11   03206
MESS12   03213
MESS13   03221
MESS14   03227
MESS15   03233
MESS16   03240
MESS17   03242
MESS18   03252
MESS19   03261
MESS2    03126
MESS20   03271
MESS21   03300
MESS22   03310
MESS23   03314
MESS24   03320
MESS25   03323
MESS26   03327
MESS27   03332
MESS28   03335
MESS29   03343
MESS3    03133
MESS30   03350
MESS31   03355
MESS4    03141
MESS5    03145
MESS6    03154
MESS7    03160
MESS8    03164
MESS9    03174
MOFPRO   00130
MOFPR1   00145
MOVBAK   03377
MOVER    02336
MSBITS   03453
MSPRNT   02633
MUCH0    03400
MVDATA   00607
NDOFRD   01214
NDTSKP   01762
NUMBER   03454
NUMBLK   03455
OBVERS   03456
ONE      03401
ONETHO   03402
OPRINT   02670
PASFLG   03457
PATGEN   00417
PCF      700202
PICNTR   03460
```

```
PIDEX1   03461
PIDEX2   03462
PIRTBL   02045
PITBL    02025
PNTRS    02303
PNTR1    03463
PNTR2    03464
PNTR3    03465
PNTR4    03466
POSITN   03467
POSTBL   03403
PREBLK   03470
PREGEN   00400
PSA     700204
PSB     700244
PSF     700201
PTSTND   01766
PTSTNS   02005
RADCHK   01540
RADLOC   03404
RAEFLG   03471
RALLTS   01431
RANBFR  004000
RANDEX   00100
RAND1    00516
RAND2    00527
RAND3    00540
RANSEL   00551
RASERR   01556
RBFLOC   03405
RBUFND   03406
RBUFST   03407
RCF     700102
RDBUF1   01117
RDCERR   01314
RDCMOD   01221
RDDATA   00253
RDSEQ    01070
RDSWCH   00123
RDTAB    00211
RECORD   03472
REPOSI   02207
REREAD   00272
REREDA   00325
RESETD   01721
RETJMP   02206
REVCHK   03473
REWCK    01034
REWDRV   00361
REWIND   03410
ROT1TS   02070
ROT2TS   02106
RRB     700112
RSA     700104
RSB     700144
```

```
RSF      700101
RSFDRV    02225
RSFDR1    02242
RSQFLG    03474
RUBOUT    03411
R1        00525
R2        00536
R3        00547
SADTST    02124
SAMDRV    00231
SAVNUM    03475
SBRECD    03476
SEAFOR    03412
SEARCH    02353
SETIDX    02015
SEVEN     03413
SEVSEV    03421
SRCMOD    02533
SRCONT    02441
SREZTS    02503
SRFBLK    02461
SRHERR    02562
SRTARN    02412
SWCMDL    01354
SWCMOD    01343
TALLY     03477
TAPONT    03500
TCF      700402
TEM1      03501
TEM2      03502
TEM3      03503
TEM4      03504
TEN       03422
TENTHO    03423
TERSEV    03424
TEST1     02200
TEST2     02201
TEST3     02202
TEST4     02203
TEST5     02204
THREE     03425
TLS      700406
TRECTR    03505
TRETHO    03426
TRTETH    03427
TSF      700401
TWOHUN    03430
TWVTHO    03431
TYALL     03034
TYBKW     03100
TYDATA    03030
TYDIR     03056
TYDRV     03040
TYFWD     03104
TYMODE    03070
```

```
TYMOVE   02734
TYPE     02661
TYRALL   02765
TYRDAT   02754
TYREAD   03020
TYSRCH   02743
TYTHOU   03432
TYWALL   03007
TYWDAT   02776
TYWRIT   03024
UNFUNC   03506
WATINT   01701
WC      000030
WDCERR   01405
WDCMOD   01332
WDINC    01022
WRITE1   00721
WRT1A    00775
WSTERR   01042
WTCNTR   03507
XORSUM   01560
.EOT     00000
```

```
.EOT      00000
WC        000030
CA        000031
RANDEX    00100
RDSWCH    00123
MOFPR0    00130
MOFPR1    00145
RDTAB     00211
SAMDRV    00231
RDDATA    00253
REREAD    00272
REREDA    00325
REWDRV    00361
PREGEN    00400
PATGEN    00417
GNPATR    00444
MCOMOB    00467
LOOP      00501
RAND1     00516
R1        00525
RAND2     00527
R2        00536
RAND3     00540
R3        00547
RANSEL    00551
EXIST     00572
MVDATA    00607
CODATA    00626
COLOOP    00640
COERR0    00653
COERR1    00673
WRITE1    00721
CORT1R    00763
WRT1A     00775
WDINC     01022
REWCK     01034
WSTERR    01042
RDSEQ     01070
RDBUF1    01117
NDOFRD    01214
RDCMOD    01221
RDCERR    01314
WDCMOD    01332
SWCMOD    01343
SWCMDL    01354
WDCERR    01405
RALLTS    01431
RADCHK    01540
RASERR    01556
XORSUM    01560
ERRCKS    01602
CKSTYP    01647
CALCTY    01653
ERRRAR    01657
WATINT    01701
```

```
RESETD   01721
IRECD    01735
NDTSKP   01762
PTSTND   01766
PTSTNS   02005
SETIDX   02015
PITBL    02025
PIRTBL   02045
ISZTST   02046
ROT1TS   02070
ROT2TS   02106
SADTST   02124
JMSTST   02134
JMPRET   02156
TEST1    02200
TEST2    02201
TEST3    02202
TEST4    02203
TEST5    02204
JMSCON   02205
RETJMP   02206
REPOSI   02207
RSFDRV   02225
RSFDR1   02242
CHNGDR   02244
GNPTRS   02263
PNTRS    02303
MOVER    02336
SEARCH   02353
SRTARN   02412
SRCONT   02441
SRFBLK   02461
SREZTS   02503
SRCMOD   02533
SRHERR   02562
MSPRNT   02633
TYPE     02661
OPRINT   02670
CRLF     02714
ERSTP    02726
TYMOVE   02734
TYSRCH   02743
TYRDAT   02754
TYRALL   02765
TYWDAT   02776
TYWALL   03007
TYREAD   03020
TYWRIT   03024
TYDATA   03030
TYALL    03034
TYDRV    03040
TYDIR    03056
TYMODE   03070
TYBKW    03100
TYFWD    03104
```

MESS1	03110
MESS2	03126
MESS3	03133
MESS4	03141
MESS5	03145
MESS6	03154
MESS7	03160
MESS8	03164
MESS9	03174
MESS10	03203
MESS11	03206
MESS12	03213
MESS13	03221
MESS14	03227
MESS15	03233
MESS16	03240
MESS17	03242
MESS18	03252
MESS19	03261
MESS20	03271
MESS21	03300
MESS22	03310
MESS23	03314
MESS24	03320
MESS25	03323
MESS26	03327
MESS27	03332
MESS28	03335
MESS29	03343
MESS30	03350
MESS31	03355
ASCII	03363
BF1LOC	03364
BF2LOC	03365
DIRTBL	03366
FIFTHO	03367
FIVTHO	03370
FTYTHO	03371
IOCON	03372
INDEP	03373
LSTTBL	03374
MASK	03375
MBLOCK	03376
MOVBAK	03377
MUCH0	03400
ONE	03401
ONETHO	03402
POSTBL	03403
RADLOC	03404
RBFLOC	03405
RBUFND	03406
RBUFST	03407
REWIND	03410
RUBOUT	03411
SEAFOR	03412

SEVEN 03413
SEVSEV 03421
TEN 03422
TENTHO 03423
TERSEV 03424
THREE 03425
TRETHO 03426
TRTETH 03427
TWOHUN 03430
TWVTHO 03431
TYTHOU 03432
ACCUM 03433
BLKFLG 03434
BLKFND 03435
CDRIVE 03436
CKSUMR 03437
CNTR 03440
CNTR1 03441
COCNTR 03442
COMBIT 03443
DATASM 03444
DIRECT 03445
DIRFLG 03446
FRSWAT 03447
FWDCHK 03450
LSTBLK 03451
LSTDRV 03452
MSBITS 03453
NUMBER 03454
NUMBLK 03455
OBVERS 03456
PASFLG 03457
PICNTR 03460
PIDEX1 03461
PIDEX2 03462
PNTR1 03463
PNTR2 03464
PNTR3 03465
PNTR4 03466
POSITN 03467
PREBLK 03470
RAEFLG 03471
RECORD 03472
REVCHK 03473
RSQFLG 03474
SAVNUM 03475
SBRECD 03476
TALLY 03477
TAPONT 03500
TEM1 03501
TEM2 03502
TEM3 03503
TEM4 03504
TRECTR 03505
UNFUNC 03506

```
WTCNTR   03507
RANBFR  004000
BUFFRS  004400
CLSF    700001
CLOF    700004
CLON    700044
RSF     700101
RCF     700102
RSA     700104
RRB     700112
RSB     700144
PSF     700201
PCF     700202
PSA     700204
PSB     700244
KSF     700301
KRB     700312
TSF     700401
TCF     700402
TLS     700406
EEM     707702
LEM     707704
```

MAINDEC EVALUATION REQUEST

After sufficient familiarization with the operation and documentation of this MAINDEC, please indicate your assessment of the following areas and return this form to Digital Equipment Corporation.

IDENTIFICATION: MAINDEC NO._____ Program Title_____

USAGE: Used by: Field Service ☐ Production ☐ Other_____ ☐

Frequency of Usage: Daily ☐ Weekly ☐ Monthly ☐

SUGGESTIONS FOR IMPROVEMENT

1. Are the program loading and operating instructions: clear? ☐, incomplete? ☐, difficult to follow? ☐

2. Do the error reports and program documentation provide sufficient diagnostic information. in all cases? ☐, in most cases? ☐, in very few cases? ☐. Suggestions for improvement:

_____

_____

_____

3. Is the program effective in isolating malfunctions: in all cases? ☐, in most cases? ☐, in very few cases? ☐. Would additional Scope loops or Switch Register control be helpful?_____ Suggestions for improvement:

_____

_____

_____

4. Does the program ever fail to detect malfunctions exposed by other software?_____ Were Margins used?_____ Please describe malfunction in detail:

_____

_____

_____

5. Does the program ever report non-existant malfunctions?_____ Please indicate erroneous report and any pertinent operating conditions:

_____

6. Does this MAINDEC ever expose malfunctions in the Central Processor or other peripheral units not detected by the appropriate MAINDEC?_____ Please describe malfunction and MAINDEC(S) used:

_____

7. Does the document provide a general understanding of the functional programming requirements of the system? Good ☐, Fair ☐, None ☐. Would a general description of programming requirements increase the effectiveness of this MAINDEC?_____

Remarks:

_____

_____

_____

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