

IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHTMD-A-D
PRODUCT NAME: TM8-E DATA RELIABILITY 9 TRACK
DATE CREATED: DECEMBER 4, 1972
MAINTAINER: DIAGNOSTIC GROUP
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TMREL9

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NOTE

THERE ARE SIX DIAGNOSTIC PROGRAMS ASSOCIATED WITH THE TM8-E DECMAGTAPE CONTROL AND ITS TRANSPORT SYSTEM, ALTHOUGH PHYSICALLY SEPARATE, THESE PROGRAMS MUST BE TREATED AS A LARGE INTEGRATED TEST, AND TO ENSURE PROPER SYSTEM OPERATION, THESE TESTS MUST BE EXECUTED IN THE ORDER DELINEATED BELOW:

IF A GIVEN TEST SHOULD FAIL AND IT APPEARS THAT A FIX HAS BEEN FOUND, ALL PROGRAMS MUST ONCE AGAIN BE RUN, ONLY WHEN ALL TESTS HAVE RUN WITHOUT ANY UNACCEPTABLE ERRORS CAN THE TM8-E SYSTEM BE CONSIDERED UP.

TM8-E DIAGNOSTIC PROGRAMS' ORDER OF EXECUTION

1. TM8-E CONTROL TEST PART 1 (MAINDEC-08-DHTMA)
2. TM8-E CONTROL TEST PART 2 (MAINDEC-08-DHTMB)
3. TM8-E DRIVE FUNCTION TIMER (MAINDEC-08-DHTMC)
4. TM8-E DATA RELIABILITY 9 TRACK (MAINDEC-08-DHTMD)
5. TM8-E DATA RELIABILITY 7 TRACK (MAINDEC-08-DHTME)
6. TM8-E RANDOM EXERCISER (MAINDEC-08-DHTMF)

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WARNING: ANY PROGRAM INTERRUPT THAT OCCURS FROM A DEVICE OTHER THAN
THE TMB-E IS A FATAL ERROR AND WILL RESULT IN A PROGRAM HALT.

1. ABSTRACT

THE TMB-E DATA RELIABILITY TEST (9 TRACK) IS PRIMARILY DESIGNED FOR THE COLLECTION OF STATISTICAL INFORMATION PERTAINING TO THE DATA RELIABILITY OF THE 9 TRACK TAPE DRIVES ASSOCIATED WITH THE TMB-E DECMAGTAPE CONTROL. THE PROGRAM IS ALSO DESIGNED TO BE USEABLE AS AN AID IN THE CHECKOUT AND MAINTENANCE OF THE TMB-E AND ASSOCIATED 9 TRACK DRIVES.

THIS PROGRAM MAY ALSO BE USED AS AN EXTENDED DATA RELIABILITY ACCEPTANCE TEST FOR 9 TRACK DRIVES.

ALL TAPE OPERATIONS ARE DONE IN 9 TRACK COMPATIBLE MODE.
CORE DUMP MODE IS NOT UTILIZED.

2. REQUIREMENTS

2.1 HARDWARE

PDP-8/E, 8/M, 8/F
TELETYPE OR COMPATIBLE DEVICE (TTY)
TMB-E DECMAGTAPE CONTROL
TU10 MASTER/SLAVE TRANSPORT SYSTEM WITH FROM ONE TO EIGHT
9 TRACK DRIVES.

2.2 MEMORY

THIS PROGRAM REQUIRES 4K OF MEMORY AND MAY RESIDE IN ANY MEMORY FIELD.

2.3 PRELIMINARY PROGRAMS

ALL PROCESSOR/MEMORY DIAGNOSTICS
TMB-E CONTROL TEST PART 1
TMB-E CONTROL TEST PART 2
TMB-E DRIVE FUNCTION TIMER

3. PROGRAM LOADING PROCEDURE

LOAD THE PROGRAM INTO ANY DESIRED MEMORY FIELD USING THE STANDARD BINARY LOADER TECHNIQUE.

4. PROGRAM STARTING PROCEDURE

- A. LOAD ADDRESS 0200.
- B. LOAD THE EXTENDED ADDRESS WITH THE PROGRAM FIELD.
- C. CLEAR ALL SWITCHES.
- E. THE PROGRAM WILL PRINT ITS TITLE AND MAINDEC NUMBER, THEN ASK FOR DRIVE SELECTION, PRIOR TO MAKING DRIVE SELECTION GO TO THE STANDARD TEST PROCEDURE IN PARAGRAPH 5.

NOTE: THE PROGRAM MAY BE RESTARTED AT ANY TIME AT ADDRESS 0201. IN THIS CASE THE PROGRAM ASKS IMMEDIATELY FOR DRIVE SELECTION.

5. STANDARD TEST PROCEDURE

USE OF THE STANDARD TEST PROCEDURE RESULTS IN EACH SELECTED TEST SEQUENCE RUNNING FROM BOT TO EOT. NO REPORTS WILL OCCUR WHEN NON-FATAL ERRORS ARE DETECTED. HOWEVER, THESE ERRORS WILL BE ACCUMULATED AND REPORTED AT THE END OF EACH PASS OF TAPE. ANY VARIATIONS FROM THIS SCHEME ARE CONTROLLED THROUGH THE SWITCH REGISTER OPTIONS AS LISTED IN PARAGRAPH 6. ERROR REPORT DESCRIPTIONS AND RELATED INFORMATION ARE GIVEN IN PARAGRAPH 7.

5.1 DRIVE SELECTION

ACCOMPLISH THE FOLLOWING STEPS TO SETUP AND SELECT THOSE 9 TRACK DRIVES TO BE TESTED.

- A. PLACE A SPARE REEL OF INDUSTRY COMPATIBLE MAGNETIC TAPE WITH THE FILE PROTECT RING IN PLACE (WRITE ENABLED) ON EACH DRIVE TO BE TESTED.
- B. LOAD THE TAPE, POSITION TO BOT AND SWITCH THE DRIVE ON LINE.
- C. START THE PROGRAM AS DESCRIBED IN PARAGRAPH 4.
- D. THE PROGRAM WILL EVENTUALLY PRINT "SELECT DRIVES".
- E. TYPE THE DRIVE NUMBERS OF THOSE 9 TRACK DRIVES TO BE TESTED. TYPING THE SAME DRIVE NUMBER TWICE WILL DELETE THAT DRIVE FROM THE SELECTION.

F. WHEN ALL DRIVE NUMBERS HAVE BEEN TYPED IN, TYPE CARRIAGE RETURN.

5.2 TEST SELECTION

ACCOMPLISH THE FOLLOWING STEPS TO SELECT THE DESIRED TEST SEQUENCES,

- A. AFTER DRIVE SELECTION IS COMPLETE, THE PROGRAM WILL PRINT "TST PAT PAR DEN RLS WMO RMO"
- B. RESPOND BY TYPING THE DESIRED CODE FOR EACH OF THE PARAMETERS USING THE TABLE BELOW AND REFERENCING THE INDICATED PARAGRAPH,

PARAMETER	DEFINITION	REFERENCE PARA.
TST	TEST SEQUENCE	5.2.1
PAT	DATA PATTERN	5.2.2
PAR	PARITY	5.2.3
DEN	DENSITY	5.2.4
RLS	RECORD LENGTH	5.2.5
WMO	WRITE STOP MODE	5.2.6
RMO	READ STOP MODE	5.2.7

- C. AFTER ALL PARAMETERS FOR A SPECIFIED TEST SEQUENCE HAVE BEEN ENTERED, TYPE A SPACE, IF THE SELECTION IS VALID, THE PROGRAM WILL PRINT "O.K."
- D. REPEAT STEPS B AND C FOR ALL DESIRED TEST SEQUENCES.
- E. WHEN ALL DESIRED TEST SEQUENCES HAVE BEEN SPECIFIED AND "O.K." HAS BEEN PRINTED BY THE PROGRAM FOR EACH SET OF TEST SEQUENCE PARAMETERS, TYPE CARRIAGE RETURN.
- F. THE PROGRAM WILL NOW START EXECUTING THE SELECTED TEST SEQUENCES ON THE DRIVES UNDER TEST.
- G. AS EACH TEST SEQUENCE IS COMPLETED ON EACH DRIVE, THE ACCUMULATED ERRORS DETECTED WILL BE REPORTED, REFERENCE PARAGRAPH 7 FOR DETAILS.

5.2,1 TEST SEQUENCE SELECTION TABLE (TST)

THE FIRST SELECTION MADE IS "TST", TYPE IN THE NUMBER OF THE TEST DESIRED.

TEST NUMBER DESCRIPTION

- 0 WRITE TO EOT ON ONE DRIVE, TYPE ACCUMULATED WRITE ERRORS, CHANGE DRIVES.
- 1 WRITE ONE RECORD LENGTH SEQUENCE OR 256 RECORDS, CHANGE DRIVES, AS EACH DRIVE REACHES EOT TYPE ACCUMULATED WRITE ERRORS.
- 2 WRITE ONE RECORD, CHANGE DRIVES, AS EACH DRIVE REACHES EOT TYPE ACCUMULATED WRITE ERRORS.
- 3 WRITE TO EOT, TYPE ACCUMULATED WRITE ERRORS, REWIND, CHANGE DRIVES, READ TO EOT, TYPE ACCUMULATED READ ERRORS, CHANGE DRIVES.
- 4 WRITE ONE RECORD LENGTH SEQUENCE, BACKSPACE, READ, CHANGE DRIVES AS EACH DRIVE REACHES EOT TYPE ACCUMULATED WRITE AND READ ERROR INFORMATION.
- 5 WRITE ONE RECORD, BACKSPACE, READ, CHANGE DRIVES, AS EACH DRIVE REACHES EOT TYPE OUT ACCUMULATED ERROR INFORMATION.
- 6 WRITE ONE RECORD LENGTH SEQUENCE OR 256 RECORDS, CHANGE DRIVES, BACKSPACE, CHANGE DRIVES, READ, CHANGE DRIVES, AS EACH DRIVE REACHES EOT TYPE ACCUMULATED ERROR INFORMATION.
- 7 WRITE ONE RECORD, CHANGE DRIVES, BACKSPACE, CHANGE DRIVES, READ, CHANGE DRIVES, AS EACH DRIVE REACHES EOT TYPE ACCUMULATED ERROR INFORMATION.
- 8 TEST 8 RUNS DIFFERENTLY DEPENDING ON THE WMO AND RMO SELECTION, IF BOTH ARE SELECTED 0 (NONSTOP), EACH WRITE AND READ PASS WILL BE MADE TO THE END OF A RECORD LENGTH SEQUENCE BEFORE CHANGING DRIVES, IF EITHER SELECTION IS START/STOP (1) OR RANDOM (2) THAT PASS WILL BE MADE WITH DRIVE CHANGE BETWEEN EACH RECORD, (I.E., WMO=0 AND RMO=1, THE WRITE PASS IS MADE NONSTOP ON EACH DRIVE TO END OF RLS, THE READ PASS IS MADE START STOP WITH A DRIVE CHANGE BETWEEN EACH RECORD).

361 000 } Good test to check heads

TEST 9 IS A READ ONLY TEST THAT MAY BE USED TO TEST DRIVE COMPATIBILITY OR MULTIPLE READ PASSES OVER DATA PREVIOUSLY WRITTEN. EITHER PATTERN 7 (RANDOM DATA) IS NOT A VALID SELECTION FOR TEST 9 EXCEPT WITH CERTAIN RESTRICTIONS.

- A. TEST 9 SELECTION FOLLOWS TEST 3,
- B. TEST 9 SELECTION FOLLOWS TEST 6 WITH SR0=1
- C. TEST 9 SELECTION FOLLOWS TEST 8 WITH SR0=1
- D. TEST 9 SELECTION FOLLOWS TEST 5 WITH SR0=1 AND ONLY A SINGLE DRIVE WAS SELECTED.

5.2.2 DATA PATTERN SELECTION TABLE (PAT)

THE SECOND SELECTION IS "PAT".
 TYPE IN THE NUMBER OF THE DATA PATTERN DESIRED; USE TABLE "A" IF PARITY SELECTION WILL BE EVEN, TABLE "B" IF PARITY WILL BE ODD.

A. EVEN PARITY DATA PATTERNS

PAT	DATA	DESCRIPTION
0	0014	HIGH FREQUENCY OUTSIDE SKEW
1	0377	SLIDING NO BIT (0)
	0177	CHARACTER PATTERN
	0277	
	0337	
	0357	
	0367	
	0373	
	0375	
	0376	
2	0103	HIGH FREQUENCY EVERY OTHER TRACK
3	0273	HALF FREQUENCY OUTSIDE TRACKS HIGH FREQUENCY ALL INSIDE TRACKS
4	0001	INCREMENTING CHARACTER PATTERN
	0002	NO 00 CODES
	0003	
	0004	

THREE 0 BITS EACH TRACK
EVERY 7TH WORD

0377
0177
0277
0337
0397
0567
0373
0375
0376

ALL 1'S ALL TRACKS

0377

RANDOM DATA PATTERN WITH NO 00
CODES

RANDOM

8. 000 PARITY DATA PATTERNS

DESCRIPTION

HALF FREQUENCY OUTSIDE
SKEW

SLIDING 1 BIT CHAR=
ACTER PATTERN (ISO=
LATED BIT)

HIGH FREQUENCY EVERY OTHER TRACK

THREE 0'S, THREE 1'S, THREE 0'S,
THREE 2'S, SIX 0'S EVERY TRACK

DATA

0004

0000
0200
0100
0040
0020
0010
0004
0002
0001

0274

0037
0076
0201
0174
0003
0370
0007
0360

5

6

7

8

PAT

0

1

2

3

INCREMENTING CHARACTER PATTERN
00 CODES INCLUDED

0001
0002
0003
0004

EACH TRACK 3 BITS EVERY
SEVENTH WORD

0000
0200
0100
0040
0020
0010
0004
0002
0001

ALL ONES HIGH FREQUENCY ALL TRACKS

0377

RANDOM DATA WORD PATTERN 03 CODES
INCLUDED

RANDOM

5.2.3 PARITY SELECTION (PAR)

THE THIRD SELECTION IS "PAR".
SPECIFY PARITY BY TYPING THE DESIRED CODE AS DESCRIBED BELOW.

CODE PARITY

0 EVEN
1 ODD

5.2.4 DENSITY SELECTION (DEN)

AFTER PARITY HAS BEEN SELECTED, 800 BPI WILL AUTOMATICALLY
BE SELECTED AND PRINTED BY THE PROGRAM.

5.2.5 RECORD LENGTH SEQUENCE SELECTION (RLS)

AFTER THE DENSITY SELECTION SPECIFY THE DESIRED RECORD LENGTH SEQUENCE SELECTION (RLS) BY TYPING THE DESIRED CODE AS DEFINED BELOW.

RECORD LENGTH SEQUENCE

- 0 ALL RECORDS ARE 24 WORDS (24 CHARACTERS)
- 1 ALL RECORDS ARE 4008 WORDS (4008 CHARACTERS)
- 2 RECORDS PROGRESS FROM 24 WORDS TO 4008 WORDS (MIN TO MAX)
- 3 RECORDS PROGRESS FROM 4008 WORDS TO 24 WORDS (MAX TO MIN)

5.2.6 WRITE STOP MODE SELECTION (WMO)

AFTER THE RECORD LENGTH SEQUENCE SELECTION, SPECIFY THE APPROPRIATE CODE FOR THE DESIRED WRITE STOP MODE (WMO).

WRITE STOP MODE

- 0 NONSTOP, THE NEXT WRITE OPERATION IS INITIATED WITHOUT WAITING FOR TAPE UNIT READY.
- 1 START/STOP. ALL WRITE OPERATIONS ARE INITIATED AFTER TAPE UNIT READY.
- 2 RANDOM, COMBINED NONSTOP, START/STOP AND RANDOM STALL OPERATIONS.

5.2.7 READ STOP MODE SELECTION (RMO)

AFTER WRITE STOP MODE SELECTION, SPECIFY THE APPROPRIATE CODE FOR THE DESIRED READ STOP MODE (RMO).

READ STOP MODE

- 0 NONSTOP, THE NEXT READ-COMPARE OPERATION IS INITIATED WITHOUT WAITING FOR TAPE UNIT READY.
- 1 START/STOP, ALL READ-COMPARE OPERATIONS ARE INITIATED AFTER TAPE UNIT READY.
- 2 RANDOM, COMBINED NONSTOP, START/STOP AND RANDOM STALL READ-COMPARE OPERATIONS.

6. SWITCH REGISTER CONTROLS

THE FOLLOWING TABLE INDICATES THE CONTROL THE SWITCH REGISTER HAS OVER PROGRAM OPERATION WHEN A PARTICULAR SR BIT IS SET TO THE "1" STATE.

SR BIT	FUNCTION
0	DUMP ERROR COUNTERS AND PROCEED TO NEXT TEST SEQUENCE AT THE END OF ONE RECORD LENGTH SEQUENCE. (256 RECORDS FOR RLS=0 OR 1, ONE MIN TO MAX SEQUENCE FOR RLS=2, OR ONE MAX TO MIN SEQUENCE FOR RLS=3.)
1	DELETE WRITE WITH EXTENDED INTERRECORD GAP; USE OF THIS SWITCH WILL CAUSE RECORDS WITH WRITE ERRORS TO BE LEFT ON TAPE.
2	REPORT ALL WRITE ERRORS AS THEY OCCUR.
3	SELECT WRITE STATISTICAL RECOVERY. USE OF THIS SWITCH WILL SELECT THE BACKSPACE 2 RECORDS; SPACE FORWARD 1 RECORD, REWRITE SEQUENCE; THIS SEQUENCE CAUSES THE SAME RECORD TO BE REWRITTEN ON APPROXIMATELY THE SAME AREA OF TAPE IF A WRITE ERROR OCCURS.
4	REPORT ALL READ-COMPARE STATUS AND DATA ERRORS AS THEY OCCUR.
5	DELETE READ RETRIES. THIS SWITCH IS AN AID TO SCOPING READ CIRCUITS BY DELETING THE BACKSPACE, REREAD THICE SEQUENCE.
6	INCREMENT PATTERN SELECTION AND REPEAT LAST TEST SEQUENCE; PATTERN SELECTION IS RESET TO ITS ORIGINAL SELECTION AFTER PATTERN 7 HAS BEEN EXERCISED.
7	COMPLEMENT PARITY SELECTION AND REPEAT TEST SEQUENCE IF NEW PARITY SELECTION IS DIFFERENT THAN THE ORIGINAL TEST SEQUENCE.

NO FUNCTION

INCREMENT RLS SELECTION TO THE NEXT SEQUENCE, AFTER MAX. TO MIN. HAS BEEN EXERCISED RESET RLS SELECTION TO ITS ORIGINAL TEST SEQUENCE SELECTION.

INCREMENT WMO TO THE NEXT STOP MODE, AFTER RANDOM START/STOP HAS BEEN EXERCISED, RESET WMO TO ITS ORIGINAL TEST SELECTION.

INCREMENT RMO TO THE NEXT READ STOP MODE, AFTER READ RANDOM START/STOP HAS BEEN EXERCISED, RESET RMO TO ITS ORIGINAL TEST SELECTION.

7. ERROR REPORTS

THE NORMAL MODE (SR=0000) OF OPERATION FOR THIS TEST IS TO SIMPLY ACCUMULATE THE ERRORS THAT OCCUR AND TO DUMP THE CONTENTS OF THE COUNTERS ON THE TTY AS EACH DRIVE REACHES EOT. THE ONLY ERROR REPORT THAT CAN OCCUR IN THIS MODE IS IF THE SYSTEM FAILS TO WRITE THE SAME RECORD FOUR TIMES IN A ROW WITH EXTENDED INTERRECORD GAP.

SWITCH REGISTER BITS 2 AND 4 ALTHOUGH THIS MODE OF ERROR REPORTING BY FORCING REPORTS FOR ALL WRITE AND READ-COMPARARE ERRORS, RESPECTIVELY, AS THEY OCCUR.

7.1 ACCUMULATED WRITE ERRORS REPORT

WHEN A WRITE OPERATION ENCOUNTERS EOT, THE FOLLOWING REPORT IS PRINTED.

END OF TAPE
DRV PAT PAR DEN MODE RECORDS LENGTH
1 7 1 000 SSTP 02954 2016 MAX TO MIN
WRITE ERRORS=0009
RECOVERED AT 1 0002
RECOVERED AT 2 0003
RECOVERED AT 3 0001
PERMANENT BAD\$PT 0003

WITH THE FOLLOWING DEFINITIONS:

SYMBOL DEFINITION

DRV DRIVE NUMBER
PAT SELECTED DATA PATTERN

14
 SELECTED PARITY
 SELECTED DENSITY
 WRITE STOP MODE
 NUMBER OF RECORDS WRITTEN
 SELECTED RECORD LENGTH SEQUENCE
 (2016 SHOWN IS AVERAGE LENGTH)
 TOTAL WRITE ERRORS
 NUMBER OF WRITE ERRORS RECOVERED ON THE NTH
 REWRITE
 PERMANENT BADSPT NUMBER OF WRITE ERRORS NOT
 RECOVERED AFTER 7 REWRITES

A SIMILAR REPORT WILL OCCUR WHEN THE END OF A RECORD LENGTH
 SEQUENCE IS REACHED AND SR0=1. HOWEVER "END OF TAPE" IS REPLACED
 BY "WRITE DUMP".

7.2 WRITE STATUS ERROR REPORT

IF SR2=1 WHEN A WRITE ERROR IS DETECTED, THE FOLLOWING ERROR REPORT
 WILL BE PRINTED.

WRITE STATUS ERROR
 COMD FUNCTN STATUS WRDCNT CURADR RECORDS LENGTH
 NNNN NNNN NNNN NNNN NNNN NNNN NNNN

WITH THE FOLLOWING DEFINITIONS.

SYMBOL	DEFINITION
COMD	COMMAND REGISTER
FUNCTN	FUNCTION/STATUS REGISTER
STATUS	MAIN STATUS REGISTER
WRDCNT	WORD COUNT REGISTER
CURADR	CURRENT ADDRESS REGISTER
RECORDS	RECORD NUMBER
LENGTH	RECORD LENGTH

THE ABOVE REPORT WILL ALSO BE FORCED, REGARDLESS OF SM SETTINGS,
 IF A WRITE ERROR PERSISTS AFTER FOUR REWRITES WITH EXTENDED
 INTERRECORD GAP. THE REPORT IS AMENDED WITH:

"XRIG WRITTEN 4 TIMES".

7.3 ACCUMULATED READ ERRORS REPORT

WHEN A READ-COMPARE OPERATION ENCOUNTERS END, THE FOLLOWING REPORT IS PRINTED.

READ PASS
END OF TAPE
DRP PAT PAR DEN MODE RECORDS LENGTH
1 7 1 800 NSTP 02954 2016 MAX TO MIN
READ ERRORS=0010
NON RECOVERABLE=0002
DATA ERRORS=0003
DATA NO STATUS=0001

WITH THE FOLLOWING DEFINITIONS (REFER TO 7.1):

SYMBOL DEFINITION

READ ERRORS TOTAL NUMBER OF READ ERRORS INCLUDING ERRORS ON REREAD.
NON RECOVERABLE TOTAL NUMBER OF NON RECOVERABLE READ ERRORS (AFTER TWO REREADS)
DATA ERRORS TOTAL NUMBER OF DATA (READ-COMPARE) ERRORS NOT INCLUDING REREADS.
DATA NO STATUS TOTAL NUMBER OF DATA ERRORS NOT INCLUDING REREADS, WITHOUT ACCOMPANYING PARITY ERRORS OR OTHER STATUS ERRORS. THIS TYPE OF ERROR SHOULD ALWAYS BE CONSIDERED NON RECOVERABLE IN NATURE.

A SIMILAR REPORT WILL OCCUR WHEN THE END OF A RECORD LENGTH SEQUENCE IS REACHED AND SR0=1. HOWEVER "END OF TAPE" IS REPLACED BY "READ DUMP".

7.4 READ STATUS ERROR REPORT

IF SR4=1 WHEN A READ-COMPARE STATUS ERROR IS DETECTED, THE FOLLOWING ERROR REPORT WILL BE PRINTED.

READ STATUS ERROR
COMD FUNCTN STATUS WRDCNT CURADR RECORDS LENGTH
NNNN NNNN NNNN NNNN NNNN NNNN NNNN

REFER TO 7.2 FOR SYMBOL DEFINITIONS.

8. RESTRICTIONS

IF ANY DEVICE OTHER THAN THE TM0-E CAUSES A PROGRAM INTERRUPT, THE PROGRAM WILL HALT. THE REASON FOR THIS RESTRICTION IS THAT EXTREMELY TIME CRITICAL OPERATIONS ARE BEING EXECUTED IN THE BACKGROUND WHILE RECORDS ARE BEING WRITTEN AND READ. COMPARED, THE PROGRAM MUST CONSTANTLY MONITOR THE TM0-E CURRENT ADDRESS REGISTER AS DATA TRANSFERS ARE TAKING PLACE.

9.
PROGRAM DESCRIPTION

THIS PROGRAM IS DESIGNED AROUND TWO MAIN SUBROUTINES AND A SERIES OF SHORTER SUBROUTINES FOR MANIPULATING DRIVE SELECTION AND ERROR AND RECORD POSITION TABLES.

THE TWO MAIN SUBROUTINES ARE THE WRITE AND READ-COMPARE ROUTINES. THE WRITE ROUTINE EXITS AFTER EVERY RECORD, EVERY RECORD LENGTH SEQUENCE, OR AT END OF TAPE. THE READ ROUTINE EXITS WHEN THE LAST RECORD WRITTEN ON TAPE HAS BEEN READ. SOME TESTS MANIPULATE THE LAST RECORD COUNTER SO THE READ ROUTINE EXITS AFTER EVERY RECORD.

OTHER SUBROUTINES USED SET UP DRIVE SELECTION TO THE LOWEST DRIVE NUMBER, CHANGE DRIVE SELECTION TO THE NEXT HIGHEST DRIVE, AND GET AND SAVE ERROR AND POSITION TABLES FOR THE DRIVE CURRENTLY SELECTED.

ALL THESE SUBROUTINES ARE TIED TOGETHER IN VARIOUS SEQUENCES FOR TEST SELECTIONS 0 THROUGH 9.

ALL DATA IS CHECKED USING THE READ-COMPARE FUNCTION. THE READ FUNCTION IS NEVER USED. BY USING THIS METHOD, RECORDS ARE USED WHICH ARE MUCH LONGER THAN COULD EVER BE POSSIBLE IN A 4K SYSTEM THAT ALSO CONTAINS THIS PROGRAM. THE OVERALL CONCEPT USED TO ALLOW UTILIZING LONG RECORDS IN THIS PROGRAM IS TO USE A RELATIVELY SHORT DATA BUFFER, THEN MONITORING THE CURRENT ADDRESS REGISTER, RESET THE CURRENT ADDRESS TO THE START OF THE BUFFER WHEN IT REACHES THE END OF THE BUFFER. THIS TECHNIQUE INVOLVES TIME CRITICAL PROGRAM EXECUTION, HENCE NO PROGRAM INTERRUPTS ARE ALLOWED OTHER THAN THOSE CAUSED BY THE TMB-E.

10.
LISTING (ATTACHED

/IMBE DATA RELIABILITY TEST (9 TRACK) MAINDEC-08-DHTMD-A=L
/THIS PROGRAM WILL RUN IN ANY EXISTING MEMORY FIELD;
/ COPYRIGHT 1971-1972, DIGITAL EQUIPMENT CORP.,
/ MAYNARD, MASS,
/

6244 RMF=6244
6201 CDF=6201
6224 RIF=6224

/MAGNETIC TAPE IOT EQUALITIES

6701 LWCR=6701
6702 CWCR=6702
6703 LCAR=6703
6704 CCAR=6704
6705 LCMR=6705
6706 LFGR=6706
6707 LOBR=6707

6711 RWCR=6711
6713 RCAR=6713
6714 RMSR=6714
6715 RCMR=6715
6716 RFSR=6716
6717 ROBR=6717

6721 SKEF=6721
6722 SKCB=6722
6723 SKTD=6723
6724 SKTR=6724
6725 CLF=6725
6712 CLT=6712
6726 SOLE=6726
6727 SBRM=6727

0000 /FIELD0 /PROGRAM FIELD /SET UP FOR HIGH SPEED DUMP,
0001 / / /CHANGED AS SHOWN FOR INTERRUPT
5001 JUMP 1 /RNF /JMP I 2 /HANDLING;
0002 2 /JMP I 3/POINTER /SUCH A SYSTEM ENABLES THIS PROGRAM
0003 3 / / /TO RUN IN ANY EXISTING MEMORY FIELD;

/PERMANENT VALUES
WRBUF, 3400 /READ=WRITE BUFFER STARTING ADDRESS
MAXLEN, 7680 /MAXIMUM RECORD LENGTH
MINLEN, 30 /MINIMUM RECORD LENGTH

/PAGE POINTERS
XRRANUM, RANGEN
XRRWIND, REWIND
XCLRTB, CLRTBL
XGOSKW, GOSKWD
XRDIT, READIT
XWRIT, WRITSE
XTSING, TESINC
XGENPT, GENPAT
XRDRNC, RDINCR
XSVCTR, SVCTRS
XNVCTR, MCVTRS
XWATKY, WAITKY
XCHGDV, CHGDRV
XALEOT, ALLEOT
XRSFOV, RSFORV
XCLRAL, CLRALL
XDCPRT, DECPRT
XTYPTD, TYPDAT
XTXT, TEXTX
XOTY, OTY
XGOT1, GOT1
XTSP3, TSP3
XTIN, TIN
XTSR, TSR
XLEOT1, LBEOT1
XLEOT2, LBEOT2
XLBSAV, LBSAV
XLBINT, LBINT
XLBWAT, LBWAT
XLBSET, LBSET

PAUSE

0130 3400
0131 7680
0132 0030

0133 5675
0134 5345
0135 5066
0136 5127
0137 4200
0140 2444
0141 3102
0142 5400
0143 4462
0144 1000
0145 1007
0146 1142
0147 1071
0150 1236
0151 1051
0152 1035
0154 5101
0155 6000
0156 6155
0157 6033
0160 6040
0161 6164
0162 6122
0163 1300
0164 1314
0165 1327
0166 1335
0167 1344
0170 1712

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0200 /TM8E DATA RELIABILITY TEST TAPE 2 (9 TRACK)
0201 /PARAMETER AND TEST SELECTIONS VIA KEYBOARD
0202 *200
0203 RELIAB, SKP
0204 STL
0205 JMS I XLBSET /SET UP INTERRUPT SERVICE
0206 JMS I XTEXT /PRINT TEXT.
0207 TEXT30 /"SELECT DRIVES"
0208 DCA MSBITS /CLEAR DRIVE SELECT
0209 JMS I XWATKY /WAIT FOR CHARACTER FROM KEYBOARD
0210 CIA
0211 TAD K0215
0212 SNA CLA
0213 JMP REL1 /IS CHARACTER CAR RET
0214 TAD CHARIN /YES,
0215 AND K0370 /NO
0216 TAD K7520
0217 SNA CLA /IS CHARACTER A VALID DRIVE NUMBER
0218 JMP VLDDRV /YES, SAVE
0219 TAD K0277 /NO, TYPE "?"
0220 JMS I XOTY /TYPE ", "
0221 TAD K025
0222 JMS I XOTY
0223 JMP RELIAB+6
0224 TAD MSBITS
0225 SNA RELIAB+3
0226 JMP SLTSTS /ANY DRIVES SELECTED?
0227 SNA RELIAB+3 /NO
0228 JMP SLTSTS /YES, SELECT TESTS
0229
0230 REL1.

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1361 /HAVE VALID DRIVE SELECTED
1362 VLDDRV, TAD K0254 /TYPE ", "
1363 JMS I XOTY
1364 TAD CHARIN /GET CHARACTER
1365 AND K0007 /MASK TO FIND DRIVE NUMBER
1366 DCA CDRIVE
1367 TAD CDRIVE
1368 CMA DELAY
1369 DCA DELAY /TEMP STORAGE FOR = DRIVE NUMBER
1370 STL
1371 RAR
1372 ISZ DELAY /MOVE SELECT BIT RIGHT ONE PLACE
1373 JMP .-2 /IS THIS DRIVE SELECTED
1374 DCA DELAY /NO
1375 TAD DELAY
1376 AND MSBITS
1377 CIA
1378 CLL RAL
1379 TAD DELAY
1380 TAD MSBITS
1381 DCA MSBITS /COMBINE DRIVE SELECT BITS
1382 JMP RELIAB+6

```

0020	*20		
0021	PASSNS, 0	/PARAMETER STORAGE	
0022	MSBITS, 0	/PARAMETER STORAGE	
0023	CDRIVE, 0	/MASTER DRIVE SELECT BITS	
0024	PATNUM, 0	/CURRENT DRIVE	
0025	PARBIT1, 0	/PATTERN NUMBER SELECTED	
0026	DRVDEN, 0	/PARITY SELECTION	
0027	RLTROL, 0	/DRIVE AND DENSITY SELECTED	
0030	MODBIT, 0	/RECORD LENGTH CONTROL	
0031	READMO, 0	/WRITE STOP MODE	
0032	RECSYS, 0	/READ STOP MODE	
0033	EXITMO, 0	/READ PASS IS SELECTED	
0034	STRLEN, 0	/EXIT MODE	
0035	COMAND, 0	/STARTING BLOCK LENGTH	
0036	BLKING, 0	/COMMAND, DRIVE, PAR, DEN	
0037	WRPASS, 0	/BLOCK LENGTH INCREMENT	
0040	NUMTST, 0	/WRITE RECOVERY COUNT	
0041	TBLCNT, 0	/NUMBER OF TESTS SELECTED	
0042	EXETST, 0	/NUMBER OF TESTS EXECUTED	
0043	SWTEST, 0	/TESTS BEING EXECUTED	
0044	EOSFLG, 0	/Cleared if parameter input is thru switches	
0045	SVRECR, 0	/Cleared at end of RLS	
0046		/TEMP STORAGE	
0047	DELAY, 0	/DELAY COUNTER	
0050	DELAY1, 0	/DELAY COUNTER	
0051	RDPASS, 0	/COUNT READ PASSES	
0052	STATRO, 0	/SAVE MAGTAPE STATUS WORD	
0053	STATRE, 0		
0054	CHARIN, 0	/CHARACTER INPUT FROM KEYBOARD	

```

/WRITE ERROR AND RECORD CONTROL REGISTERS
WRCHK, 0
RECV1, 0
RECV2, 0
RECV3, 0
RECV4, 0
RECV5, 0
RECV6, 0
RECV7, 0
PERMS, 0
RECORD, 0
LASRCR, 0
WRTEOT, 0
WRTLEN, 0
WRRECR, 0
/PERMANENT BAD SPOT ON TAPE
/RECORD COUNT
/RECORD COUNT OVERFLOW
/LAST RECORD
/
/WRITE BLOCK LENGTH
/SAVE STARTING RECORD

```

```

/READ ERROR AND RECORD CONTROL REGISTERS
READLN, 0
RNOSTA, 0
CMPERR, 0
NRREAD, 0
RDERRS, 0
RDEOT, 0
K0003, 3
K0004, 4
K0007, 7
K0010, 10
K0017, 17
K0020, 20
K0030, 30
K0040, 40
K0060, 60
K0100, 100
K0177, 177
K0200, 200
K0240, 240
K0300, 300
K0400, 400
K7443, 7443
K7751, 7751
K7770, 7770
K7771, 7771
K7775, 7775

```

```

0055 0000
0056 0000
0057 0000
0060 0000
0061 0000
0062 0000
0063 0000
0064 0000
0065 0000
0066 0000
0067 0000
0070 0000
0071 0000
0072 0000
0073 0000
0074 0000
0075 0000
0076 0000
0077 0000
0100 0000
0101 0000
0102 0000
0103 0000
0104 0003
0105 0004
0106 0007
0107 0010
0110 0017
0111 0020
0112 0030
0113 0040
0114 0060
0115 0100
0116 0177
0117 0200
0120 0240
0121 0300
0122 0400
0123 7443
0124 7751
0125 7770
0126 7771
0127 7775

```

```

0256 4555 /SELECT TESTS
0257 6715 JMS I XTEXT
0260 3040 SLTSTS, TEXT31
0261 7610 DCA NUMTST
0262 7477 SKP CLA
0263 1262 TSTTBL=1
0264 3016 TAD :=1
0265 4561 DCA 16
0266 4846 JMS I XTIN
0267 7041 JMS I XMAIKY
0270 1360 CIA
0271 7650 TAD K0215
0272 5313 SNA CLA
0273 1054 JMP TSTYGS+3
0274 0365 TAD CHARIN
0275 1366 AND K0370
0276 7650 TAD K7520
0277 5321 SNA CLA
0300 1054 JMP VLDTST
0301 7041 TAD CHARIN
0302 1362 CIA
0303 7450 TAD K0270
0304 5321 SNA VLDTST
0305 7001 IAC CLA
0306 7650 SNA CLA
0307 5321 JMP VLDTST
0310 1363 TAD K0277
0311 4556 JMS I XOTY
0312 5265 JMP SLTSTS+7
0313 7200 CLA
0314 1040 TAD NUMTST
0315 7450 SNA TSTYGS
0316 5310 JMP I ,+1
0317 5720 EXECUT
0320 0601

/IS CHAR A VALID NUMBER 0=7?
/IS CHARACTER A CAR RET
/YES, SEE IF TESTS SELECTED
/NO
/IS CHAR AN 8?
/YES
/IS CHAR A 9?
/YES
/CHARACTER WAS NOT 0=9
/TYPE "?"
/TRY AGAIN
/ANY TESTS SELECTED?
/NO
/YES, EXECUTE SELECTED

```

/HAVE VALID TEST NUMBER SELECTED
VLOTST, CLA CLL / T VALID TEST NUMBER
TAD CHARIN AND K0017 /MOVE INTO POSITION
RAR
RTR
RTR

DCA PASSWS+1 /SAVE IT
JMS I XTSP3 /TYPE 3 SPACES
JMS I XWATKY /WAIT FOR PATTERN KEY
AND K0370
TAD K7520

SEA CLA /IS KEY VALID FOR PATTERN?
JMP TSTYQS /NO
TAD CHARIN /YES
AND K0007 /MASK OCTAL
DCA PASSWS /SAVE IT

JMS I XTSP3 /WAIT FOR PARITY KEY
JMS I XWATKY
AND K0376

SEA CLA /IS KEY VALID FOR PARITY? (0 OR 1)
JMP TSTYQS /NO
TAD CHARIN /YES
RAL /ROTATE INTO POSITION
RTL

AND K0010 /MASK PARITY BIT
TAD PASSWS /COMBINE PARITY WITH PATTERN
DCA PASSWS /SAVE IT
JMS I XTSP3
JMP I .+1

0321 7300
0322 1054
0323 0110
0324 7010
0325 7012
0326 7012
0327 3021
0330 4560
0331 4546
0332 0365
0333 1366
0334 7640
0335 5310
0336 1054
0337 0106
0340 3020
0341 4560
0342 4546
0343 0364
0344 1366
0345 7640
0346 5310
0347 1054
0350 7004
0351 7006
0352 0107
0353 1020
0354 3020
0355 4560
0356 5757
0357 0400
0360 0215
0361 0254
0362 0270
0363 0277
0364 0376
0365 0370
0366 7520

K0215,
K0254,
K0270,
K0277,
K0376,
K0370,
K7520,

*400

0400
 1104
 0401
 1021
 0402
 3021
 0403
 1311
 0404
 4556
 0405
 1310
 0406
 4556
 0407
 1310
 0410
 4556
 0411
 1120
 0412
 4556
 0413
 4546
 0414
 0313
 0415
 1312
 0416
 7040
 0417
 5707
 0420
 1054
 0421
 7006
 0422
 7006
 0423
 0114
 0424
 1020
 0425
 3020

TAD K0003
 TAD PASSWS+1
 DCA PASSWS+1
 TAD K270
 JMS I XOTY
 TAD K0260
 JMS I XOTY
 TAD K0260
 JMS I XOTY
 TAD K0240
 JMS I XOTY
 JMS I XWATKY
 AND K0374
 TAD KX7520
 SZA CLA
 JMP I XTSP3
 TAD CHARIN
 RTL
 RTL
 AND K0060
 TAD PASSWS
 DCA PASSWS

/DENSITY IS 800 BPI 9 TRACK
 /COMBINE DENSITY OF 800 WITH TEST
 /SAVE
 /ECHO 2 ZEROS (00)
 /WAIT FOR RECORD LENGTH KEY
 /NO, PRINT "3"
 /YES
 /MOVE RECORD LENGTH INTO POSITION
 /COMBINE RECORD LENGTH WITH PAR AND PAT
 /SAVE IT

/IS KEY FOR RECORD LENGTH 0-1-2-3

0426
 4560
 0427
 4546
 0430
 0313
 0431
 1312
 0432
 7640
 0433
 5707
 0434
 1034
 0435
 0104
 0436
 1127
 0437
 7650
 0440
 5707
 0441
 1054
 0442
 7006
 0443
 7006
 0444
 7006
 0445
 2121
 0446
 1020
 0447
 3020
 0450
 4560
 0451
 4546
 0452
 0313
 0453
 1312
 0454
 7640
 0455
 5707

JMS I XTSP3
 JMS I XWATKY
 AND K0374
 TAD KX7520
 SZA CLA
 JMP I XTSP3
 TAD CHARIN
 AND K0003
 TAD K7775
 SNA CLA
 JMP I XTSP3
 TAD CHARIN
 RTL
 RTL
 RTL
 AND K0300
 TAD PASSWS
 DCA PASSWS
 JMS I XTSP3
 JMS I XWATKY
 AND K0374
 TAD KX7520
 SZA CLA
 JMP I XTSP3

/WAIT FOR WRITE STOP MODE KEY
 /NO, PRINT "7"
 /IS KEY FOR WRITE STOP MODE 0-1-1-3
 /YES, PRINT "3"
 /NO
 /MOVE INTO POSITION
 /COMBINE WRITE STOP MODE WITH RECORD LENGTH, PAR, PAT
 /SAVE IT
 /WAIT FOR READ MODE KEY
 /NO, PRINT "7"
 /IS KEY FOR READ STOP MODE 0-1-2-3

0456	1054	TAD CHARIN	/YES
0457	0104	AND K0003	
0460	1127	TAD K7775	
0461	7680	SNA CLA	/IS KEY AN INVALID 3?
0462	9707	JMP I XTSYOS	/YES, PRINT "7"
0463	1054	TAD CHARIN	/MOVE INTO POSITION
0464	7004	RAL	
0465	7006	RTL	
0466	0112	AND K0030	
0467	1021	TAD PASSWS+1	/COMBINE READ STOP MODE WITH TEST AND DENSITY
0470	3021	DCA PASSWS+1	/SAVE IT
0471	4546	JMS I XWATKY	
0472	7041	CIA	
0473	1120	TAD K0240	
0474	7440	SAZ	
0475	5305	JMP .+10	
0476	1020	TAD PASSWS	/SAVE TEST PARAMETERS
0477	3416	DCA I 16	/SAVE TEST PARAMETERS
0500	1021	TAD PASSWS+1	/+1 TO TESTS COUNTED
0501	3416	DCA I 16	
0502	2040	ISE NUMTST	
0503	4555	JMS I XTEXT	
0504	6750	TEXT32	
0505	5706	JMP I .+5	
0506	0265	SLTSTS+7	
0507	0310	TSTYOS	
0510	0260	XTSYOS,	
0511	0270	K0260,	
0512	7520	K270,	
0513	0374	KX7520,	
		K0374,	
		/TABLE OF TEST POINTERS	
		TESTX,	
0514	0000	0	
0515	7200	CLA	/TEST NUMBER
0516	1042	TAD EXETST	/+ TEST POINTER
0517	1323	TAD TBLTST	
0520	3321	DCA .+1	
0521	4724	JMS I TBLTST+1	/MODIFIED, JMS TO TEST X
0522	5714	JMP I TESTX	
0523	4724	TBLTST,	
0524	1400	JMS I .+1	
0525	1414	TEST0	
0526	1437	TEST1	
0527	1462	TEST2	
0530	1506	TEST3	
0531	1535	TEST4	
0532	1600	TEST5	
0533	1645	TEST6	
0534	2000	TEST7	
0535	2200	TEST10	
		TEST11	
0536	0000	L0TEXT,	
0537	4562	0	
0540	1501	JMS I	XTSR
0541	1116	TEXT	"MAINDEC-08=DHTMD=A"

0542 0405
0543 0355
0544 6070
0545 5504
0546 1024
0547 1504
0550 5501
0551 0000
0552 4961
0553 5736

JMS I XTIN
JMP I LBTEXT

0600	*600		
0600	0514	XTESTX, TESTX	
0601	7610	/EXECUTE TESTS SELECTED BY KEYBOARD	
0602	7500	EXECUT, CLA SKP	
0603	1202	TSITBL	
0604	3375	TAD *-1	
0605	3041	DCA TSTDEX	
0606	1775	DCA TBLCNT	
0607	3020	TAD I TSTDEX	
0610	2375	DCA PASSWS	
0611	1775	ISZ TSTDEX	
0612	3021	TAD I TSTDEX	
0613	1021	DCA PASSWS+1	
0614	7006	TAD PASSWS+1	
0615	7006	RTL	
0616	7004	RTL	
0617	0110	RAL	
0620	3042	AND K0017	
0621	7410	DCA EXETSY	/SAVE TEST NUMBER
0622	1200	SKP	
0623	4622	PARAMS	
0624	3374	JMS I *-1	
0625	4955	DCA EXECNT	
0626	6756	JMS I XTEXT	/TEST
0627	1042	TEXT33	
0630	1120	TAD EXETST	
0631	1111	TAD K0240	
0632	4556	TAD K0020	
0633	4560	JMS I XOTY	/PRINT TEST NUMBER
0634	1041	JMS I XTSP3	
0635	4553	TAD TBLCNT	/PRINT TABLE POSITION
0636	4560	JMS I XDCPRT	
0637	1374	JMS I XTSP3	
0640	4553	TAD EXECNT	
0641	7240	JMS I XDCPRT	/PRINT TEST EXECUTE COUNT
0642	3043	CLA CMA	
0643	4600	DCA SWTEST	
0644	2374	JMS I XTESTX	
		ISZ EXECNT	
		GOTST,	
		TSRUNL,	

/SEE IF READ MODE IS TO CHANGE

0645	7604	LAS	
0646	7010	RAR	
0647	7620	SNL CLA	/CHANGE READ MODE IF AC SW11#1
0650	5270	JMP INCHMO	/NO
0651	1127	TAD K7775	
0652	1042	TAD EXETST	
0653	7710	SPA CLA	
0654	5270	JMP INCHMO	
0655	1107	TAD K0010	
0656	1031	TAD READMO	
0657	3031	DCA READMO	
0660	1031	TAD READMO	/+1 TO READ MODE
0661	7041	CIA	
0662	1112	TAD K0030	
0663	7640	SEA CLA	/DONE ALL READ MODES?
0664	5225	JMP TSRUNL	/NO, EXECUTE THIS NEW MODE
0665	1021	TAD PASSWS+1	/YES, RE-INITIALIZE READ MODE
0666	0112	AND K0030	
0667	3031	DCA READMO	

/SEE IF WRITE MODE IS TO CHANGE

0670	7604	INCHMO, LAS	
0671	7012	RTR	
0672	7620	SNL CLA	/CHANGE WRITE MODE IF AC SW 10#1
0673	5307	JMP INCRCLC	/NO
0674	1030	TAD MODBIT	
0675	1115	TAD K0100	
0676	3030	DCA MODBIT	/+1 TO WRITE MODE
0677	1030	TAD MODBIT	
0700	7041	CIA	
0701	1121	TAD K0300	
0702	7640	SEA CLA	/DONE ALL WRITE MODES?
0703	5225	JMP TSRUNL	/NO, EXECUTE THIS NEW MODE
0704	1020	TAD PASSWS	/YES, REINITIALIZE WRITE MODE
0705	0121	AND K0300	
0706	3030	DCA MODBIT	

/SEE IF RECORD LENGTH IS TO CHANGE

0707	7604	INCRCLC, LAS	
0710	7012	RTR	
0711	7010	RAR	
0712	7620	SNL CLA	/CHANGE RECORD LENGTH IF AC SW9#1
0713	5327	JMP CHGPAT	/NO
0714	1027	TAD RLTR0L	
0715	1111	TAD K0020	
0716	3027	DCA RLTR0L	/+1 TO RECORD LENGTH
0717	1027	TAD RLTR0L	
0720	7041	CIA	
0721	1115	TAD K0100	
0722	7640	SEA CLA	/DONE ALL RECORD LENGTHS?
0723	5225	JMP TSRUNL	/NO, EXECUTE THIS NEW RECORD LENGTH
0724	1020	TAD PASSWS	/YES, REINITIALIZE RECORD LENGTH
0725	0114	AND K0060	
0726	3027	DCA RLTR0L	

```

0727 7604 /SEE IF PATTERN IS TO CHANGE
0730 0113 CHGPAT,
0731 7650 AND K0040
0732 5343 SNA CLA /CHANGE PATTERN IF AC SW 7#1
0733 2024 JMP CHRPAR /NO
0734 1024 ISZ PATNUM /+1 TO PATTERN
0735 0107 TAD PATNUM
0736 7650 AND K0010
0737 5225 SNA CLA /DONE ALL PATTERNS?
0740 1020 JMP TSRUNL /NO, EXECUTE THIS PATTERN
0741 0106 TAD PASSWS /YES, REINITIALIZE PATTERN
0742 3024 DCA PATNUM
/SEE IF PARITY IS \O CHANGE
0743 7604 LAS
0744 0111 AND K0020
0745 7650 SNA CLA /CHANGE PARITY IF AC SW 9#1
0746 5361 JMP RPTTST /NO
0747 1025 TAD PARBT1
0750 7040 CMA /CHANGE PARITY
0751 0107 AND K0010
0752 3025 DCA PARBT1
0753 1020 TAD PASSWS
0754 0107 AND K0010
0755 7041 CIA
0756 1025 TAD PARBT1
0757 7440 SZA
0760 5225 JMP TSRUNL
/CHANGE TEST NUMBER
0761 2375 RPTTST, ISZ TSTDEX
0762 2041 ISZ TBLCNT
0763 1041 TAD TBLCNT
0764 7041 CIA
0765 1040 TAD NUMTST
0766 7640 SZA CLA
0767 5773 JMP I ,+4
0770 7402 HLT
0771 5772 JMP I ,+1
0772 0601 EXECUT
0773 0606 EXECUT+5
0774 0000 EXECNT, 0 /NUMBER OF TIMES TO BE EXECUTED.
0775 0000 TSTDEX, 0 /POINTER TO GET TEST.

```

```

1000
1000 0000
1001 4216
1002 1410
1003 3411
1004 2012
1005 5202
1006 5600

1007 0000
1010 4216
1011 1411
1012 3410
1013 2012
1014 5211
1015 5607

1016 0000
1017 7610
1020 0054
1021 1220
1022 3010
1023 1124
1024 3012
1025 7610
1026 7037
1027 1226
1030 1023
1031 3017
1032 1417
1033 3011
1034 5616

1035 0000
1036 4551
1037 4534
1040 4535
1041 4200
1042 4547
1043 5237
1044 7240
1045 3044
1046 3050
1047 5635
1050 2337

*1000
/SAVE DRIVE RECORD AND ERROR COUNTERS
SVCTRS, 0
JMS CTRDEX
TAD I 10
DCA I 11
ISZ 12
JMP :-3
JMP I SVCTRS

/RESET DRIVE COUNTERS BACK INTO PROGRAM
MVCTRS, 0
JMS CTRDEX
TAD I 11
DCA I 10
ISZ 12
JMP :-3
JMP I MVCTRS

/RESTORE DRIVE COUNTERS

/SET UP INDEX REGISTERS FOR MOVE AND SAVE COUNTERS
CTRDEX, 0
CLA SKP
WRCHEK=1
TAD :-1
DCA 10
TAD K7751
DCA 12
CLA SKP
DRVADR=1
TAD :-1
TAD CDRIVE
DCA 17
TAD I 17
DCA 11
JMP I CTRDEX

/CLEAR ALL DRIVES
CLRALL, 0
JMS I XRSFOV
JMS I XRWIND
JMS I XCLRTB
JMS SVCTRS
JMS I XCHGOV
JMP :-4
CLA CMA
DCA EOSFLG
DCA I :+2
JMP I CLRALL
TIIFLG

/RESET TO FIRST DRIVE
/REWIND
/CLEAR READ AND WRITE TABLES
/SAVE COUNTERS
/DONE ALL DRIVES?
/NO

```

```

1051 0000 /RESET DRIVE SELECTION TO LOWEST DRIVE NUMBER
1052 7200 RSFORV, 0
1053 3023 CLA CDRIVE /START WITH 0
1054 1313 TAD K4000
1055 3270 DCA CDRVBT /SAVE BIT FOR 0
1056 1270 TAD CDRVBT
1057 0022 AND MSBITS /MASK WITH DRIVES SELECTED
1060 7640 SZA CLA /DOES DRIVE EXIST
1061 5266 JMP +5 /YES
1062 2023 ISE CDRIVE /NO, +1 TO DRIVE NUMBER
1063 1270 TAD CDRVBT
1064 7110 CLL RAR /MOVE BIT OVER
1065 5255 JMP RSFORV+4 /TRY AGAIN
1066 4315 JMS SETFUN
1067 5651 JMP I RSFORV
1070 0000 CDRVBT, 0

```

```

/SELECT NEXT DRIVE
+1 TO EXIT IF LAST DRIVE TESTED
CHGDRV, 0
1071 0000 CLA
1072 7200 TAD CDRVBT /GET MASK BIT OVER 1
1073 1270 CLL RAR /MOVE OVER 1
1074 7110 ISE CDRIVE /+1 TO DRIVE NUMBER
1075 2023 AND K7760 /MASK FOR 8 DRIVES POSSIBLE
1076 0314 SZA /END OF 8 DRIVES
1077 7440 JMP +4 /NO, SEE IF DRIVE EXISTS
1100 5304 JMS RSFORV
1101 4291 ISE CHGDRV /+1 TO EXIT
1102 2271 JMP I CHGDRV /EXIT
1103 5671 DCA CDRVBT /SAVE CURRENT BIT
1104 3270 TAD CDRVBT
1105 1270 AND MSBITS /MASK DRIVES SELECTED
1106 0022 SNA /DOES DRIVE EXIST?
1107 7450 JMP CHGDRV+1 /NO, SEE IF NEXT EXISTS
1110 5272 JMS SETFUN /EXIT WITHOUT SKIP
1111 4315 JMP I CHGDRV
1112 5671 K4000,
1113 4000 K7760,
1114 7760

```


/SET UP FUNDAMENTAL COMMAND

```

1115 0000
1116 7200
1117 1026
1120 0104
1121 3026
1122 6224
1123 1026
1124 3026
1125 1023
1126 7100
1127 7012
1130 7012
1131 1026
1132 1121
1133 3026
1134 1025
1135 7040
1136 1122
1137 1026
1140 3035
1141 5715
    
```

```

SETFUN, 0
CLA
TAD DRVDEN
AND K0003
DCA DRVDEN
RIF
TAD DRVDEN
DCA DRVDEN
TAD CDRIVE
CLL
RTR
RTR
TAD DRVDEN
TAD K0300
DCA DRVDEN
TAD PAR0T1
SEA CLA
TAD K0400
TAD DRVDEN
DCA COMAND
JMP I SETFUN
    
```

/WAIT FOR KBD FLAG AND READ CHARACTER

```

1142 0000
1143 6031
1144 5343
1145 6036
1146 6046
1147 6041
1150 5347
1151 3054
1152 1054
1153 5742
1200 1200
    
```

```

WAITKY, 0
KSF
JMP .-1
KRB
TLS
TSF
JMP .-1
DCA CHARIN
TAD CHARIN
JMP I WAITKY
    
```

/ECHO CHARACTER

```

1200 1200
    
```

*1200 /INITIALIZE TEST PARAMETERS /PATNUM=PARBT1-DRVDEN=RLTROL=MODBIT=READMO

```

1200 0000
1201 7200
1202 1020
1203 0106
1204 3024
1205 1020
1206 0107
1207 3025
1210 1020
1211 0235
1212 3026
1213 1021
1214 0104
1215 1026
1216 1121
1217 3026
1220 6224
1221 1026
    
```

```

PARAMS, 0
CLA
TAD PASSWS
AND K0007
DCA PATNUM
TAD PASSWS
AND K0010
DCA PARBT1
TAD PASSWS
AND K7000
DCA DRVDEN
TAD PASSWS+1
AND K0003
TAD DRVDEN
TAD K0300
DCA DRVDEN
RIF
TAD DRVDEN
    
```

/PATTERN

/PARITY

/DRIVE NUMBERS AND DENSITY

1222 3026 DCA DRVDEN
1223 1020 TAD PASSWS
1224 0114 AND K0060
1225 3027 DCA RLTR0L
1226 1020 TAD PASSWS
1227 0121 AND K0300
1230 3030 DCA MODBIT

/RECORD LENGTH

/WRITE STOP MODE

```

1231 1021 TAD PASSWS+1
1232 0112 AND K0030
1233 3031 /READ STOP MODE
1234 5600 JMP I PARAMS
1235 7000 K7000, 7000
/TEST FOR ALL DRIVES TO HAVE REACHED EOT
1236 0000 ALLEOT, 0
1237 7200 CLA
1240 1032 TAD RECSYS
1241 7440 SZA
1242 5254 JMP TRDEOT
1243 4531 JMS I XRSFDV
1244 4545 JMS I XMVCTR
1245 1072 TAD WRTEOT
1246 7450 SNA
1247 5265 JMP ALLEOS
1250 4547 JMS I XCHGDV
1251 5244 JMP ALLEOT+6
1252 2236 ISZ ALLEOT
1253 5636 JMP I ALLEOT
1254 4551 JMS I XRSFDV
1255 4545 JMS I XMVCTR
1256 1103 TAD RDEOT
1257 7450 SNA
1260 5265 JMP ALLEOS
1261 4547 JMS I XCHGDV
1262 5253 JMP TRDEOT+1
1263 2236 ISZ ALLEOT
1264 5636 JMP I ALLEOT
1265 7004 LAS
1266 7004 RAL
1267 7620 SNL
1270 5636 JMP I ALLEOT
1271 1044 TAD EOSFLG
1272 7440 SZA
1273 5636 JMP I ALLEOT
1274 2236 ISZ ALLEOT
1275 4077 JMS I +2
1276 5636 JMP I ALLEOT
1277 2344 CTDRMP
        PAUSE
        /TEST AC SW 0=1
        /EXIT AT END OF SEQUENCE
        /NO, GO TO EOT
        /WRITTEN TO EOS?
        /NO
        /SKIP TO END OF TEST
        /PRINT ERROR COUNTERS
    
```

/ROUTINE TO SEE IF EOT IS ERROR CAUSE,
/IF EOT IS ONLY C SE, TAKE NEXT INSTRUCTION,
/IF OTHER CAUSE, SKIP NEXT INSTRUCTION.

```

LBE0T1, 0
1300 0000
1301 6716
1302 0312
1303 7640
1304 5310
1305 6714
1306 0313
1307 7640
1310 2300
1311 5700
1312 0037
1313 3767

```

/ROUTINE TO SEE IF EOT ERROR CAUSE (USE STATUS SAVED IN MEM,);
/TAKE NEXT INSTR IF EOT, OTHERWISE SKIP NEXT INSTRUCTION.

```

LBE0T2, 0
1314 0000
1315 7200
1316 1053
1317 0312
1320 7640
1321 5325
1322 1052
1323 0313
1324 7640
1325 2314
1326 5714

```

/ROUTINE TO SAVE STATUS REGISTERS.

```

LBSAV, 0
1327 0000
1330 6714
1331 3052
1332 6716
1333 3053
1334 5727

```

/ROUTINE TO SEE IF INTERRUPT CAUSED BY DEVICE,
/ERROR HALT IF DEVICE DID NOT CAUSE INTERRUPT.

```

LBINT, 0
1335 0000
1336 6721
1337 7410
1340 5735
1341 6723
1342 7402
1343 5735

```

/ILLEGAL INTERRUPT;

/ROUTINE TO WAIT FOR EF OR MTF.

1344	0000	LBWAT, 0
1345	6721	SKEF
1346	7410	SKP
1347	5744	JMP I LBWAT
1350	6723	SKTD
1351	5345	JMP .-4
1352	5744	JMP I LBWAT

```

1400 /TMBE DATA RELIABILITY TEST - TAPE 3 (9 TRACK)
1401 #1400
1402 /WRITE TO EOT
1403 /REWIND GO TO NEXT DRIVE
1404 TEST0, 0
1405 CLA EXITMO
1406 DCA RECSYS
1407 JMS I XCLRAL
1408 JMS I XCLRRTB
1409 JMS I XGENPT
1410 JMS I XWRIT
1411 JMS I XRWIND
1412 JMS I XCHGDV
1413 JMP TEST0+5
1414 JMS I TEST0
1415 /SET EXIT EOT
1416 /NO READ PASS
1417 /CLEAR ERROR COUNTERS
1418 /CLEAR READ AND WRITE TABLE
1419 /GENERATE PATTERN
1420 /WRITE
1421 /REWIND
1422 /ANY MORE DRIVES?
1423 /YES
1424 /NO, EXIT
    
```

```

1414 /WRITE 1 RECORD LENGTH SEQUENCE OR 256 RECORDS
1415 /CHANGE DRIVES, GO TO EOT
1416 TEST1, 0
1417 CLA K0100
1418 TAD EXITMO
1419 DCA RECSYS
1420 JMS I XCLRAL
1421 JMS I XRSFDV
1422 JMS I XMVCTR
1423 TAD WRTEOT
1424 SZA
1425 JMP +4
1426 JMS I XGENPT
1427 JMS I XWRIT
1428 JMS I XSVCTR
1429 JMS I XCHGDV
1430 JMP TEST1+7
1431 JMS I XALEOT
1432 JMP TEST1+6
1433 JMS I TEST1
1434 /EXIT WRITE ROUTINE AT END OF RLS
1435 /NO READ PASS
1436 /CLEAR ERROR COUNTERS
1437 /GET DRIVE COUNTERS
1438 /IS THIS ONE AT EOT?
1439 /YES
1440 /GENERATE PATTERN
1441 /WRITE
1442 /SAVE COUNTERS THIS DONE
1443 /DONE 1 RLS ALL DRIVES?
1444 /NO, DO NEXT DRIVE
1445 /ALL DRIVES AT EOT?
1446 /NO
1447 /YES, EXIT
    
```

/WRITE ONE RECORD
/CHANGE DRIVES, GO TO EOT
TEST2, 0

1437 0000
1440 7200
1441 1117
1442 3033
1443 3032
1444 4552
1445 4551
1446 4545
1447 1072
1450 7440
1451 5255
1452 4542
1453 4540
1454 4544
1455 4547
1456 5246
1457 4550
1460 5245
1461 5637

/EXIT WRITE ROUTINE AT EOT
/NO READ PASS

/IS THIS ONE AT EOT
/YES
/GENERATE PATTERN
/WRITE
/SAVE COUNTERS THIS DRIVE
/DONE ALL DRIVES
/NO, DO NEXT DRIVE
/ALL DRIVES AT EOT
/NO
/YES, EXIT

/WRITE TO EOT, REWIND
/CHANGE DRIVES, READ
TEST3, 0

1462 0000
1463 7200
1464 3033
1465 1122
1466 3032
1467 4552
1470 4542
1471 4545
1472 4540
1473 4534
1474 4547
1475 5271
1476 4545
1477 7200
1500 3066
1501 3067
1502 4537
1503 4547
1504 5276
1505 5662

/GENERATE PATTERN
/GET COUNTERS THIS DRIVE
/WRITE
/REWIND
/DONE ALL DRIVES
/NO
/GET COUNTERS THIS DRIVE

/READ
/DONE ALL DRIVES?
/NO
/YES, EXIT

```

1506 0000 /WRITE 1 RLS
1507 7200 /BACKSPACE, READ, CHANGE IVES
1510 1115 /TEST4, 0
1511 3033 CLA
1512 1122 TAD K0100
1513 3032 DCA EXITMO
1514 4552 TAD K0400
1515 4551 DCA RECSYS
1516 4545 JMS I XCLRAL
1517 4542 JMS I XRSFOV
1520 7200 JMS I XGENPT
1521 1072 CLA
1522 7440 TAD WRTEOT
1523 5330 SZA
1524 4540 JMP I XWRIT
1525 4536 JMS I XGOBKW
1526 4537 JMS I XRDIT
1527 4544 JMS I XSVCTR
1530 4547 JMS I XCHGOV
1531 5316 JMP TEST4+10
1532 4550 JMS I XALEOT
1533 5315 JMP TEST4+7
1534 5706 JMP I TEST4

/IS THIS DRIVE AT EOT?
/YES
/WRITE
/BACK UP
/READ
/SAVE COUNTERS
/ANY MORE DRIVES?
/YES
/TEST FOR ALL DRIVES AT EOT
/NO
/YES, EXIT

```

```

1535 0000 /WRITE 1 RECORD, BACKSPACE, READ
1536 7200 /THEN CHANGE DRIVES
1537 1117 /TEST5, 0
1540 3033 CLA
1541 1122 TAD K0200
1542 3032 DCA EXITMO
1543 4552 TAD K0400
1544 4551 DCA RECSYS
1545 4542 JMS I XCLRAL
1546 4545 JMS I XRSFOV
1547 7200 JMS I XGENPT
1550 1072 CLA
1551 7440 TAD WRTEOT
1552 5330 SZA
1553 4540 JMP I XWRIT
1554 4536 JMS I XGOBKW
1555 4537 JMS I XRDIT
1556 4544 JMS I XSVCTR
1557 4547 JMS I XCHGOV
1560 5345 JMP TEST5+10
1561 4550 JMS I XALEOT
1562 5344 JMP TEST5+7
1563 5735 JMP I TEST5

/IS THIS DRIVE AT EOT?
/YES
/WRITE
/BACK UP
/READ
/SAVE COUNTERS
/DONE ALL DRIVES?
/NO
/ALL DRIVES AT EOT?
/NO
/YES, EXIT

```

```

/WRITE PASS, HEAD RECOVER
/CLEAR ALL COUNTERS
/GENERATE PATIERN

```


1600 *1600

/WRITE 1 RLS, CHANGE DRIVES, REPEAT
/BACKSPACE, CHANGE DRIVES, REPEAT
/READ, CHANGE DRIVES, REPEAT

TEST6, 0
CLA K0100
TAD EXITMO
DCA K2400
DCA RECSYS
JMS I XCLRAL
JMS I XRSFDV
JMS I XGENPT
JMS I XMVCTR
CLA
TAD WRTEOT
SZA
JMP :+3
JMS I XWRIT
JMS I XSVCTR
JMS I XCHGDV
JMP :-10
JMS I XMVCTR
CLA
TAD RDEOT
SNA
JMS I XGOBKW
JMS I XSVCTR
JMS I XCHGDV
JMP :-7
JMS I XMVCTR
CLA
TAD RDEOT
SNA
JMS I XRDIT
JMS I XSVCTR
JMS I XCHGDV
JMP :-7
JMS I XALEOT
JMP TEST6+7
JMP I TEST6

/EXIT AT END OF RLS
/WRITE PASS READ RECOVER
/CLEAR ALL COUNTERS
/GENERATE PATTERN
/GET COUNTERS
/AT EOT? /YES
/WRITE COUNTERS
/SAVE COUNTERS
/DONE ALL DRIVES /NO
/GET COUNTERS AGAIN (FOR BKSP)
/READ TO EOT IS SKP
/BACK UP
/SAVE POSITION
/DONE ALL DRIVES /NO
/GET COUNTERS AGAIN (FOR READ)
/READ TO EOT
/NO, READ
/SAVE COUNTERS
/DONE ALL DRIVES /NO
/ALL DRIVES AT EOT?
/NO
/YES, EXIT

1600 0000
1601 7200
1602 1115
1603 3033
1604 1122
1605 3032
1606 4552
1607 4531
1610 4542
1611 4545
1612 7200
1613 1072
1614 7440
1615 5220
1616 4540
1617 4544
1620 4547
1621 5211
1622 4545
1623 7200
1624 1103
1625 7450
1626 4536
1627 4544
1630 4547
1631 5222
1632 4545
1633 7200
1634 1103
1635 7450
1636 4537
1637 4544
1640 4547
1641 5232
1642 4550
1643 5207
1644 5600

```

1645 0000 /WRITE 1 RECORD, CHANGE DRIVES, REPEAT
1646 7200 /BACKSPACE, CHANDRIVES, REPEAT
1647 1117 /READ, CHANGE DRIVES, REPEAT
1650 3033 TEST7, 0
1651 1122 CLA
1652 3032 TAD K0200
1653 4552 DCA EXITMO
1654 4531 DCA RECYSYS
1655 4542 JMS I XCLRAL
1656 4545 JMS I XRSFDV
1657 7200 JMS I XGENPT
1660 1072 JMS I XMVCTR
1661 7440 CLA
1662 5265 TAD WRTEOT
1663 4540 SZA
1664 4544 JMP :+3
1665 4547 JMS I XWRIT
1666 5256 JMS I XSVCTR
1667 4545 JMS I XCHGDV
1670 7200 JMP :+10
1671 1103 JMS I XMVCTR
1672 7450 CLA
1673 4536 TAD RDEOT
1674 4544 SNA I XG08KH
1675 4547 JMS I XSVCTR
1676 5267 JMS I XCHGDV
1677 4545 JMP :+7
1700 7200 JMS I XMVCTR
1701 1103 CLA
1702 7450 TAD RDEOT
1703 4537 SNA I XRDIT
1704 4544 JMS I XSVCTR
1705 4547 JMS I XCHGDV
1706 5277 JMP :+7
1707 4550 JMS I XALEOT
1710 5254 JMP TEST7+7
1711 5645 JMP I TEST7

```

/EXIT AT EVERY RECORD

/WRITE PASS READ RECOVER
/CLEAR ALL COUNTERS

/GENERATE PATTERN
/GET COUNTERS

/AT EOT? /YES
/WRITE /SAVE COUNTERS
/DONE ALL DRIVES /NO
/GET COUNTERS AGAIN (FOR BKSP)

/READ TO EOT IS SKP
/BACK UP /SAVE POSITION
/DONE ALL DRIVES /NO
/GET COUNTERS AGAIN (FOR READ)

/READ TO EOT
/NO, READ /SAVE COUNTERS
/DONE ALL DRIVES /NO
/ALL DRIVES AT EOT?
/NO /YES, EXIT

```

1712 0000
1713 6201
1714 1340
1715 3735
1716 1341
1717 3736
1720 7001
1721 3737
1722 6224
1723 1313
1724 3325
1725 6201
1726 1342
1727 3001
1730 7430
1731 5712
1732 4355
1733 1743
1734 5712
1735 0001
1736 0002
1737 0003
1740 6244
1741 5403
1742 5402

```

```

LBSET, 0
CDF 00
TAD Z1
DCA I P1
TAD Z2
DCA I P2
IAC
DCA I P3
RIF
TAD LBSET+1
DCA ,+1
CDF/PROG FLD,
TAD Z3
DCA 1
SZL
JMP I LBSET
JMS I XTEXT
TEXTLB
JMP I LBSET
1
2
3
RMF
5403
5402

```

```

/SET UP INTERRUPT LINKS.
/DF=0.
/RMF IO LOC1, FLD 0,
/JMP I 3 TO LOC 2, FLD 0,
/1 TO LOC 3, FLD 0;
/CHANGE TO PROG FLD,
/JMP I 2 TO LOC 1, PF;
/TITLE TEXT,
/EXIT,

```

```

1743 0000
1744 4561
1745 4562
1746 2415
1747 7005
1750 4004
1751 0124
1752 0140
1753 2205
1754 1411
1755 0102
1756 1114
1757 1124
1760 3140
1761 7140
1762 2422
1763 1300
1764 4561
1765 4561
1766 4777
1767 5743

```

```

TEXTLB, 0
JMS I XTIN
JMS I XTSR
2415
7005
4004
0124
0140
2205
1411
0102
1114
1124
3140
7140
2422
1300
JMS I XTIN
JMS I XTIN
JMS I (LBTEXT
JMP I TEXTLB

```

```

/ATM&E DATA RELIABILITY 9 TRK

```

1777 0536
2000

*2000

/WRITE 1 RECORD, CHANGE DRIVES
/REPEAT UNTIL END OF RLS
/BACKSPACE, CHANGE DRIVES
/READ 1 RECORD, CHANGE DRIVES
/REPEAT UNTIL END OF RLS
TEST10: 0

2000	0000	CLA	
2001	7200	TAD MOOBIT	/GET WRITE MODE
2002	1030	SZA CLA	/IS MODE NONSTOP OR START STOP
2003	7640	JMP .+3	
2004	5207	TAD K0100	/NON STOP
2005	1115	SKP	
2006	7410	TAD K0200	/START STOP
2007	1117	DCA EXITMO	
2010	3033	TAD K0400	
2011	1122	DCA RECSYS	/WRITE PASS, READ RECOVER
2012	3032	JMS I XCLRAL	/CLEAR COUNTERS
2013	4552	JMS I XGENPT	/GENERATE PATTERN
2014	4542	JMS I X3FOV	
2015	4551	JMS I XSVCTR	
2016	4545	TAD RECORD	/RESET ALL DRIVES?
2017	1066	DCA WRRECR	/NO, SAVE LAS RCR NEXT DRIVE
2020	3074	TAD RECORD+1	
2021	1067	DCA WRRECR+1	
2022	3075	JMS I XSVCTR	
2023	4544	JMS I XCHGDV	
2024	4547	JMP .-7	
2025	5216	CLA CMA	
2026	7240		

TS10L2:

2027 3044
2030 4551
2031 4545
2032 7200
2033 1072
2034 7640
2035 5251
2036 1074
2037 3045
2040 1075
2041 3046
2042 4540
2043 7200
2044 1045
2045 3074
2046 1046
2047 3075
2050 4544

TS10L1:

2027	3044	DCA EOSFLG	
2030	4551	JMS I XRSFOV	/SET TO 0 AT END OF RLS
2031	4545	JMS I XMVCTR	
2032	7200	CLA	
2033	1072	TAD WRTEOT	
2034	7640	SZA CLA	/HAS DRIVE WRITTEN TO EOT
2035	5251	JMP TS10LS	/YES, DONT WRITE ANYMORE
2036	1074	TAD WRRECR	
2037	3045	DCA SVRECR	/SAVE START OF RLS
2040	1075	TAD WRRECR+1	
2041	3046	DCA SVRECR+1	
2042	4540	JMS I XWRIT	/WRITE
2043	7200	CLA	
2044	1045	TAD SVRECR	
2045	3074	DCA WRRECR	
2046	1046	TAD SVRECR+1	
2047	3075	DCA WRRECR+1	
2050	4544	JMS I XSVCTR	/SAVE COUNTERS FOR THIS DRIVE

```

2051 4547 TS10LS, JMS I XCHGOV /ANY DRIVES LEFT?
2052 5231 JMP TS10L1+1 /YES, WRITE ON IT
2053 7200 CLA /DRIVES AT END OF RLS
2054 1044 TAD EOSFLG /YES, BACK UP
2055 7450 SNA /MOVE COUNTERS
2056 5265 JMP .+7
2057 4545 JMS I XHVCTR

2060 1072 TAD WRTEOT /GET WRITTEN EOT FLAG
2061 7450 SNA /DRIVE AT EOT
2062 5230 JMP TS10L1 /NO, AT LEAST ONE ISN'T
2063 4547 JMS I XCHGOV /ALL DRIVES AT EOT
2064 5257 JMP .-5 /NO
2065 4551 JMS I XRSFDV /START 1ST DRIVE AGAIN
2066 4545 JMS I XHVCTR /GET COUNTERS
2067 1103 TAD RDEOT
2070 7450 SNA /DRIVE READ TO EOT
2071 4536 JMS I XG0BKW /NO, BACK UP
2072 4544 JMS I XSVCTR
2073 4547 JMS I XCHGOV /ALL DRIVES BACKED UP?
2074 5265 JMP .-7 /NO
2075 4551 JMS I XRSFDV /START 1ST DRIVE AGAIN
2076 4545 JMS I XHVCTR /GET DRIVE COUNTERS
2077 1103 TAD RDEOT /READ TO EOT YET?
2100 7640 SZA CLA /YES, BYPASS READ
2101 5341 JMP T10RND
2102 1070 TAD LASRCR
2103 7041 CIA
2104 1066 TAD RECORD
2105 7640 SZA CLA
2106 5314 JMP .+6
2107 1071 TAD LASRCR+1
2110 7041 CIA
2111 1067 TAD RECORD+1
2112 7650 SNA CLA /READ TO LAST RECORD WRITTEN?
2113 5341 JMP T10RND /YES
2114 1070 TAD LASRCR /SAVE LAST RECORD
2115 3045 DCA SVRECR
2116 1071 TAD LASRCR+1
2117 3046 DCA SVRECR+1
2120 1031 TAD READMO
2121 7650 SNA CLA /GET READ MODE
2122 5332 JMP .+10 /NON STOP OR START STOP?
2123 1066 TAD RECORD /NON STOP
2124 3070 DCA LASRCR /START STOP
2125 1067 TAD RECORD+1
2126 3071 DCA LASRCR+1
2127 2070 ISZ LASRCR
2130 7410 SKP
2131 2071 ISZ LASRCR+1

```

2132 4537
2133 7200
2134 1045
2135 3070
2136 1046
2137 3071
2140 4544
2141 4547
2142 5276
2143 4545
2144 7200
2145 1070
2146 7041
2147 1066
2150 7440
2151 5357
2152 1071
2153 7041
2154 1067
2155 7050
2156 5275
2157 4547
2160 5343
2161 4550
2162 5214
2163 5600

JMS I XRDIT
CLA
TAD SVRECR
DCA LASRCR
TAD SVRECR+1
DCA LASRCR+1
JMS I XSVCTR
JMS I XCHGOV
JMP T10RDP
JMS I XMVCTR
CLA
TAD LASRCR
CIA
TAD RECORD
SEA
JMP .+6
TAD LASRCR+1
CIA
TAD RECORD+1
SNA CLA
JMP T10RDP-1
JMS I XCHGOV
JMP T10RND+2
JMS I XALEOT
JMP TS10L2
JMP I TEST10

/READ

/RESTORE LAST WRITTEN

/SAVE COUNTERS
/DONE ALL DRIVES
/NO
/GET CURRENT COUNTERS

/AT

/NOT AT EDS, READ AGAIN
/TEST FOR ALL READ TO EOT
/NO
/ALL AT EOT?
/NO
/YES, EXIT

T10RND,

2200

*2200 /READ PASS ONLY /RANDOM PATTERN SELECTION IS INVALID TEST11, 0

2201 JMS I XCLRAL /CLEAR COUNTERS
2202 TAD K0400
2203 DCA RECSYS
2204 TAD K0200
2205 DCA EXITMO
2206 CLA CMA
2207 DCA T11FLG
2210 JMS I XWRIT
2211 CLA
2212 TAD EOSFLG
2213 SZA
2214 JMS I XTSINC
2215 CLA
2216 TAD RECORD
2217 DCA T11INC
2220 TAD RECORD+1
2221 DCA T11INC+1
2222 DCA RECORD
2223 TAD PATNUM
2224 CIA
2225 TAD K0007
2226 SZA
2227 JMS I XGENPT
2230 CLA CMA
2231 DCA EOSFLG
2232 JMS I XRSFDV
2233 JMS I XMVCTR
2234 TAD RDEOT
2235 SZA
2236 JMP ,+10
2237 TAD RECORD
2240 TAD T11INC
2241 DCA LASRCR
2242 TAD RECORD+1
2243 TAD T11INC+1
2244 DCA LASRCR+1
2245 JMS I XSVCTR
2246 JMS I XCHGDV
2247 JMP T11LPI+3
2250 JMS I XRSFDV
2251 JMS I XMVCTR
2252 TAD RDEOT
2253 SZA
2254 JMP T11END
2255 TAD LASRCR
2256 DCA SVRECR
2257 TAD LASRCR+1
2260 DCA SVRECR+1

/WRITE EXIT EVERY RECORD
/SET TEST11 WRITE EXIT
/SET UP RECORD LENGTHS
/GET EOSFLAG
/INCREMENT TO END?
/NO
/SAVE SEQUENCE LENGTH

/IF RANDOM PATTERN DON'T GENERATE
/GENERATE PATTERN

/SET START OF SEQUENCE
/GET COUNTERS FOR THIS DRIVE
/IS THIS DRIVE AT EOT
/YES
/NO

/CURRENT RECORD + SEQUENCE LENGTH TO READ EXIT

/SAVE COUNTERS FOR THIS DRIV
/DONE ALL DRIVES
/NO

/THIS DRIVE AT EOT?
/YES, DONT READ

/SAVE END OF RLS RECORDS

T11ROL,

T11LPI,

2261 1031 TAD READMO /NONSTOP OR START STOP?
 2262 7650 SNA CLA /NON STOP
 2263 5273 JMP .+10
 2264 1066 TAD RECORD
 2265 3070 DCA LASRCR
 2266 1067 TAD RECORD+1
 2267 3071 DCA LASRCR+1
 2270 2070 ISZ LASRCR
 2271 7410 SKP
 2272 2071 ISZ LASRCR+1
 2273 4537 JMS I XRDIT
 2274 7200 CLA
 2275 1045 TAD SVRECR
 2276 3070 DCA LASRCR
 2277 1046 TAD SVRECR+1
 2300 3071 DCA LASRCR+1
 2301 4544 JMS I XSVCTR
 2302 4547 JMS I XCHGDV
 2303 5251 JMP T11RDL
 2304 4550 JMS I XALEOT
 2305 7410 SKP
 2306 5600 JMP I TEST11

T11END,

2307 4551 JMS I XRSFOV
 2310 4545 JMS I XMVCTR
 2311 7200 CLA
 2312 1066 TAD RECORD
 2313 7041 CIA
 2314 1070 TAD LASRCR
 2315 7640 SZA CLA
 2316 5324 JMP .+6
 2317 1067 TAD RECORD+1
 2320 7041 CIA
 2321 1071 TAD LASRCR+1
 2322 7650 SNA CLA
 2323 3044 DCA EOSFLG
 2324 4547 JMS I XCHGDV
 2325 5310 JMP T11LP2
 2326 7200 CLA
 2327 1044 TAD EOSFLG
 2330 7440 SZA
 2331 5251 JMP T11RDL
 2332 4550 JMS I XALEOT
 2333 5230 JMP T11LP1
 2334 5600 JMP I TEST11
 2335 0000
 2336 0000
 2337 0000

T11LP2,

T11INC, 0
T11FLG, 0

/GET COUNTERS AGAIN

/AT END OF RLS?
/YES
/CHECKED ALL DRIVES?

/AT END OF RLS?
/NO
/TEST EOS DUMP SWITCH

/DUMP ERROR COUNTERS ON ALL DRIVES

2340	4544
2341	4344
2342	7402
2343	5342
2344	0000
2345	4551
2346	4545
2347	1337
2350	7450
2351	5366
2352	4555
2353	6765
2354	4555
2355	7011
2356	7610
2357	4612
2360	4757
2361	1032
2362	7450
2363	5373
2364	4555
2365	7000
2366	4555
2367	7011
2370	7610
2371	4674
2372	4771
2373	4547
2374	5346
2375	5744

```

ERRDMP, JMS I XSVCTR
        JMS CTRDMP
        HLI
        JMP , -1
CTRDMP, 0
        JMS I XRSFDV
        JMS I XMVCTRS
        TAD T11FLG
        SNA
        JMP COMEND-5
        JMS I XTEXT
        TEXT34
        JMS I XTEXT
        TEXT36
        CLA SKP
        WRDMP
        JMS I , -1
        TAD RECSYS
        SNA
        JMP COMEND
        JMS I XTEXT
        TEXT35
        JMS I XTEXT
        TEXT36
        CLA SKP
        READMP
        JMS I , -1
        JMS I XCHGOV
        JMP CTRDMP+2
        JMP I CTRDMP
  
```

PAUSE

2400 *2400
 /IMSE DATA RELIABILITY TEST TAPE 4 (9 TRACK)
 /GET SWS AND START TEST ROUTINE
 /1 DRV OPERATION ONLY

```

2400 STRTES, STL
2401 JMS I XLBSET
2402 LAS
2403 AND KX7000
2404 TAD K0303
2405 DCA DRV0EN
2406 RIF
2407 TAD DRV0EN
2410 DCA DRV0EN
2411 JMS I XRWIND
2412 LAS
2413 DCA PASSWS
2414 LAS
2415 AND K0017
2416 DCA PAINUM
2417 DCA PARBT1
2420 HLT
2421 LAS
2422 DCA PASSWS+1
2423 JMS I XCLRTD
2424 DCA SWTEST
2425 HLT
2426 JMS I XGENPT
2427 JMS I XWRIT
2430 TAD RECSYS
2431 SNA CLA
2432 JMP ,+3
2433 JMS I XGOBKH
2434 JMS I XRDIT
2435 RMSR
2436 AND K0010
2437 SNA CLA
2440 JMP STR1
2441 HLT
2442 JMP STRTES+1
2443 KX7000, 7000

                /SET UP INTERRUPT SERVICE,
                /GET FIRST WD SWS,
                /MASK DRV NUMBER

                /REWIND
                /GET SWS AGAIN
                /FOR FIRST CONTROL WRD

                /PATTERN NUMBER TO
                /GENERATE FIRST PATTERN
                /PAR BIT IS IN PAINUM
                /WAIT FOR 2ND SW WORD
                /GET IT
                /SAVE FOR EXECUTE
                /CLR ERROR TABLES
                /INDICATE SWITCH TEST
                /WAIT CLEAR SWS
                /GENERATE PATTERN
                /DO WRITE OPERATION

                /READ PASS SELECTED
                /NO
                /MOVE BKWD TO FRST WRT
                /MAKE READ PASS
                /GET STATUS

                /AT EOT
                /NO MAKE NEXT WRT PASS
                /HALT END OF TEST
                /RESTART FIRST WORD
    
```

```

2444 5244 /SET UP WRITE SEQUENCE
2445 7200 /GET INFO FROM JMS+1 AND JMS+2
2446 1066 WRTSEQ, JMP ,
2447 7640 TAD RECORD
2450 5324 SZA CLA /DOING RECORD 0
2451 1067 JMP NOINCR /NO
2452 7640 TAD RECORD+1
2453 5324 SZA CLA /AK FLAG * 0
2454 1043 JMP NOINCR /YES NOT BLK 0
2455 7640 TAD SWTEST
2456 5270 SZA CLA /TEST SWS
                JMP NOTSWS /NO
/ENTER HERE IF PARAMETERS WERE SUPPLIED THRU THE AC SWITCHES
2457 7410 SKP
PARAMS
JMS I 1
TAD PASSWS /INITIALIZE
AND K0400
DCA RECSYS /READ PASS SELECT SWITCH
TAD PASSWS+1
AND K0300
DCA EXITMO /WRITE SEQUENCE EXIT MODE
/ENTER HERE IF PARAMETERS WERE SUPPLIED THRU THE KEYBOARD
NOTSWS, TAD RLTR0L /GET RECORD LENGTH BITS
AND K0020
SZA CLA /MIN LENTH STRY IS SKP
TAD MAXLEN /MAX LENGTH SELECTED
SNA /MIN LENGTH SELECTED
TAD MINLEN
CMA IAC
DCA STRLEN
DCA BLKING /CLR LENGTH INCREMENTER
TAD RLTR0L
AND K0040
SNA CLA /CHNGING LENGTH
JMP NOINCR-2 /NO
TAD DRVDEN /DENSITY
AND K0003
TAD TADING
DCA +1 /TO GET INCREMENTER
TAD INCTBL /GET DENSITY INC +
DCA BLKING

```

2513	1034	TAD STRLEN	/GET STARTING LENGTH
2514	1131	TAD MAXLEN	
2515	7650	SNA CLA	/START LEN = MAX
2516	5322	JMP NOINCR-2	/YES LV BLKING +
2517	1036	TAD BLKING	
2520	7041	CMA IAC	/MAKE INCR -
2521	3036	DCA BLKING	/SO LENGTH GETS LNGR
2522	1034	TAD STRLEN	
2523	3073	DCA WRTLEN	/SET UP FIRST LENGTH
2524	1025	DCA WRTLEN	/MOVE PARITY BIT INTO POSITION
2525	7106	NOINCR, CLL RTL	
2526	7006	RTL	
2527	7004	RAL	/PAR + DRV + DENSITY
2530	1026	TAD DRVOEN	
2531	3035	DCA COMAND	
2532	1066	TAD RECORD	
2533	3074	DCA WRRECR	/SAVE STARTING RECORD
2534	1067	TAD RECORD+1	
2535	3075	DCA WRRECR+1	
2536	2755	ISZ I X11FLG	
2537	7410	SKP I WRTSEQ	
2540	5644	JMP I WRTSEQ	
2541	7001	IAC	
2542	3755	DCA I X11FLG	
2543	1125	TAD K7770	
2544	3037	DCA WRPASS	/SET 8 PASS COUNTER
2545	5746	JMP I ,+1	/WRT SEQUENCE
2546	2600	STRTOP	
2547	1350	TAD INCTBL	
2550	0010	INCTBL, 10	
2551	0004	4	/24 CHARACTER 200 BPI
2552	0002	2	/12 CHARACTER 556 BPI
2553	0002	2	/6 CHARACTER 800 BPI
2554	5644	WSEQXT, JMP I WRTSEQ	/IN CASE OF SWITCH GOOF
2555	2337	X11FLG, T11FLG	
2556	0303	K0303, 303	

```

2600
2600 1035
2601 6722
2602 5201
2603 6725
2604 6705
2605 6724
2606 5205
2607 6725
2610 1035
2611 6705
2612 1073
2613 6701
2614 1130
2615 6703
2616 1232
2617 3002
2620 1364
2621 6706
2622 1024
2623 1126
2624 7650
2625 4313

2626 6001
2627 7200
2630 5631
2631 7050
2632 2633

2633 4566
2634 6714
2635 7710
2636 5324
2637 1037
2640 1107
2641 7650
2642 5233
2643 1037
2644 7410
2645 2065
2646 1245
2647 3250
2650 2056
2651 1125
2652 3037
2653 1030
2654 7440
2655 5263

*2600
/PERFORM WRITE SEQUENCE OPERATION
STRIP, TAD COMAND /LOAD CM WHEN CONTROL READY,
SKCB
JMP , -1
CLF /CLEAR STATUS,
LCMR /LOAD CM,
SKTR /WAIT FOR TRANSPORT,
JMP , -1

NONSTP, CLF
TAD COMAND
LCMR /LOAD WC,
TAD WRTLEN
LWCR /LOAD CA,
TAD WRBUF
LCAR
TAD XTSTST /SET UP INTERRUPT LINK,
DCA 2 /LOAD FR (WRITE) AND GO,
TAD K4100
LFGR
TAD PATNUM
TAD K7771
SNA CLA /PATTERN 7 RANDOM
JMS STRPAY /YES SEE IF REGEN VALID
/PROGRAM STAYS IN THIS LOOP UNTIL INTERRUPT
ION
CLA
JMP I , +1
CAMON /CA MONITOR

XTSTST, TS1STP
/AT PROG INT COMES TO TSTSTP

TSTSTP, JMS I XLBINT
RMSR /READ STATUS
SPA CLA /EF = 1
JMP WRTERR /YES SEE IF EOT
TAD WRPASS
TAD K0010
SNA CLA /ERR REC PASS
JMP NSTSEL-3 /NO
TAD WRPASS
SKP
ISZ PERMBS /CONSTANT
TAD , -1 /ISZ PERMBS = WRITE PASS
DCA , +1 /TO +1 RECV1 TO RECV7
ISZ RECV1
TAD K7770
DCA WRPASS /RESET 8 PASS COUNTER
TAD MODBIT
SZA /AC = 0 IS NONSTOP
JMP STOPOP /START STOP SELECTED

```

```

2656 1037 NSTSEL, TAD WRPASS
2657 1107 TAD K0010
2660 7650 SNA CLA /ERROR PASS
2661 4541 JMS I XTSINC NO INCR BLOCK NUMBER
2662 5207 JMP NONSTP /GO AGAIN

2663 0117 STOPOP, AND K0200
2664 7640 SEA CLA /RANDOM STOP
2665 4273 JMS RANSTP /YES
2666 1037 TAD WRPASS
2667 1107 TAD K0010
2670 7650 SNA CLA /ERROR RECVR PASS
2671 4541 JMS I XTSINC /NO INCR BLOCK NUMBER
2672 5200 JMP STRTOP /GO AGAIN
/SELECTION IS RANDOM START STOP STALL
RANSTP, JMP
JMS I XRANUM /GET RANDOM NUMBER
AND K0177 /MASK 0 TO 127
CMA /MAKE #1 TO -128
DCA DELAY1 /SAVE IT
TAD K0004 /#4
TAD DELAY1 /# = RAN COUNT
SMA CLA /1 TO 4
JMP NSTSEL /IS GO NONSTOP
TAD K7443
DCA DELAY
ISZ DELAY /STALL 1 MILLISEC
JMP -1 /DONE ALL SELECTED
ISZ DELAY1 /NO
JMP -5 /EXIT RANDOM STALL
JMS I RANSTP /SEE IF APPROPRIATE TO REGENERATE RANDOM DATA
STRPAT, JMP
TAD RECSYS /READ PASS SELECTED
SEA CLA /YES DON'T REGEN
JMS I STRPAT
TAD WRPASS
TAD K0010
SNA CLA /ERROR PASS
JMS I XGENPT /NO REGENERATE PATTERN
JMP I STRPAT /FINISH WRITE OPERATION

```

```

2724 4563 /EF=1 DURING WRITE TEST EOT AND RECVR OPTION
2725 5763 WRTERR, JMS I XLEOT1
2726 1037 JMP I XENDTP /TYPE EOT INFO
2727 1107 TAD WRPASS
2730 7650 SNA CLA /FIRST ERROR PASS
2731 2055 ISZ WRCHEK /YES #1 WRT CHECK ERRS
2732 7604 LAS /TEST AC SW 2#1
2733 7006 RTL /TYPE ALL WRITE ERRORS
2734 7700 SMA CLA
2735 5345 JMP TESREC /NO
2736 4555 JMS I XTEXT /PRINT TEXT
2737 6200 TEXT1 /TYPE STANDARD DATA INFORMATION
2740 4554 JMS I XTYPDT
2741 4560 JMS I XTSP3
2742 1073 TAD WRTLEN
2743 7041 CIA
2744 4553 JMS I XDCPRT
2745 7604 LAS
2746 0122 AND K0400 /TEST AC SW 3#1
2747 7640 SZA CLA /STATISTICAL RECOVERY
2750 5765 JMP I XSTREC /YES TRY 7 MORE TIMES
2751 1032 TAD RECSYS
2752 7440 SZA /READ PASS SELECTED
2753 4766 JMS I XRCXRG /YES WRITE XIRG
2754 1125 TAD K7770
2755 3037 DCA WRPASS /RESET WRITE COUNT
2756 6714 RMSR
2757 0107 AND K0010
2760 7640 SZA CLA /EOT # 1
2761 5763 JMP I XENDTP /YES TYPE EOT INFO
2762 5253 JMP NSTSEL-3 /TEST STOP MODE
2763 4600 XENDTP, ENDTAP
2764 4100 K4100, 4100
2765 5275 XSTREC, STAREC
2766 3000 XRCXRG, XRGREC

```

3000

*3000
/WRITE RECOVERY UTILIZIN EXTENDED INTER RECORD GAP (XIRG)
/USED AFTER 7 REWRITES AFTER EACH WRITE ERROR
/IF STATISTICAL RECOVERY NOT SELECTED.
/USED ONLY IF READ PASS IS SELECTED
XRGREG, 0

3000	0000	CLA		
3001	7200	TAD K7774		
3002	1301	DCA WRPASS	/COUNT 4 REWRITES	
3003	3037	LAS		
3004	7604	RAL	/TEST AC SW1=1	
3005	7004	SPA CLA		
3006	7710	JMP XRGRCD		
3007	5246	JMS I XBACK1		
3010	4700	CLA		
3011	7200	TAD COMAND	/LOAD CM WHEN CONTROL READY,	
3012	1035	SKCB		
3013	6722	JMP .-1		
3014	5213	CLF		
3015	6725	LCMR		
3016	6705	SKTR		
3017	6724	JMP .+1		
3020	5217	CLF		
3021	6725	TAD COMAND		
3022	1035	LCMR		
3023	6705	TAD WRTLEN	/LOAD WC,	
3024	1073	LWCR	/LOAD CA,	
3025	6701	TAD WRBUF	/SET UP INTERRUPT,	
3026	1130	LCAR	/WRITE WITH XIRG,	
3027	6703	TAD XRG1		
3030	1240	DCA 2		
3031	3002	TAD K4500		
3032	1277	LFGR		
3033	6706	ION		
3034	6001	CLA		
3035	7200	JMP I .+1		
3036	5637	CAMON		
3037	7050	XXRG1, XRG1		
3040	3041	/RETURN HERE AFTER PROGRAM INTERRUPT		
		XRG1,	/SAVE STATUS,	
3041	4566	JMS I XLBINT		
3042	4565	JMS I XLBSAV		
3043	1052	TAD STATRD		


```

3044 7710 SPA CLA /HAVE EF?
3045 5251 JMP :+4 /YES
3046 1125 XRGRCO, TAD K7770
3047 3037 DCA WRPASS /RESET 7 COUNIER
3050 5600 JMP I XRGREC /EOT ONLY?
3051 4564 JMS I XLEOT2 /YES,
3052 5246 JMP XRGRCO /DONE 4 XIRG?
3053 2037 ISZ WRPASS /NO
3054 5204 JMP XRGREC+4 /TYPEOUT STATUS EVERY 4 XIRG
3055 4555 JMS I XTEXT /WRITE STATUS ERROR
3056 6200 TEXT1 /TYPE STANDARD DATA INFORMATION
3057 4554 JMS I XTYPDT
3060 4555 JMS I XTEXT /4TH EXTENDED RECORD GAP
3061 6442 TEXT14
3062 1052 TAD STATRD

```

```

3063 0107 AND K0010 /EOT=1
3064 7650 SNA CLA /NO
3065 5201 JMP XRGREC+1
3066 1026 TAD DRVDEN
3067 6725 CLF
3070 6705 LCMR
3071 1276 TAD K5100
3072 6706 LFGR
3073 4567 JMS I XLBWAT /WRITE EOF,
3074 4565 JMS I XLBSAV /WAIT DONE,
3075 5600 JMP I XRGREC /SAVE STATUS,
3076 5100 K5100,
3077 4500 K4500,
3100 4514 XBACK1,
3101 7774 K7774,

```

```

3102 0000 /SEE IF RECORD LENGTH SHOULD BE CHANGED
3103 2066 TESING, 0
3104 7410 ISZ RECORD
3105 2067 SKP RECORD+1
3106 7300 CLA CLL
3107 1036 TAD BLKING
3110 7450 SNA
3111 5342 JMP TES2K
3112 1073 TAD WRTLEN
3113 3073 DCA WRTLEN
3114 1073 TAD WRTLEN
3115 7500 SNA
3116 5323 JMP .+5
3117 1132 TAD MINLEN
3120 7700 SNA CLA
3121 5335 JMP RESETL
3122 5327 JMP CWCKO
3123 1131 TAD MAXLEN
3124 7001 IAC
3125 7710 SPA CLA
3126 5335 JMP RESETL
3127 1033 TAD EXITMO
3130 0117 AND K0200
3131 7450 SNA
3132 5702 JMP I TESING
3133 5734 JMP I .+1
3134 2554 WSEQXT
3135 1034 TAD STRLEN
3136 3073 DCA WRTLEN
3137 3044 DCA EOSFLG
3140 1033 TAD EXITMO
3141 5331 JMP RESETL-4
3142 7200 CLA
3143 1066 TAD RECORD
3144 0350 AND K377
3145 7650 SNA CLA
3146 5337 JMP RESETL+2
3147 5327 JMP RESETL-6
3150 0377 K377. PAUSE

```

```

/GET INCREMENTIER
/LENGTH CHANGING?
/NO, GET OUT
/YES, INC + RECORD LENGTH
/SAVE

```

```

/COUNT LESS THAN MINIMUM
/YES, RESET

```

```

/COUNT MORE THAN MAXIMUM
/YES,RESET

```

```

/EXIT AT EOT ONLY
/EXIT AT END OF EVERY RECORD

```

```

/RESET LENGTH TO CURRENT START
/CLEAR EOS FLAG

```

```

/GET NEXT RECORD NUMBER

```

```

/RECORD NOT AN INCREMENT OF 256
/MULT OF 256 CLEAR EOS FLAG

```

/TAPE 5 (9 TRACK)

*4200

/DATA RELIABILITY READ/COMPARE SEQUENCE
READIT, 0

4200
4201
4202
4203
4204
4205
4206
4207
4210
4211
4212
4213
4214
4215
4216
4217
4220
4221
4222
4223
4224
4225
4226
4227
4230
4231
4232
4233
4234
4235
4236
4237
4240
4241
4242
4243
4244
4245
4246
4247
4250
4251
4252
4253
4254

0000
7200
1066
7640
5207
1067
7640
5212
1034
3076
1127
3051
6722
5214
7200
1035
6725
6705
6724
5222
7200
6725
1035
6705
1076
6701
1130
6703
1244
3002
1335
6706
6001
7200
5643
7050
4245
4566
4565
1052
7510
5336
0107
7640
5763

CLA
TAD RECORD
SZA CLA
JMP .+3
TAD RECORD+1
SZA CLA
JMP .+3
TAD STRLEN
DCA READLN
TAD K7775
DCA ROPASS
RDSTPD, SKCB
JMP .-1
CLA
TAD COMAND
CLF
LCMR
SKTR
JMP .-1
READGO, CLA
CLF
TAD
LCMR
TAD READLN
LWCR
TAD WRBUF
LCAR
TAD XRDRET
DCA 2
TAD K3100
LFGR
ION
CLA
JMP I .+1
CAMON
XRDRET, RDRET
/AT PROGRAM INTERRUPT RETURN IS HERE
RDRET, JMS I XLBINT
JMS I XLBSAV
TAD STATRD
SPA
JMP RDERRO
AND K0010
SZA CLA
JMP I XRNDTP

/SET UP INITIAL READ LENGTH
/WAIT FOR CONTROL,
/LOAD CM,
/WAIT FOR TRANSPORT,
/LOAD WC,
/LOAD CA,
/SET UP INTERRUPT,
/READ/COMP = GO,
/CA MONITOR
/CHECK CAUSE OF INTERRUPT,
/SAVE STATUS,
/ANY ERRORS?
/YES
/HAVE EDT7
/YES, READ DUMP

```

4255 1031 RTSSTP, TAD READMO /GET READ MODE BITS
4256 7440 SZA /NON STOP?
4257 5275 JMP ROSTPC
4260 4543 JMS I XRDINC INCR FOR NEXT BLOCK
4261 7200 CLA
4262 1066 TAD RECORD
4263 7041 CMA IAC
4264 1070 TAD LASRCR
4265 7440 SZA
4266 5273 JMP .+5
4267 1067 TAD RECORD+1
4270 7041 CIA
4271 1071 TAD LASRCR+1
4272 7440 SZA
4273 5224 JMP READGO
4274 5600 RDEXIT, JMP I READIT

/
ROSTPC, AND K0020 /MASK READ RANDOM STOP
SZA RNRDRS /TEST FOR START STOP OR RANDOM
JMS I XRDINC /RANDOM
CLA RECORD /NORMAL START STOP
CMA IAC
TAD LASRCR
SZA
JMP .+5
TAD RECORD+1
CIA
TAD LASRCR+1
SZA
JMP ROSTPD /GO AGAIN
JMP I READIT /GO AGAIN
/RANDOM READ START STOP
RNRDRS, 0

JMS I XCRANUM /GET RANDOM NUMBER
AND K0177 /MASK 0 TO 127
CMA /MAKE =1 TO =128
DCA DELAY1 /TO COUNT MILLISEC
TAD DELAY1
TAD K0004
SMA CLA
JMP RTSSTP+3
TAD K7443
DCA DELAY
ISZ DELAY
JMP .-1
ISZ DELAY1
JMP .-5
JMP I RNRDRS

/
K3100, 3100

```

/MAGTAP STATUS INDICATES SOME ERROR

4336	4564	JMS I	XLEOT2	/EOT?
4337	5763	JMP I	XRNDTP	/YES
4340	7604	LAS		
4341	0117	AND	K0200	/PRINT IMMEDIATE?
4342	7650	SNA CLA		
4343	5777	JMP I	(RDOERR	/NO
4344	1052	TAD	STATRD	/YES.
4345	7112	CLL RTR		
4346	7620	SNL CLA		
4347	5353	JMP	.+4	
4350	4555	JMS I	XTEXT	/R/C ERROR, PRINT DATA ERROR
4351	6500	TEXT16		
4352	5355	JMP	.+3	
4353	4555	JMS I	XTEXT	/NO R/C ERROR, PRINT STATUS ERROR
4354	6460	TEXT15		
4355	4554	JMS I	XTYPDT	/STANDARD STUFF
4356	4560	JMS I	XTSP3	
4357	1076	TAD	READLN	/THEN RECORD LENGTH
4360	7041	CIA		
4361	4553	JMS I	XDCPRT	
4362	5777	JMP I	(RDOERR	
4363	4664	XRNDTP,	RNDTAP	

```

4377 4400
      *4400
4400 1104 RDBERR, TAD K0003 /1ST PASS?
4401 1051 TAD RDPASS
4402 7640 SZA CLA
4403 5217 JMP I,+14 /NO, DO NOT UPDATE ERROR COUNTERS,
4404 1052 TAD STATRD /YES, R/C?
4405 7112 CLL RTR
4406 7420 SNL
4407 5216 JMP I,+7 /NO, NOT A DATA ERROR,
4410 0113 AND K0040 /YES, PARITY ERROR?
4411 7650 SNA CLA
4412 5215 JMP I,+3 /YES, UPDATE DATA ERROR,
4413 2100 ISZ CMPERR
4414 7410 SKP
4415 2077 ISZ RNSTA /NO, UPDATE DATA NO STATUS,
4416 2102 ISZ RDERRS /ALWAYS UPDATE READ ERROR ON 1ST PASS
4417 7200 CLA
4420 4543 JMS I XRDINC
4421 7604 LAS
4422 0115 AND K0100 /YES AC SW 5 = 1
4423 7450 SNA RPNAS3 /DELETE ERROR RECOVERY?
4424 5251 JMP RPNAS3
4425 7200 CLA /RESET PASS COUNTER
4426 1127 TAD K7775
4427 3051 DCA RDPASS
4430 1052 TAD STATRD
4431 0107 AND K0010 /IS EOT=1
4432 7440 SZA /YES, PRINT EOT
4433 5660 JMP I XRDTP2
4434 1066 TAD RECORD
4435 7041 CMA IAC
4436 1070 TAD LASRCR
4437 7640 SZA CLA
4440 5246 JMP I,+6 /TAD RECORD+1
4441 1067 TAD RECORD+1
4442 7041 CIA
4443 1071 TAD LASRCR+1
4444 7450 SNA
4445 5647 JMP I,+2
4446 5650 JMP I,+2
4447 4274 RDEXIT
4450 4214 RDSTPD
/SEE IF ALL RE-READS HAVE BEEN MADE
RPNAS3, ISZ RDPASS /DONE ALL RE-HEADS?
JMP I,+3 /NO
ISZ NRREAD /+1 NON REC READ
JMP RPNAS3 /DO NEXT RECORD
JMS I XSTBAK /PUT POINTERS BACK THIS ONE
JMS BACK1 /BACK UP
JMP I RPNAS3-1 /GO AGAIN
XRDTP2, RNDTAP+1
XSTBAK, SETBAK

```

```

4462 0000 /SET UP POINTERS FOR NEXT RECORD
4463 7200 RDINCR, 0
4464 1076 CLA
4465 3332 TAD READLN
4466 2066 DCA SETBAK+2
4467 7410 ISZ RECORD /+1 TO NEXT RECORD
4470 2067 SKP RECORD+1
4471 1036 TAD BLKING
4472 7450 SNA /GET RECORD INCREMENT
4473 5662 JMP I RDINCR /IS LENGTH CHANGING?
                                /NO, EXIT
                                /LENGTH + OR * INCR
/RECORD LENGTH IS CHANGING, COUNT IT
TAD READLN /SAVE LAST RECORD LENGTH
DCA READLN
TAD READLN
SMA
JMP +5
TAD MINLEN /IS LENGTH LESS THAN MIN
SMA CLA /YES, RESET
JMP RESTRL
JMP I RDINCR /IS LENGTH MORE THAN MAX
TAD MAXLEN
IAC
SMA CLA /NO
JMP I RDINCR /YES, RESET LENGTH
RESTRL, DCA READLN
JMP I RDINCR

/BACKSPACE 1 RECORD
/OR GET BACK IN SYNC FOR NONSTOP RE-READ
BACKL, 0
SKTR /WAIT FOR TRANSPORT,
JMP -1
CLF
CLA CMA /SET UP WC TO *1,
LWCR /LOAD CM,
TAD DRVDEN
LCMR /SPC REV 1,
TAD K7100
LFGR /WAIT DONE,
JMS I XLBWAT
JMP I BACKL
5714

```

/SET RECORD POINTERS BACK
SETBAK, 0

4530 0000
4531 7610
4532 0000
4533 1332
4534 3076
4535 7240
4536 1066
4537 3066
4540 1066
4541 7001
4542 7640
4543 5730
4544 1067
4545 7440
4546 5351
4547 3066
4550 5730
4551 1355
4552 3067
4553 5730
4554 7100
4555 7777

CLA SKP

0

TAD -1

DCA READLN

CLA CMA

TAD RECORD

DCA RECORD

TAD RECORD

IAC

SZA CLA

JMP I SETBAK

TAD RECORD+1

SZA

JMP +3

DCA RECORD

JMP I SETBAK

TAD K7777

DCA RECORD+1

JMP I SETBAK

K7100, 7100

K7777, 7777

/GET LAST RECORD LENGTH

/-1 TO RECORD COUNT

4600
 *4600
 ENDIAP,
 4600 ISZ RECORD /WRITE PASS IS AT EOT
 4601 SKP RECORD+1
 4602 ISZ RECORD+1
 4603 JMS I XTEXT
 4604 TEXT2
 4605 JMS WRDMP
 4606 CLA CMA
 4607 DCA WRTEOT
 4610 JMP I,+1
 4611 WSEQXT
 4612 WRDMP,
 4613 /WRITE DUMP
 4614 CLA CLL
 4615 TAD MODBIT
 4616 RTR
 4617 RTR
 4620 JMS I XCMDMP /COMMON DUMP FOR READ AND WRITE
 4621 JMS I XTEXT
 4622 TEXT10
 4623 TAD WRCHEK
 4624 JMS I XDCPRT
 4625 TAD K7771
 4626 DCA 10
 4627 SKP
 4630 RECV1+1
 4631 TAD ,+1
 4632 DCA 11
 4633 DCA 12
 4634 ISZ 12
 4635 TAD I 11
 4636 DCA 13
 4637 TAD 13
 4640 SNA TYRALL
 4641 JMP TYRALL
 4642 JMS I XTIN
 4643 JMS I XTEXT
 4644 TEXT12
 4645 TAD 12
 4646 JMS I XOC11
 4647 JMS I XTSP3
 4650 TAD 13
 4651 JMS I XDCPRT
 4652 ISZ 12
 4653 ISZ 10
 4654 JMP TYRECV
 4655 TAD PERMBS
 4656 SNA
 4657 JMP ,+5
 4660 JMS I XTEXT
 4661 TEXT13
 4662 TAD PERMBS
 4663 JMS I XDCPRT
 4664 JMP I WRDMP

/READ PASS IS AT END OF TAPE
RNDIAP, JMS I XRDINC

4664 4543
4665 4553
4666 6517
4667 4555
4670 6221
4671 4274
4672 5673
4673 4274

JMS I XTEXT
TEXT20
JMS I XTEXT
TEXT2
JMS READMP
JMP I ,+1
RDEXIT

/READ DUMP
READMP, 3
TAD READMO
CLL RAR
JMS I XCMDMP,

/COMMON DUMP FOR READ AND WRITE

4700 4555
4701 6530
4702 1102
4703 4553
4704 4555
4705 6000
4706 1101
4707 4553
4710 4555
4711 6615
4712 1100
4713 4553
4714 4555
4715 6630
4716 1077
4717 4553
4720 7240
4721 3103
4722 5674
4723 5000

JMS I XTEXT
TEXT21
TAD RDERRS
JMS I XDCPRT
JMS I XTEXT
TEXT22
TAD NRHEAD
JMS I XDCPRT
JMS I XTEXT
TEXT23
TAD CMPERR
JMS I XDCPRT
JMS I XTEXT
TEXT24
TAD RNOSTA
JMS I XDCPRT
CLA CMA
DCA RDEOT
JMP I READMP

/NON RECOVERED =

/DATA ERRORS =

/DATA NO STAT =

XCMDMP, COMDMP

5000

*5000
/COMMON DUMP FOR READ AND WRITE
COMDMP, 0

5001

5002

5003

5004

5005

5006

5007

5010

5011

5012

5013

5014

5015

5016

5017

5020

5021

5022

5023

5024

5025

5026

5027

5030

5031

5032

5033

5034

5035

5036

5037

5040

5041

5042

5043

5044

5045

5046

5047

5050

5051

CLL RTR

DCA DELAY

TAD DRVDEN

RTL

RTL

JMS I XOCT1

JMS I XTSP3

TAD PATNUM

JMS I XOCT1

JMS I XTSP3

TAD PARBT1

RTR

RAR

JMS I XOCT1

TAD DRVDEN

AND K003

TAD CDM1

JMS CDM4

TAD DELAY

TAD CDM2

JMS CDM4

TAD RECORD

JMS I XUDPRT

RECORD+1

TAD RLTR0L

RTR

RTR

AND K003

TAD CDM3

JMS CDM4

JMP I COMDMP

CDMP1,

CDMP2,

CDMP3,

CDMP4,

0

DCA .+1

0

DCA .+2

JMS I XTEXT

0

JMP I CDM4

/PRINT DRIVE NUMBER

/PRINT PATTERN NUMBER

/PRINT PARITY

/MODIFIED = TAD I (DENTYP, OR MODTYP, OR LTHBL)

/MODIFIED = APPROPRIATE TEXT - SEE BELOW

5052 6263
5053 6272
5054 6301
5055 6301
5056 6236
5057 6245
5060 6254
5061 6254
5062 6310
5063 6320
5064 6331
5065 6346

MODTYP, TEXT7
TEXT8
TEXT9
TEXT9
TEXT9
DENIYP, TEXT4
TEXT5
TEXT6
TEXT6
LTHIBL, TYPMIN
TYPMAX
TYPAV1
TYPAV2
PAUSE

/NON-STOP
/START=STOP
/RANDOM
/RANDOM
/TYPE 200 BPI
/TYPE 556 BPI
/TYPE 800 BPI
/TYPE 800 BPI
/TYPE MINIMUM LENGTH
/TYPE MAXIMUM LENGTH
/TYPE AVE 1 LENGTH
/TYPE AVE 2 LENGTH

/TM8E DATA RELIABILITY TEST - TAPE 6 (9 TRACK)

/CLEAR READ AND WRITE TABLES

CLRTBL, 0

5066 0000
5067 7610
5070 0054
5071 1270
5072 3010
5073 1124
5074 3011
5075 3410
5076 2011
5077 5275
5100 5666

CLA SKP
WRCHK=1
TAD :-1
DCA 10
TAD K7751
DCA 11
DCA I 10
ISZ 11
JMP :-2
JMP I CLRTBL

/TYPE COMMAND, STATUS, RECORD NUMBER

TYPOAT, 0

5101 0000
5102 6715
5103 4725
5104 4560
5105 6716
5106 4725
5107 4560
5110 6714
5111 4725
5112 4560
5113 6711
5114 4725
5115 4560
5116 6713
5117 4725
5120 4560
5121 1066
5122 4726
5123 0067
5124 5701

RCMR
JMS I XOCprt /PRINT COMMAND
JMS I XTSP3
RFSR
JMS I XOCprt /PRINT FS
JMS I XTSP3 /PRINT MS,
RMSR
JMS I XOCprt
JMS I XTSP3
RWCR
JMS I XOCprt
JMS I XTSP3
RCAR
JMS I XOCprt
JMS I XTSP3
TAD RECORD
JMS I XUDprt /PRINT RECORD NUMBER
RECORD+1
JMP I TYPOAT

XOCprt, OCIPRT
XUDprt, UDPRNT

5125 6011
5126 5200

5127 0000
5130 7200
5131 1066
5132 3070
5133 1067
5134 3071
5135 1074
5136 3066
5137 1075
5140 3067
5141 1066
5142 7640
5143 5346
5144 1067
5145 7640
5146 5351
5147 4534
5150 5727
5151 6722
5152 5351
5153 6725
5154 1070
5155 7041
5156 1066
5157 6701
5160 1035
5161 6705
5162 6724
5163 5362
5164 1370
5165 6706
5166 4567
5167 5727
5170 7100

/GO BACKWARD
GOBKWD: 0

CLA
TAD RECORD
DCA LASKCR
TAD RECORD+1
DCA LASKR+1
TAD WRRECR
DCA RECORD
TAD WRRECR+1
DCA RECORD+1
TAD RECORD
SZA CLA
JMP .+3
TAD RECORD+1
SZA CLA
JMP .+3
JMS I XRWIND
JMP I GOBKWD
SKGB
JMP .-1
CLF
TAD LASKR
CIA
TAD RECORD
LWCR
TAD COMAND
LCMR
SKTR
JMP .-1
TAD P7100
LFGR
JMS I XLBWAT
JMP I GOBKWD
P7100, 7100

/GET LAST RECORD
/SAVE LAST RECORD

/RESTORE TO FIRST

/BLOCK 0 FIRST
/NO, BACKSPACE
/YES, REWIND
/EXIT

/LOAD WC (USE DIFFERENCE FOR BACK SPACE,);
/LOAD CM WHEN CONTROL READY,
/WAIT FOR TRANSPORT,
/SPC REV,
/WAIT DONE;

/UNSIGN DECIMAL PRINT, DOUBLE PRECISION
/CALLING SEQUENCE: JMS UDPRNT /SUBROUTINE CALLED WITH AC=LOW ORDER WORD
/ HI ADDR /ADDRESS OF HIGH ORDER WORD
/ RETURN /RETURN WITH AC AND L CLEAR

```

5200 *5200
0000 UDPRNT, 0
3254 DCA UDLOW
1600 TAD I UDPRNT /PICK UP ADDRESS OF HIGH-ORDER WORD
3261 DCA UDGET
1661 TAD I UDGET
3253 DCA UDHIGH
1247 TAD UDLOOP
3252 DCA UDCNT
1250 TAD UDADDR
3262 DCA UDPTR
2200 ISZ UDPRNT
1662 TAD I UDPTR
2262 ISZ UDPTR
3255 DCA UDHSUB
1662 TAD I UDPTR
2262 ISZ UDPTR
3256 DCA UDLSUB
7100 CLL
1256 TAD UDLSUB
1254 TAD UDLOW
3260 DCA UDTEML
7004 RAL
1255 TAD UDHSUB
1253 TAD UDHIGH
7420 SNL
5237 JMP UDOUT
2257 ISZ UDBOX
3253 DCA UDHIGH
1260 TAD UDTEML
3254 DCA UDLOW
5221 JMP UDDO
7200 CLA
1257 TAD UDBOX
1251 TAD UDTWO
4556 JMS I XOTY
3257 DCA UDBOX
2252 ISZ UDCNT
5213 JMP UDARND
5600 JMP I UDPRNT
7773 -5
5263 UDADDR, UDCON1
0260 UDTWO, 260
0000 UDCNT, 0
0000 UDHIGH, 0
0000 UDLOW, 0
0000 UDHSUB, 0
0000 UDLSUB, 0
0000 UDBOX, 0
0000 UDTEML, 0
5201 5200
5202 0000
5203 3254
5204 1600
5205 3261
5206 1661
5207 3253
5210 1247
5211 3252
5212 1250
5213 3262
5214 2200
5215 1662
5216 2262
5217 3255
5220 1662
5221 2262
5222 3256
5223 7100
5224 1256
5225 1254
5226 3260
5227 7004
5230 1255
5231 1253
5232 7420
5233 5237
5234 2257
5235 3253
5236 1260
5237 3254
5240 5221
5241 7200
5242 1257
5243 1251
5244 4556
5245 3257
5246 2252
5247 5213
5250 5600
5251 7773
5252 5263
5253 0260
5254 0000
5255 0000
5256 0000
5257 0000
5260 0000

```

```

/PICK UP ADDRESS OF HIGH-ORDER WORD
/PICK UP BOTH WORDS FOR USE IN SUBROUTINE
/INITIALIZE DIGIT COUNTER FOR "5"
/INITIALIZE TO TABLE OF POWERS OF TEN
/INDEX LINKAGE FOR CORRECT RETURN
/PICK UP CURRENT POWER OF TEN FOR
/USE IN SUBTRACTION
/DOUBLE PRECISION SUBTRACTION
/DID IT UNDERFLOW?
/NO, COUNT IS DONE
/YES, COUNT NOT DONE YET, INDEX DIGIT
/DEPOSIT REMAINING PORTIONS OF WORD
/GO BACK AND SUBTRACT AGAIN
/PICK UP RESULTING DIGIT
/ADD "260" TO IT
/INITIALIZE DIGIT TO "5"
/HAVE WE TYPED "5" DIGITS
/NO, DETERMINE NEXT DIGIT
/YES, SUBROUTINE DONE, RETURN
/COUNT OF "5" DIGITS
/INITIAL ADDRESS OF POWERS OF TEN
/ICODE FOR DIGITS
/STORAGE LOCATIONS

```

5261	0000	UDGET,	0	
5262	0000	UDPTR,	0	
5263	7775	UDCON1,	7775	'=10,000
5264	4360		4360	
5265	7777		7777	/=1,200
5266	6030		6030	
5267	7777		7777	/=100
5270	7634		7634	
5271	7777		7777	/=10
5272	7766		7766	
5273	7777		7777	/=1
5274	7777		7777	


```

/SWS SAY STATISTICAL RECOVERY
STAREC, IS2 WRPASS /DONE 7 REWRITES
  JMP ,+3 /NO
  IS2 PERMBS /+1 PERM BAD SPOTS
  JMP I BACK2-1 /RESTART
  JMS BACK2 /BACKSPACE 2
  RMSR
  AND K1000
  SNA CLA /AT BOT
  JMS SPAFW1 /NO SPACE FWD1
  CLA
  JMP I ,+1 /GO AGAIN
  NSISEL=3
  TESREC+4
/BACKSPACE 2 RECORDS
BACK2, JMP ,
SKCB
JMP , -1
CLF
TAD K7776
LWCR
TAD COMAND
LCMR
SKTR
JMP , -1
TAD G7100
LFGR
JMS I XLBWAT
CLA
JMP I BACK2 /EXIT BACKSPACE 2
07100, 7100
/SPACE FORWARD 1 RECORD
SPAFW1, JMP ,
CLF
CLA CMA
LWCR
TAD K6100
LFGR
JMS I XLBWAT
JMP I SPAFW1 /EXIT SPACE FWD
K1000, 1000
K7776, 7776
K6100, 6100
/REWIND DRIVE TO LOAD POINT
/CALL WITH DRIVE SELECT IN AC
REWIND, 0
SKCB
JMP , -1
CLA
TAD DRVDEN
CLF
LCMR
SKTR

```

/WAIT FOR CONTROL,

/LOAD WC # -2

/LOAD CM,

/WAIT TRANSPORT,

/SPC REV 2,

/WAIT DONE,

/EXIT BACKSPACE 2

/SPACE FORWARD 1 RECORD

/CLEAR STATUS,

/LOAD WC # -1,

/SPC FWD 1,

/WAIT DONE,

/EXIT SPACE FWD

/REWIND DRIVE TO LOAD POINT

/CALL WITH DRIVE SELECT IN AC

/WAIT FOR CONTROL,

/LOAD CM,

/WAIT FOR TRANSPORT,

5275 2037
5276 5301
5277 2065
5300 5711
5301 4312
5302 6714
5303 0342
5304 7650
5305 4332
5306 7200
5307 5710
5310 2653
5311 2751

5312 5312
5313 6722
5314 5313
5315 6725
5316 1343
5317 6701
5320 1035
5321 6705
5322 6724
5323 5322
5324 1331
5325 6706
5326 4567
5327 7200
5330 5712
5331 7100

5332 5332
5333 6725
5334 7240
5335 6701
5336 1344
5337 6706
5340 4567
5341 5732
5342 1000
5343 7776
5344 6100

5345 0000
5346 6722
5347 5346
5350 7200
5351 1026
5352 6725
5353 6705
5354 6724

5355	5354	JMP .=1	
5356	6714	RMSR	/BOT?
5357	7006	RTL	
5360	7710	SPA CLA	
5361	5745	JMP I	/YES
5362	1370	TAD K1100	/REWIND = 60
5363	6706	LFGR	
5364	6723	SKTD	
5365	5364	JMP	.=1
5366	6725	CLE	
5367	5745	JMP I	REWIND
5370	1100	K1100,	1100

```

5400 *5400
5401 GENPAT, JMP I XSTSTR
5402 JMS I XSTSTR /GET PATTERN NUMBER
5403 TAD PATNUM
5404 TAD PARBT1 /+ JMP I
5405 TAD JMPTBL /TO BE EXECUTE
5406 DCA ,+1
5407 JMP I JMPTBL+1
5408 JMP I ,+1 /TO GET TO PATTERNS
5409 JMPTBL,
5410 GNEVN0
5411 GNEVN1
5412 GNEVN2
5413 GNEVN3
5414 GNEVN4
5415 GNEVN5
5416 GNEVN6
5417 GNEVN7
5420 GNODD0
5421 GNODD1
5422 GNODD2
5423 GNODD3
5424 GNODD4
5425 GNODD5
5426 GNODD6
5427 GNODD7
5430 /EVEN PATTERN 0 HIGH FREQ SKEW
5431 GNEVN0, TAD ,+2
5432 JMP GNODD6+1
5433 /EVEN PATTERN 2 HIGH FREQ EVERY OTHER TRK
5434 GNEVN2, TAD ,+2
5435 JMP GNODD6+1
5436 /ODD PATTERN 2 COMPLEMENT OFF EVEN 2
5437 GNODD2, TAD ,+2
5440 GNODD2, JMP GNODD6+1
5441 /ODD AND EVEN PATTERN 6 ALL TRACKS
5442 GNEVN6, NOP
5443 GNODD6, CMA /SAME AS ODD
5444 AND K0377
5445 DCA 12
5446 TAD 12
5447 DCA I 10
5450 ISZ 11
5451 JMP , -3
5452 JMP I GENPAT
5453 /EVEN PARITY PATTERN 3 HIGH REQ, INSIDE HALF OUTSIDE
5454 GNEVN3, TAD ,+2
5455 JMP GNODD6+1
5456 0273

```

5455 1257 /ODD PATTERN 4 INCREMENTING CHARACTER NO 00
 5456 5243 GNEVN4, TAD ,+2 /GET SNA TO THROW 00
 5457 0004 JMP GNODD6+1 /GENERATE PATTERN
 0004 SKP

5460 1262 /ODD PATTERN 4 SAVE 00 CODES
 5461 5265 GNEVN4, TAD ,+1 /GET SKP TO SAVE 00
 5462 7450 JMP GNODD4+1 /DEPOSIT SKP OR SNA
 5463 7410 SNA DCA INC0CH /00 TO 14 START
 SKP DCA 14 /GET NEXT CHAR
 /STORE IT

5464 1263 /DONE ALL WORDS
 5465 3316 DCA INC0CH /NO GET NEXT
 5466 3014 DCA 14 /EXIT
 5467 4312 JMS GENING
 5470 3410 DCA I 10
 5471 2011 ISZ 11
 5472 5267 JMP GNODD4+3
 5473 5600 JMP I GENPAT

5474 4533 /EVEN RANDOM PATTERN 7
 5475 0366 GNEVN7, JMS I XTRANUM
 5476 7450 AND K0377
 5477 5274 SNA
 5500 3410 JMP GNEVN7
 5501 2011 DCA I 10
 5502 5274 ISZ 11
 5503 5600 JMP GNEVN7
 JMP I GENPAT

5504 4533 /ODD RANDOM PATTERN 7
 5505 0366 GNEVN7, JMS I XTRANUM
 5506 3410 AND K0377
 5507 2011 DCA I 10
 5510 5304 ISZ 11
 5511 5600 JMP GNODD7
 JMP I GENPAT

```

5512 5312 /INCREMENT 14 FOR NEXT CHARACTER
5513 7014 GENING, JMP
5514 7001 TAD 14 /GET LAST
5515 0366 IAC /+1
AND K0377 /MASK LMR 6

5516 7450 INC0CH, SNA SKP /SNA IF EVEN PAR
5517 7001 IAC /NEVER EXECUTED IF ODD
5520 3014 DCA 14 /SAVE CHAR
5521 1014 TAD 14 /PUT IN AC
5522 5712 JMP I GENING /EXIT
5523 4347 GNEVN1, JMS ST9WRD /EVEN PATTERN 1
5524 0377 0377 /SLIDING 0 RET
5525 0177 0177 /BY CHARACTER
5526 0277 0277
5527 0337 0337
5530 0357 0357
5531 0367 0367
5532 0373 0373
5533 0375 0375
5534 0376 0376

5535 4347 GNOOD1, JMS ST9WRD /ODD PATTERN 1
5536 0000 0000 /SLIDING 1 BIT
5537 0200 0200 /BY CHARACTER
5540 0100 0100
5541 0040 0040
5542 0020 0020
5543 0010 0010
5544 0004 0004
5545 0002 0002
5546 0001 0001

5547 5347 /STORE 9 WORD SUBROUTINE EVN AND ODD 1
5550 7240 ST9WRD, JMP
5551 1347 CLA CMA
TAD ST9WRD
5552 3012 DCA 12
5553 1367 TAD K7767 /TO COUNT 9
5554 3013 DCA 13
5555 1412 ST9A, TAD I 12 /GET NEXT WORD
5556 3410 DCA I 10 /STORE IN WRITE BUFFER
5557 2011 ISZ 11 /FILLED BUFFER
5560 7410 SKP /NO
5561 5600 ST9B, JMP I GENPAT /BUFFER FULL EXIT
5562 2013 ISZ 13 /DONE 9
5563 5355 JMP ST9A /NOT 9 YET GET NEXT
5564 5350 JMP ST9WRD+1 /START OVER FROM FIRST OF 9

5565 5624 / XSTSTR, SETSTR
5566 0377 K0377, 377
5567 7767 K7767, 7767

```

5600 *5600

/ODD PATTERN 5 EACH TRACK 3 FRAMES EVERY 27
GNODD5, JMS STHALF

5600	4234
5601	0000
5602	0200
5603	0100
5604	0040
5605	0020
5606	0010
5607	0004
5610	0002
5611	0001

/ODD PATTERN 3 3 ONES 3 ZEROS THREE ONES
GNODD3, JMS STHALF

5612	4234
5613	0037
5614	0300
5615	0076
5616	0201
5617	0174
5620	0003
5621	0370
5622	0007
5623	0360

/INITIALIZE AUTO INDEX 10-11 FOR PATTERN STORAGE
SETSTR, 0

5624	0000	CLA
5625	7200	TAD BLENTH
5626	1233	DCA 11
5627	3011	TAD WRBUF
5630	1130	DCA 10
5631	3010	JMP I SETSTR
5632	5624	

/WORD COUNT IN 11

/WRITE BUFFER =1 IN 10

BLENTH, =400

/READ=WRITE BUFFER LENGTH,

```

5634 5234 /GENERATE A THREE WORD PATTERN
5635 7240 STHALF, JMP
5636 1234 CLA CMA
5637 3012 TAD STHALF
5638 1274 DCA 12 /SAVE TABLE LIST
5639 3013 TAD KX7767 /9 COUNT
5640 1127 DCA 13 /3 COUNT
5641 3015 TAD K7775
5642 1412 DCA 15
5643 3261 TAD I 12 /GET DATA WORD
5644 1261 DCA STHF1 /SAVE FOR FUTURE USE
5645 3410 TAD STHF1
5646 2011 DCA I 10 /DEPOSIT DATA WORD IN TABLE
5647 2011 ISZ I: /DONE?
5648 7410 SKP /NO
5649 5660 JMP I EXITGN /BUFFER FULL, EXIT
5650 2015 ISZ 15 /DONE 3 WORDS?
5651 5246 JMP I-6 /NO
5652 2013 ISZ 13 /DONE 9 WORDS?
5653 5242 JMP STHF /NO
5654 5235 JMP STHALF+1 /YES

```

```

5660 5561 EXITGN, ST9B
5661 0000 STHF1, 0

```

```

5662 4234 /EVEN PATTERN 5 EACH TRACK ON A 0 FOR 3 FRAMES
5663 0377 GNEVNS, JMS STHALF
5664 0177 0177
5665 0277 2277
5666 0337 2337
5667 0357 0357
5670 0367 0367
5671 0373 0373
5672 0375 0375
5673 0376 0376
5674 7767 KX7767, 7767

```

```

5675 /RANDOM NUMBER GENERATOR
5676 JMP
5677 CLA
5700 TAD RANTND /GET CURRENT TABLE ADDRESS
5701 TAD RANDEX /END TABLE
5702 SZA CLA /AT END OF TABLE
5703 JMP RANTAD /NO
5704 TAD RANTBL
5705 DCA RANDEX /RESET TABLE ADDRESS
5706 TAD RANCON /GET ROTATING WORD
5707 CLL RAL
5708 SZL
5709 IAC
5710 DCA RANCON /SAD BT 11=1
5711 /YES
5712 TAD RANCON /RESET ROTATING
5713 TAD I RANDEX /GET CYCLIC
5714 DCA I RANDEX /T NEXT TABLE
5715 TAD RANSAV /RESET IT
5716 RAR /GET LAST RANDOM
5717 TAD I RANDEX /USE LINK AND 11 BITS
5720 ISZ RANDEX /T RANDOM BIAS
5721 DCA RANSAV /STEP FOR NEXT NUMBER
5722 TAD RANSAV /TO GENERATE NEXT
5723 JMP I RANCON /EXIT AC=RANDOM

```

```

5724 /TABLE TO GENERATE RANDOM NUMBERS
5725 RANDEX, RANTND /TO GET INDIRECT
5726 RANCON, 6543 /CYCLIC
5727 RANTBL, *1 /TO RESET RANDEX TO STRT
5730 6543 /TABLE
5731 3210 /OF 8
5732 0765 /NUMBERS
5733 5432
5734 2107
5735 7654
5736 4321
5737 1076
5740 RANTND, *1 /TO DETERMINE END
5741 RANSAV, 0 /TO SAVE LAST RANDOM

```

PAUSE

/TM8E DATA RELIABILITY TEST - TAPE 7 (0 TRACK)
 /PRINT TEXT MESSAGE REQUESTED BY LOCATION FOLLOWING "JMS I XTEXT"
 *6000

6000	TEXTX, 0
6001	CLA
6002	TAD I, #2 /GET TEXT POINTER
6003	DCA, #2 /SAVE
6004	SKP
6005	0000
6006	JMS I, #1 /JMS TO TEXT
6007	ISZ TEXTX /+1 TO RETURN AFTER TEXT POINTER
6010	JMP I TEXTX

6011	/PRINT OCTAL NUMBER IN AC
6012	OCTPRT, 0
6013	DCA VALUE
6014	TAD VALUE
6015	RTL
6016	RTL OCT1 /PRINT 1ST CHARACTER
6017	TAD VALUE
6020	RTR
6021	RTR
6022	RTR
6023	JMS OCT2 /PRINT 2ND CHARACTER
6024	TAD VALUE
6025	RTR
6026	RTR
6027	JMS OCT1 /PRINT 3RD CHARACTER
6030	TAD VALUE
6031	JMS OCT1 /PRINT 4TH CHARACTER
6032	JMP I OCTPRT

6033	OCT1, 0
6034	AND K007 /MASK OCTAL BIT
6035	TAD K262 /MAKE ASCII
6036	JMS I XOTY /PRINT CHARACTER
6037	JMP I OCT1

6040	/TYPE 3 SPACES
6041	TSP3, 0
6042	CLA
6043	TAD K0240
6044	JMS I XOTY
6045	TAD K0240
6046	JMS I XOTY
6047	TAD K0240
6050	JMS I XOTY
6051	JMP I TSP3

```

6051 0000
6052 3310
6053 3311
6054 1321
6055 3312
6056 1303
6057 3264
6060 7410
6061 3310
6062 7100
6063 1310
6064 1304
6065 7430
6066 2311
6067 7430
6070 5261
6071 7200
6072 1311
6073 1316
6074 4556
6075 7200
6076 3311
6077 2264
6100 2312
6101 5263
6102 5651
6103 1304
6104 6030
6105 7634
6106 7766
6107 7777
6110 0000
6111 0000
6112 0000
6113 0077
6114 0212
6115 0215
6116 0260
6117 0340
6120 7740
6121 7774

/CONVERT NUMBER IN AC TO DECIMAL AND PRINT
DECPRT, 0
DCA VALUE /SAVE INPUT
DCA DIGIT /CLEAR
TAD KX7774
DCA CNTRZB /SET COUNTER TO 4
TAD ADDRZA /SET TABLE PCINTER
DCA ARROW
SKP 7410 /SAVE
DCA VALUE
DCA VALUE /SUBTRACT POWER OF TEN
TAD TENPWR /DEVELOP BCD DIGIT
SEL ISZ DIGIT
SEL ISZ DIGIT /DEVELOP BCD DIGIT
JMP ARROW*3 /LOOP
CLA /HAVE DIGIT
TAD DIGIT
TAD K260
JMS I XOTY /PRINT
CLA
DCA DIGIT /CLEAR DIGIT
ISZ ARROW /UPDATE POINTER
ISZ CNTRZB /DONE?
JMP ARROW*1 /NO
JMP I DECPRT
ADDRZA, TAD TENPWR /ONE THOUSAND
TENPWR, -1750 /ONE HUNDRED
-144 /TEN
-12 /ONE
-1 /ONE
VALUE, 0
DIGIT, 0
CNTRZB, 0
K77, 77
K0212, 212
K215, 215
K260, 260
K0340, 340
K7740, 7740
KX7774, 7774

```

/TYPE A STRING OF CHARACTERS
 /CHARACTERS MUST BE STORED IN INTERNAL STRIPPED ASCII, 2 CHARACTERS PER WORD,
 TSR,

6122 0000
 6123 7240
 6124 1322
 6125 3017
 6126 1417
 6127 3340
 6130 1340
 6131 7012
 6132 7012
 6133 7012
 6134 4341
 6135 1340
 6136 4341
 6137 5326
 6140 0000
 6141 0000
 6142 0313
 6143 7450
 6144 5417
 6145 1320
 6146 7500
 6147 5352
 6150 1317
 6151 7410
 6152 1120
 6153 4556
 6154 5741

0
 CLA CMA
 TAD TSR
 DCA 17
 TAD I 17
 DCA TSRI
 TAD TSRI
 RTR
 RTR
 RTR
 JMS TSR2
 TAD TSRI
 JMS TSR2
 JMP TSR+4
 0
 0

/GET CHARACTER

/PRINT LEFT CHARACTER

/PRINT RIGHT CHARACTER

/GET NEXT PAIR

TSR1,
 TSR2,

AND K77 /MASK CHARACTER
 SNA /IS IT END OF MESSAGE
 JMP I 17 /YES, EXIT
 TAD K7742 /RE-COMBINE ASCII CODE WITH STRIPPED CODE
 SMA /
 JMP +3 /CHARACTER WAS <40, ADD 300
 TAD K0340 /CHARACTER WAS >40, ADD 200
 SKP /PRINT ASCII CHARACTER
 TAD K0240
 JMS I XOTY
 JMP I TSR2

/TYPE THE ASCII CHARACTER IN AC
 OTY,

6155 0000
 6156 6046
 6157 7300
 6160 6041
 6161 5360
 6162 6042
 6163 5755

0
 TLS
 CLA CLL
 TSF
 JMP -1
 TCF
 JMP I OTY

/TYPE CARRIAGE RETURN, LINE FEED
 TIN,

6164 0000
 6165 7200
 6166 1315
 6167 4556
 6170 1314
 6171 4556
 6172 5764

0
 CLA
 TAD K215
 JMS I XOTY /CR
 TAD K0212 /LF
 JMS I XOTY
 JMP I TIN

```

6200
*6200
/WRITE STATUS ERROR
/COMD FUNCIN STATUS REC D LENGTH
TEXT1, 0
  JMS I XTIN
  JMS I XTSR
  2722
  1124
  0540
  2324
  0124
  2523
  4005
  2222
  1722
  0000
  SKP
  TEXT25
  JMS I '1
  JMP I TEXT1

```

```

/END OF TAPE
/DRV PAT PAR D.LN MODE RECDOS LENGTH
TEXT2, 0
  JMS I XTIN
  JMS I XTSR
  0516
  0440
  1706
  4024
  0120
  0500
  SKP
  TEXT36
  JMS I '1
  JMP I TEXT2

```

```

6201 0000
6201 4561
6202 4562
6203 2722
6204 1124
6205 0540
6206 2324
6207 0124
6210 2523
6211 4005
6212 2222
6213 1722
6214 0000
6215 7410
6216 6644
6217 4616
6220 5600

```

```

6221 0000
6222 4561
6223 4562
6224 0516
6225 0440
6226 1706
6227 4024
6230 0120
6231 0500
6232 7410
6233 7011
6234 4633
6235 5621

```

```

6236 0000
6237 4562
6240 4040
6241 4062
6242 6060
6243 0000
6244 5636

/200 FOR 200 BPI
TEXT4, 0
JMS I XTZR
4040
4062
6060
0000
JMP I TEXT4

/556 FOR 556 BPI
TEXT5, 0
JMS I XTZR
4040
4065
6566
0000
JMP I TEXT5

/800 FOR 800 BPI
TEXT6, 0
JMS I XTZR
4040
4070
6060
0000
JMP I TEXT6

/NSIP FOR NONSTOP MODE
TEXT7, 0
JMS I XTZR
4016
2324
2040
0000
JMP I TEXT7

/SSTP FOR START STOP MODE
TEXT8, 0
JMS I XTZR
4023
2324
2040
0000
JMP I TEXT8

/RNDM FOR RANDOM START STOP MODE
TEXT9, 0
JMS I XTZR
4022
1604
1540
0000
JMP I TEXT9

```

```

6245 0000
6246 4562
6247 4040
6250 4065
6251 6566
6252 0000
6253 5645

6254 0000
6255 4562
6256 4040
6257 4070
6260 6060
6261 0000
6262 5654

6263 0000
6264 4562
6265 4016
6266 2324
6267 2040
6270 0000
6271 5663

6272 0000
6273 4562
6274 4023
6275 2324
6276 2040
6277 0000
6300 5672

6301 0000
6302 4562
6303 4022
6304 1604
6305 1540
6306 0000
6307 5701

```

6310	0000		
6311	4562	JMS I XTZR	
6312	4040		
6313	4062		
6314	6440		
6315	1511		
6316	1600		
6317	5710	JMP I TYPMIN	

6320	0000		
6321	4562	JMS I XTZR	
6322	4040		
6323	4064		
6324	6060		
6325	7040		
6326	1501		
6327	3000		
6330	5720	JMP I TYPMAX	

6331	0000		
6332	4562	JMS I XTZR	
6333	4040		
6334	4062		
6335	6061		
6336	6640		
6337	1511		
6340	1640		
6341	2417		
6342	4015		
6343	0130		
6344	0000		
6345	5731	JMP I TYPAV1	

6346	0000		
6347	4562	JMS I XTZR	
6350	4040		
6351	4062		
6352	6061		
6353	6640		
6354	1501		
6355	3040		
6356	2417		
6357	4015		
6360	1116		
6361	0000		
6362	5746	JMP I TYPAV2	

```

6400
*6400
/
WRITE ERRORS =
TEXT10, 0
JMS I XTIN
JMS I XTSR
2722
1124
0540
0522
2217
2223
7500
JMP I TEXT10

```

```

/RECOVERED AT
TEXT12, 0
JMS I XTSR
2205
0317
2605
2205
0440
0124
4000
JMP I TEXT12

```

```

/PERMANENT BADSPT
TEXT13, 0
JMS I XTIN
JMS I XTSR
2005
2215
0116
0516
2440
0201
0423
2024
4000
JMP I TEXT13

```

```

6400 0000
6401 4561
6402 4562
6403 2722
6404 1124
6405 0540
6406 0522
6407 2217
6410 2223
6411 7500
6412 5600

```

```

6413 0000
6414 4562
6415 2205
6416 0317
6417 2605
6420 2205
6421 0440
6422 0124
6423 4000
6424 5613

```

```

6425 2000
6426 4561
6427 4562
6430 2005
6431 2215
6432 0116
6433 0516
6434 2440
6435 0201
6436 0423
6437 2024
6440 4000
6441 5625

```

```

6442 0000
6443 4562
6444 4030
6445 1122
6446 0740
6447 2722
6450 1124
6451 2405
6452 1640
6453 6440
6454 2411
6455 1505
6456 2300
6457 5642

/XIRG WRITTEN 4 TIMES
TEXT14, 2
JMS I XTZR
4030
1122
3740
2722
1124
2405
1640
6440
2411
1505
2300
JMP I TEXT14

```

```

6460 0000
6461 4561
6462 4562
6463 2205
6464 0104
6465 4023
6466 2401
6467 2425
6470 2340
6471 0522
6472 2217
6473 2200
6474 7410
6475 6644
6476 4675
6477 5660

/READ STATUS ERROR
/COMD FUNCIN STATUS RECORD LENGTH
TEXT15, 2
JMS I XIIN
JMS I YTSR
2205
0104
4023
2401
2425
2340
0522
2217
2200
SKP
TEXT25
JMS I .-1
JMP I TEXT15

```


/READ DATA ERROR
/COMD FUNCIN STATUS RECORD LENGTH
TEXT16, 0

6500 0000
6501 4561
6502 4562
6503 2205
6504 0104
6505 4004
6506 0124
6507 0140
6510 0522
6511 2217
6512 2200
6513 7410
6514 6644
6515 4714
6516 5700

JMS I XTIN
JMS I XTJR
2205
0104
4004
0124
0140
0522
2217
2200
SKP
TEXT25
JMS I .-1
JMP I TEXT16

/READ PASS
TEXT20, 0

6517 0000
6520 4561
6521 4562
6522 2205
6523 0104
6524 4020
6525 0123
6526 2300
6527 5717

JMS I XTIN
JMS I XTJR
2205
0104
4020
0123
2300
JMP I TEXT20

/READ ERRORS =
TEXT21, 0

6530 0000
6531 4561
6532 4562
6533 2205
6534 0104
6535 4005
6536 2222
6537 1722
6540 2375
6541 0000
6542 5730

JMS I XTIN
JMS I XTJR
2205
0104
4005
2222
1722
2375
0000
JMP I TEXT21

```

6600 *6600
/ /NON RECOVERABLE #
TEXT22, 0
JMS I XTIN
JMS I XTSR
1617
1640
2205
2317
2605
2201
2214
0575
0000
JMP I TEXT22

```

```

/ /DATA ERRORS =
TEXT23, 0
JMS I XTIN
JMS I XTSR
0401
2401
4005
2222
1722
2375
0000
JMP I TEXT23

```

```

/ /DATA ERROR WITH NO STATUS ERROR
TEXT24, 0
JMS I XTIN
JMS I XTSR
2401
2401
4016
1740
2324
0124
2923
7500
JMP I TEXT24

```

```

6600 0000
6601 4561
6602 4562
6603 1617
6604 1640
6605 2205
6606 2317
6607 2605
6610 2201
6611 0214
6612 0575
6613 0000
6614 5600

```

```

6615 0000
6616 4561
6617 4562
6620 0401
6621 2401
6622 4005
6623 2222
6624 1722
6625 2375
6626 0000
6627 5615

```

```

6630 0000
6631 4561
6632 4562
6633 0401
6634 2401
6635 4016
6636 1740
6637 2324
6640 0124
6641 2923
6642 7500
6643 5630

```

/COMD FUNCIN STATUS WRDCNT CURADR RECORD LENGTH
TEXT25, 0

6644	0000
6645	4561
6646	4562
6647	0317
6650	1504
6651	4006
6652	2516
6653	0324
6654	1640
6655	2324
6656	0124
6657	2923
6660	4027
6661	2204
6662	2316
6663	2440
6664	0325
6665	2201
6666	0422
6667	4022
6670	0503
6671	1722
6672	0423
6673	4014
6674	0516
6675	0724
6676	1000
6677	4561
6700	5644

JMS I	XTIN
JMS I	XISR
0317	
1504	
4006	
2516	
0324	
1640	
2324	
0124	
2923	
4027	
2204	
2316	
2440	
0325	
2201	
0422	
4022	
0503	
1722	
0423	
4014	
0516	
0724	
1000	
JMS I	XTIN
JMP I	TEXT25

```

6701 0000
6702 4561
6703 4562
6704 2305
6705 1405
6706 0324
6707 4004
6710 2211
6711 2605
6712 2340
6713 0000
6714 5701

/SELECT DRIVES
TEXT30, 0
JMS I XTIN
JMS I XTSR
2305
1405
0324
4004
2211
2605
2340
0000
JMP I TEXT30

```

```

6715 0000
6716 4561
6717 4562
6720 2305
6721 1405
6722 0324
6723 4024
6724 0523
6725 2423
6726 0000
6727 4561
6730 4562
6731 2423
6732 2440
6733 2001
6734 2440
6735 2001
6736 2240
6737 0405
6740 1640
6741 2214
6742 2340
6743 2715
6744 1740
6745 2215
6746 1700
6747 5715

/SELECT TESTS
/TST PAT PAR DEN RLS WMO RMO
TEXT31, 0
JMS I XTIN
JMS I XTSR
2305
1405
0324
4024
0523
2423
0000
JMS I XTIN
JMS I XTSR
2423
2440
2001
2440
2001
2240
0405
1640
2214
2340
2715
1740
2215
1700
JMP I TEXT31

```

```

6750 0000
6751 4562
6752 1756
6753 1356
6754 0000
6755 5750

/D.K.
TEXT32, 0
JMS I XTSR
1756
1356
0000
JMP I TEXT32

```

```

6756 0000
6757 4561
6760 4562
6761 2405
6762 2324
6763 4000
6764 5756

/TEST
TEXT33, 0
JMS I XTIN
JMS I XTJR
2405
2324
4000
JMP I TEXT33

/WRITE DUMP
TEXT34, 0
JMS I XTIN
JMS I XTJR
2722
1124
0540
0425
1520
0000
JMP I TEXT34
*7000

/READ DUMP
TEXT35, 0
JMS I XTIN
JMS I XTJR
2205
0104
4004
2515
2000
JMP I TEXT35
7000 0000
7001 4561
7002 4562
7003 2205
7004 0104
7005 4004
7006 2515
7007 2000
7010 5600

```

/DRV PAT PAR DEN MODE RECORDS LENGTH
TEXT36, 0

7011	0000	
7012	4561	JMS I XTIN
7013	4562	JMS I XTSR
7014	0422	0422
7015	2640	2640
7016	2001	2001
7017	2440	2440
7020	2001	2001
7021	2240	2240
7022	0405	0405
7023	1640	1640
7024	1517	1517
7025	3405	3405
7026	4022	4022
7027	0503	0503
7030	1722	1722
7031	0423	0423
7032	4014	4014
7033	0516	0516
7034	0724	0724
7035	1000	1000
7036	4561	JMS I XTIN
7037	5611	JMP I EXT36

7100	DR0TAB=7100
7040	DRINCR=40
7140	DR1TAB=DR0TAB+DRINCR
7200	DR2TAB=DR1TAB+DRINCR
7240	DR3TAB=DR2TAB+DRINCR
7300	DR4TAB=DR3TAB+DRINCR
7340	DR5TAB=DR4TAB+DRINCR
7400	DR6TAB=DR5TAB+DRINCR
7440	DR7TAB=DR6TAB+DRINCR
7500	TSTIBL=DR7TAB+DRINCR

7040	DRVADR, DR0TAB
7041	DR1TAB
7042	DR2TAB
7043	DR3TAB
7044	DR4TAB
7045	DR5TAB
7046	DR6TAB
7047	DR7TAB

7050	6713	CAMON,	RCAR
7051	7700		SMA CLA
7052	5250		JMP .-2
7053	1130		TAD WRBUF
7054	6703		LCAR
7055	5250		JMP .-5

\$

ADDRZA	6103	ERRORP	2340	K0303	2556	LWCR	6701
ALLEOS	1265	EXECNT	0774	K0340	6117	MAXLEN	0131
ALLEOT	1236	EXECUT	0601	K0370	0365	MINLEN	0132
ARRON	0064	EXETST	0042	K0374	0513	MODBIT	0030
BACK1	4514	EXITGN	0660	K0376	0564	MODTYP	5052
BACK2	5312	EXITMC	0033	K0377	5966	MVBITS	0022
BLENTH	5633	GENINC	5512	K0400	0122	MVCTRS	1007
BKINC	0036	GENPAT	5420	K1000	5342	NOINCR	2524
BANON	7050	GNEVNO	5430	K1100	5370	NONSTP	2607
CCAR	6704	GNEVN1	5523	K215	6115	NOTSWS	2470
CCF	6201	GNEVN2	5433	K260	6116	NRREAD	0101
CDMP1	5040	GNEVN3	5452	K270	0511	NSTSEL	2656
CDMP2	5041	GNEVN4	5460	K3100	4335	NUMTST	0040
CDMP3	5042	GNEVN5	5662	K3767	1313	OCT1	6033
CDMP4	5043	GNEVN6	5441	K377	3150	OCTPRT	6011
CDRIVE	0023	GNEVN7	5474	K4000	1113	OPY	6155
CDRVBT	1070	GN0002	5455	K4100	2764	P1	1735
CHARIN	0054	GN0001	5535	K4500	3077	P2	1736
CHGDRV	1071	GN0002	5436	K5100	3076	P3	1737
CHGPAT	0727	GN0003	5612	K6100	5344	P7100	5170
CHRPAR	0743	GN0004	5464	K7000	1235	PARAMS	1200
CLF	6725	GN0005	5602	K7100	4554	PARBT1	0025
CLRALL	1035	GN0006	5442	K7443	0123	PASSWS	0020
CLRTBL	5066	GN0007	5524	K7520	2566	PATNUM	0024
CLT	6712	GOBKWD	5127	K77	6113	PERMBS	0065
COMPERR	0100	GOTST	0643	K7740	6120	Q7100	5331
CONTRZB	6112	INC2CH	5516	K7751	0124	RANCON	5725
COMAND	0035	INCRLC	0707	K7760	1114	RANDEX	5724
COMDMP	5000	INCTBL	2550	K7767	5567	RANGEN	5675
COMEND	2373	INCWMC	0670	K7770	0125	RANSAV	5740
CTRDEX	1016	JMPTBL	5407	K7771	0126	RANSTP	2673
CTRDMP	2344	K0003	0104	K7774	3101	RANTAD	5712
CWCOK	3127	K0004	0105	K7775	0127	RANTBL	5726
CWCR	6702	K0007	0106	K7776	5343	RANTNO	5737
DECPRT	6051	K0010	0107	K7777	4555	RCAR	6713
DELAY	0047	K0017	0110	KX7000	2443	RCMR	6715
DENTYP	0050	K0020	0111	KX7520	0512	RDBR	6717
DENTYP	5056	K0030	0112	KX7767	5674	RDEOT	0103
DIGIT	6111	K0037	1312	KX7774	6121	RDERR0	4336
DR0TAB	7100	K0040	0113	LASRCH	0070	RDERRS	0102
DR1TAB	7140	K0262	0114	LBEOT1	1300	RDEXIT	4274
DR2TAB	7200	K0100	0115	LBEOT2	1314	RDINCR	4462
DR3TAB	7240	K0177	0116	LBINT	1335	RDEERR	4400
DR4TAB	7300	K0200	0117	LBSAV	1327	RDPASS	0051
DR5TAB	7340	K0212	6114	LBSET	1712	RDRRET	4245
DR6TAB	7400	K2215	0360	LBTEXT1	0536	RDSTPC	4275
DR7TAB	7440	K0240	0120	LBWAT	1344	RDSTPD	4214
DRINCR	0040	K2254	0361	LCAR	6703	READGO	4224
DRVADR	7040	K0260	0510	LCMR	6705	READIT	4200
DRVDEN	0026	K0270	0362	LDBR	6707	READLN	0076
ENDTAP	4600	K0277	0363	LFGP	6706	READMO	0031
EOSFLG	0044	K0300	0121	LTHTBL	5062	READMP	4674

RECORD	0066	STRTES	2420	TEXT4	6236	WRPASS	0037
RECSYS	0032	STHTCP	2620	TEXT5	6245	WRRECR	0074
RECV1	0056	SVCTRS	1222	TEXT6	6254	WRTDMP	4612
RECV2	0057	SVRECR	2045	TEXT7	6263	WRTTEOT	0072
RECV3	0060	SWTEST	2043	TEXT8	6272	WRTERR	2724
RECV4	0061	T10RDP	2076	TEXT9	6301	WRTLEN	0073
RECV5	0062	T10RND	2141	TEXTLB	1743	WRTSEQ	2444
RECV6	0063	T11END	2322	TEXTX	6000	WSEQXT	2554
RECV7	0064	T11FLG	2337	TIN	6164	X11FLG	2555
RELI1	0225	T11INC	2335	TRDEOT	1254	XALEOT	0150
RELIAB	0200	T11LP1	2230	TS10L1	2030	XBACK1	3100
RESETL	3135	T11LP2	2310	TS10L2	2014	XCHGDV	0147
RESTR1	4511	T11RDL	2251	TS10L5	2051	XCLRAL	0152
REWIND	5345	TADJNC	2547	TSP3	6040	XCLRT8	0135
RFSR	6716	TBLCNT	0041	TSR	6122	XCMOMP	4723
RIF	6224	TBLTST	2523	TSR1	6140	XDCPRT	0153
RLTROL	0027	TENPWR	6104	TSR2	6141	XENDTP	2763
RYF	6244	TES2K	3142	TSRUNL	0025	XGENPT	0142
RMSR	6714	TESINC	3122	TSTDEX	0775	XCOBKW	0136
RNDTAP	4315	TESREC	2745	TSTSTP	2633	XLBINT	0166
RNDSTA	4064	TEST0	1400	TSTYBL	7500	XLBSAV	0165
RNSTA	0077	TEST1	1414	TSTYQS	0310	XLBSET	0170
RPASN3	4451	TEST10	2200	TYPAV1	6331	XLBMAT	0167
RPASS3	4425	TEST11	2220	TYPAV2	6346	XLEOT1	0163
RPTST	0761	TEST2	1437	TYPDAT	5101	XLEOT2	0164
RPTSTV	1051	TEST3	1462	TYPMAX	6320	XMVCTR	0145
RTSSIP	4255	TEST4	1506	TYPMIN	6310	XOCPR1	5125
RWCR	6711	TEST5	1535	TYRALL	4051	XOCT1	0157
SBRM	6727	TEST6	1600	TYRECV	4634	XOTY	0156
SOLE	6726	TEST7	1645	UDADDR	5250	XRANUM	0133
SETBAK	4530	TESTX	2514	UDARND	5213	XRCXRG	2766
SETFUN	1115	TEXT11	6220	UDBOX	5257	XRDINC	0143
SETSTR	5624	TEXT10	6420	UDCNT	5252	XRDIT	0137
SKCB	6722	TEXT12	6413	UDCON1	5263	XRDRET	4244
SKEF	6721	TEXT13	6425	UDDO	5221	XRDTP2	4460
SKTD	6723	TEXT14	6442	UDGET	5261	XRG1	3041
SKTR	6724	TEXT15	6460	UDHIGH	5253	XRGCD	3046
SLTSTS	0256	TEXT16	6520	UDHSUB	5255	XRGREC	3000
SPAFW1	5332	TEXT2	6221	UDLOOP	5247	XRNDTP	4363
ST9A	5555	TEXT20	6517	UDLOW	5254	XRSFDV	0151
ST9B	5561	TEXT21	6530	UDLSUB	5256	XRWIND	0134
ST9WRD	5547	TEXT22	6600	UDOUT	5237	XSTBAK	4461
STAREC	5275	TEXT23	6615	UDPRN1	5202	XSTREC	2765
STATRD	0052	TEXT24	6632	UDPTR	5262	XSTSTR	5565
STATRE	0053	TEXT25	6644	UDTEML	5260	XSVCTR	0144
STHALF	5634	TEXT32	6701	UDTWO	5251	XTESTX	0620
STHF	5642	TEXT31	6715	VALUE	6110	XTEXT	0155
STHF1	5661	TEXT32	6750	VLDORV	0231	XTIN	0161
STOPOP	2663	TEXT33	6756	VLDTST	7321	XTSINC	0141
STR1	2426	TEXT34	6765	WAITKY	1142	XTSP3	0160
STRLEN	2034	TEXT35	7000	WRBUF	0132	XTSR	0162
STRPAT	2713	TEXT36	7011	WRCHK	0055	XTSTST	2632

XTSYQS	0507
XTYPOT	0154
XUDPRT	5126
XWATKY	0146
XWRIT	0140
XXRG1	3040
Z1	1740
Z2	1741
Z3	1742

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 23 SECONDS

3K CORE USED