

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)

TABLE OF CONTENTS

1.	ABSTRACT
2.	REQUIREMENTS
2.1	HARDWARE
2.2	MEMORY
2.3	PRELIMINARY PROGRAMS
3.	PROGRAM LOADING PROCEDURE
4.	PROGRAM STARTING PROCEDURE
5.	STANDARD TEST PROCEDURE
5.1	DRIVE SELECTION
5.2	TEST SELECTION
5.2.1	TEST SEQUENCE SELECTION TABLE (TST)
5.2.2	DATA PATTERN SELECTION TABLE (PAT)
5.2.3	PARITY SELECTION (PAR)
5.2.4	DENSITY SELECTION (DEN)
5.2.5	RECORD LENGTH SEQUENCE SELECTION (RLS)
5.2.6	WRITE STOP MODE SELECTION (WMO)
5.2.7	READ STOP MODE SELECTION (RMO)
6.	SWITCH REGISTER CONTROLS
7.	ERROR REPORTS
7.1	ACCUMULATED WRITE ERRORS REPORT
7.2	WRITE STATUS ERROR REPORT
7.3	ACCUMULATED READ ERRORS REPORT
7.4	READ STATUS ERROR REPORT
8.	RESTRICTIONS
9.	PROGRAM DESCRIPTION
10.	LISTING

4
WARNING: ANY PROGRAM INTERRUPT THAT OCCURS FROM A DEVICE OTHER THAN
THE TMS-E IS A FATAL ERROR AND WILL RESULT IN A PROGRAM HALT.

1. ABSTRACT
=====

THE TMS-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 TMS-E DECMAGTAPE CONTROL. THE PROGRAM IS ALSO DESIGNED TO BE USEABLE AS AN AID IN THE CHECKOUT AND MAINTENANCE OF THE TMS-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)
TMS-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
TMS-E CONTROL TEST PART 1
TMS-E CONTROL TEST PART 2
TMS-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	SEQUENCE	5.2.6
RMO	WRITE STOP MODE	5.2.7
	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.

TEST SEQUENCE SELECTION TABLE (TST)

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

TEST DESCRIPTION
NUMBER

- 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 WHO 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., WHO=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 0177 0277 0337 0357 0367 0373 0375 0376	SLIDING NO BIT (0) CHARACTER PATTERN
2	0103	HIGH FREQUENCY EVERY OTHER TRACK
3	0273	HALF FREQUENCY OUTSIDE TRACKS HIGH FREQUENCY ALL INSIDE TRACKS
4	0001 0002 0003 0004	INCREMENTING CHARACTER PATTERN NO 00 CODES

THREE 0 BITS EACH TRACK
EVERY 7TH WORD

0377
0177
0277
0337
0357
0367
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

0004

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

0000
0200
0100
0040
0020
0010
0004
0002
0001

HIGH FREQUENCY EVERY OTHER TRACK

0274

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

0037
0076
0201
0174
0003
0370
0007
0360

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
RANDOM DATA WORD PATTERN 03 CODES
INCLUDED

0377
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.

- | CODE | 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).

- | CODE | 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).

- | CODE | 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. |

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 OR-
IGINAL 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 ALTH THIS MODE OF ERROR REPORTING
BY FORCING REPORTS FOR ALL WRITE AND READ=COMPARE ERRORS, RE-
SPECIALLY, 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 BADSPT 0003

WITH THE FOLLOWING DEFINITIONS:

SYMBOL DEFINITION

DRV DRIVE NUMBER
PAT SELECTED DATA PATTERN

14
 SELECTED PARITY
 SELECTED DENSITY
 MODE
 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
 NUMBER OF WRITE ERRORS NOT
 RECOVERED AFTER 7 REWRITES
 PERMANENT BADSPT
 WRITE ERRORS
 RECOVERED AT N
 REWRITE
 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
DEB 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 OUMP".

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.

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 LMCR=6701
6702 CWCR=6702
6703 LCAR=6703
6704 CCAR=6704
6705 LCMR=6705
6706 LFGR=6706
6707 LDBR=6707

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

6721 SKCF=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 JMP 1 /RMF /JMP I 2
0002 2 /JMP I 3/POINTER /HANDLING;
0003 3 /1 / /SUCH A SYSTEM ENABLES THIS PROGRAM
/TO RUN IN ANY EXISTING MEMORY FIELD;

/PERMANENT VALUES
 WRBUF, 3400 /READ=WRITE BUFFER STARTING ADDRESS
 MAXLEN, 7630 /MAXIMUM RECORD LENGTH
 MINLEN, 30 /MINIMUM RECORD LENGTH

/PAGE POINTERS
 XRRANUM, RANGEN
 XRRWIND, REWIND
 XCLRTBL, CLRTBL
 XGOSKW, GOSKWD
 XRDIT, READIT
 XWRIT, WRIT
 XTSING, TESI
 XGENPT, GENPAT
 XRDINC, RDINCR
 XSVCTR, SVCTRS
 XNVCTR, NVCTRS
 XWATKY, WAITKY
 XCHGDRV, CHGDRV
 XALEOT, ALLEOT
 XRSFOV, RSFOV
 XCLRAL, CLRAL
 XDCPRT, DCPRT
 XTYPDT, TYPDAT
 XTEXT, TEXT
 XOTY, OTY
 XQTI, QTI
 XTSP3, TSP3
 XTIN, TIN
 XTSR, TSR
 XLEOT1, LBEOT1
 XLEOT2, LBEOT2
 XLBSAV, LBSAV
 XLBINT, LBINT
 XLBWAT, LBWAT
 XLBSET, LBSET

PAUSE

0130 3400
 0131 7630
 0132 0030
 2133 5675
 0134 5345
 2135 5066
 0136 5127
 0137 4200
 2140 2444
 0141 3102
 2142 5400
 0143 4462
 2144 1000
 0145 1007
 2146 1142
 0147 1071
 0150 1236
 0151 1051
 0152 1035
 0153 6031
 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

```

/ TM8E DATA RELIABILITY TEST - TAPE 2 (9 TRACK)
/ PARAMETER AND TEST SELECTIONS VIA KEYBOARD
*200
RELIAB, SKP
0200 0200
0201 7410
0202 4570
0203 4555
0204 6701
0205 3022
0206 4546
0207 7041
0210 1300
0211 7650
0212 5225
0213 1054
0214 0365
0215 1366
0216 7650
0217 5231
0220 1363
0221 4556
0222 1361
0223 4556
0224 5206
0225 1022
0226 7450
0227 5203
0230 5256

/ SET UP INTERRUPT SERVICE
/ PRINT TEXT.
"SELECT DRIVES"
/ CLEAR DRIVE SELECT
/ WAIT FOR CHARACTER FROM KEYBOARD
0231 0231
0232 4556
0233 1054
0234 0106
0235 3023
0236 1023
0237 7040
0240 3047
0241 7120
0242 7010
0243 2047
0244 5242
0245 3047
0246 1047
0247 0022
0250 7041
0251 7104
0252 1047
0253 1022
0254 3022
0255 5206

/ IS CHARACTER A VALID DRIVE NUMBER
/ YES, SAVE
/ NO, TYPE "?"
/ TYPE ","
0256 0256
0257 0257
0258 0258
0259 0259
0260 0260
0261 0261
0262 0262
0263 0263
0264 0264
0265 0265
0266 0266
0267 0267
0268 0268
0269 0269
0270 0270
0271 0271
0272 0272
0273 0273
0274 0274
0275 0275
0276 0276
0277 0277
0278 0278
0279 0279
0280 0280
0281 0281
0282 0282
0283 0283
0284 0284
0285 0285
0286 0286
0287 0287
0288 0288
0289 0289
0290 0290
0291 0291
0292 0292
0293 0293
0294 0294
0295 0295
0296 0296
0297 0297
0298 0298
0299 0299
0300 0300

/ ANY DRIVES SELECTED?
/ NO
/ YES, SELECT TESTS
0301 0301
0302 0302
0303 0303
0304 0304
0305 0305
0306 0306
0307 0307
0308 0308
0309 0309
0310 0310
0311 0311
0312 0312
0313 0313
0314 0314
0315 0315
0316 0316
0317 0317
0318 0318
0319 0319
0320 0320
0321 0321
0322 0322
0323 0323
0324 0324
0325 0325
0326 0326
0327 0327
0328 0328
0329 0329
0330 0330

/ HAVE VALID DRIVE SELECTED
/ TYPE ","
0331 0331
0332 0332
0333 0333
0334 0334
0335 0335
0336 0336
0337 0337
0338 0338
0339 0339
0340 0340
0341 0341
0342 0342
0343 0343
0344 0344
0345 0345
0346 0346
0347 0347
0348 0348
0349 0349
0350 0350
0351 0351
0352 0352
0353 0353
0354 0354
0355 0355
0356 0356
0357 0357
0358 0358
0359 0359
0360 0360
0361 0361
0362 0362
0363 0363
0364 0364
0365 0365
0366 0366
0367 0367
0368 0368
0369 0369
0370 0370
0371 0371
0372 0372
0373 0373
0374 0374
0375 0375
0376 0376
0377 0377
0378 0378
0379 0379
0380 0380
0381 0381
0382 0382
0383 0383
0384 0384
0385 0385
0386 0386
0387 0387
0388 0388
0389 0389
0390 0390
0391 0391
0392 0392
0393 0393
0394 0394
0395 0395
0396 0396
0397 0397
0398 0398
0399 0399
0400 0400

/ TEMP STORAGE FOR - DRIVE NUMBER
/ MOVE SELECT BIT RIGHT ONE PLACE
/ IS THIS DRIVE SELECTED
/ NO
0401 0401
0402 0402
0403 0403
0404 0404
0405 0405
0406 0406
0407 0407
0408 0408
0409 0409
0410 0410
0411 0411
0412 0412
0413 0413
0414 0414
0415 0415
0416 0416
0417 0417
0418 0418
0419 0419
0420 0420
0421 0421
0422 0422
0423 0423
0424 0424
0425 0425
0426 0426
0427 0427
0428 0428
0429 0429
0430 0430

/ COMBINE DRIVE SELECT BITS
0431 0431
0432 0432
0433 0433
0434 0434
0435 0435
0436 0436
0437 0437
0438 0438
0439 0439
0440 0440
0441 0441
0442 0442
0443 0443
0444 0444
0445 0445
0446 0446
0447 0447
0448 0448
0449 0449
0450 0450
0451 0451
0452 0452
0453 0453
0454 0454
0455 0455
0456 0456
0457 0457
0458 0458
0459 0459
0460 0460
0461 0461
0462 0462
0463 0463
0464 0464
0465 0465
0466 0466
0467 0467
0468 0468
0469 0469
0470 0470
0471 0471
0472 0472
0473 0473
0474 0474
0475 0475
0476 0476
0477 0477
0478 0478
0479 0479
0480 0480
0481 0481
0482 0482
0483 0483
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0486 0486
0487 0487
0488 0488
0489 0489
0490 0490
0491 0491
0492 0492
0493 0493
0494 0494
0495 0495
0496 0496
0497 0497
0498 0498
0499 0499
0500 0500

```

0020	*20		
0020	PASSWS,	0	/PARAMETER STORAGE
0021	0000	0	/PARAMETER STORAGE
0022	0000	0	/MASTER DRIVE SELECT BITS
0023	MSBITS,	0	/CURRENT DRIVE
0024	CDRIVE,	0	/PATTERN NUMBER SELECTED
0025	PATNUM,	0	/PARITY SELECTION
0026	PARB11,	0	/DRIVE AND DENSITY SELECTED
0027	DRVDEN,	0	/RECORD LENGTH CONTROL
0028	RLTROL,	0	/WRITE STOP MODE
0029	MODBIT,	0	/READ STOP MODE
0030	0000	0	/READ PASS IS SELECTED
0031	0000	0	/EXIT MODE
0032	RECSYS,	0	/STARTING BLOCK LENGTH
0033	0000	0	/COMMAND, DRIVE, PAR, DEN
0034	0000	0	/BLOCK LENGTH INCREMENT
0035	COMAND,	0	/WRITE RECOVERY COUNT
0036	BLKING,	0	/NUMBER OF TESTS SELECTED
0037	WRPASS,	0	/NUMBER OF TESTS EXECUTED
0038	0000	0	/TESTS BEING EXECUTED
0039	NUMTST,	0	/CLEARED IF PARAMETER INPUT IS THRU SWITCHES
0040	0000	0	/CLEARED AT END OF RLS
0041	0000	0	/TEMP STORAGE
0042	TBLCNT,	0	/DELAY COUNTER
0043	EXETST,	0	/DELAY COUNTER
0044	SWTEST,	0	/COUNT READ PASSES
0045	EOSFLG,	0	/SAVE MAGTAPE STATUS WORD
0046	SVRECR,	0	/CHARACTER INPUT FROM KEYBOARD
0047	0000	0	
0048	0000	0	
0049	0000	0	
0050	0000	0	
0051	0000	0	
0052	0000	0	
0053	0000	0	
0054	0000	0	

0055	0000	/WRITE ERROR AND RECORD CONTROL REGISTERS
0056	0000	WRCHK, 0
0057	0000	RECV1, 0
0060	0000	RECV2, 0
0061	0000	RECV3, 0
0062	0000	RECV4, 0
0063	0000	RECV5, 0
0064	0000	RECV6, 0
0065	0000	RECV7, 0
0066	0000	PERMBS, 0
0067	0000	RECORD, 0
0070	0000	0
0071	0000	LASRCR, 0
0072	0000	0
0073	0000	WRTEOT, 0
0074	0000	WRTLEN, 0
0075	0000	WRRECR, 0
0076	0000	0
0077	0000	/READ ERROR AND RECORD CONTROL REGISTERS
0100	0000	READLN, 0
0101	0000	ANOSTA, 0
0102	0000	CMPEER, 0
0103	0000	NRREAD, 0
0104	0003	RDEERS, 0
0105	0004	RDEOT, 0
0106	0007	K0003, 3
0107	0010	K0004, 4
0110	0017	K0007, 7
0111	0020	K0010, 10
0112	0030	K0017, 17
0113	0040	K0020, 20
0114	0060	K0030, 30
0115	0100	K0040, 40
0116	0177	K0060, 60
0117	0200	K0100, 100
0120	0240	K0177, 177
0121	0300	K0200, 200
0122	0400	K0240, 240
0123	7443	K0300, 300
0124	7751	K0400, 400
0125	7770	K7443, 7443
0126	7771	K7751, 7751
0127	7775	K7770, 7770
		K7771, 7771
		K7775, 7775

/PERMANENT BAD SPOT ON TAPE
/RECORD COUNT
/RECORD COUNT OVERFLOW
/LAST RECORD

/WRITE BLOCK LENGTH
/SAVE STARTING RECORD

/READ BLOCK LENGTH

/DON REC READ
/COUNT READ ERRORS

```

0256 4555 /SELECT TESTS
0257 6715 JMS I XTEXT
0260 3040 TEXT131
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 XNATKY
0270 1360 CIA
0271 7650 TAD K0215
0272 5313 SNA CLA
0273 1054 JMP TSTYQS+3
0274 0365 TAD CHARIN
0275 1366 AND K0370
0276 7650 TAD K7520
0277 5321 SNA CLA
0300 1054 JMP VLDIST
0301 7041 TAD CHARIN
0302 1362 CIA
0303 7450 TAD K0270
0304 5321 SNA
0305 7001 JMP VLDIST
0306 7650 IAC CLA
0307 5321 SNA CLA
0310 1363 JMP VLDIST
0311 4556 TAD K0277
0312 5265 JMS I XOTY
0313 7200 JMP SLTSTS+7
0314 1040 CLA
0315 7450 TAD NUMTST
0316 5310 SNA
0317 5720 JMP TSTYQS
0320 0601 JMP I,+1
        EXECUT

0255 /SLTSTS,
0256 JMS I XTEXT
0257 TEXT131
0260 DCA NUMTST
0261 SKP CLA
0262 TSTTBL-1
0263 TAD -1
0264 DCA 16
0265 JMS I XTIN
0266 JMS I XNATKY
0267 CIA
0270 TAD K0215
0271 SNA CLA
0272 JMP TSTYQS+3
0273 TAD CHARIN
0274 AND K0370
0275 TAD K7520
0276 SNA CLA

0277 JMP VLDIST
0278 TAD CHARIN
0279 CIA
0280 TAD K0270
0281 SNA
0282 JMP VLDIST
0283 IAC CLA
0284 SNA CLA
0285 JMP VLDIST
0286 TAD K0277
0287 JMS I XOTY
0288 JMP SLTSTS+7
0289 CLA
0290 TAD NUMTST
0291 SNA
0292 JMP TSTYQS
0293 JMP I,+1
0294 EXECUT

0255 /IS CHARACTER A CAR RET
0256 /YES, SEE IF TESTS SELECTED
0257 /NO
0258 /WAIT FOR KEY
0259 /IS CHAR A VALID NUMBER 0-9?
0260 /YES
0261 /NO
0262 /IS CHAR AN 8?
0263 /YES
0264 /IS CHAR A 9?
0265 /YES
0266 /CHARACTER WAS NOT 0-9
0267 /TYPE "?"
0268 /TRY AGAIN
0269 /ANY TESTS SELECTED?
0270 /NO
0271 /YES, EXECUTE SELECTED
    
```

```
0321 7300 /HAVE VALID TEST NUMBER SELECTED
0322 1054 VLOTST, CLA CLL
0323 0110 TAD CHARIN /IT VALID TEST NUMBER
0324 7010 AND K0017
0325 7012 RAR /MOVE INTO POSITION
0326 7012 RTR
0327 3021 DCA PASSWS+1 /SAVE IT
0330 4560 JMS I XTSP3 /TYPE 3 SPACES
0331 4546 JMS I XWATKY /WAIT FOR PATTERN KEY
0332 0365 AND K0370
0333 1366 TAD K7520
0334 7640 SZA CLA /IS KEY VALID FOR PATTERN?
0335 5310 JMP TSTYQS /NO
0336 1054 TAD CHARIN /YES
0337 0106 AND K0007 /MASK OCTAL
0340 3020 DCA PASSWS /SAVE IT
0341 4560 JMS I XTSP3 /WAIT FOR PATTERN KEY
0342 4546 JMS I XWATKY
0343 0364 AND K0370
0344 1366 TAD K7520
0345 7640 SZA CLA /IS KEY VALID FOR PARITY? (0 OR 1)
0346 5310 JMP TSTYQS /NO
0347 1054 TAD CHARIN /YES
0350 7004 RAR /ROTATE INTO POSITION
0351 7006 RTL
0352 0107 AND K0010 /MASK PARITY BIT
0353 1020 TAD PASSWS /COMBINE PARITY WITH PATTERN
0354 3020 DCA PASSWS /SAVE IT
0355 4560 JMS I XTSP3
0356 5757 JMP I .+1
0357 0400
0360 0215 K0215,
0361 0254 K0254,
0362 0270 K0270,
0363 0277 K0277,
0364 0376 K0376,
0365 0370 K0370,
0366 7520 K7520, 7520
```

*400

0400	TAD K0003	/DENSITY IS 800 BPI 9 TRACK
1104	TAD PASSWS+1	/COMBINE DENSITY OF 800 WITH TEST
0401	DCA PASSWS+1	/SAVE
0402	TAD K270	
0403	JMS I X0TY	
0404	TAD K0260	/ECHO 2 ZEROS (00)
0405	JMS I X0TY	
0406	TAD K0260	
0407	JMS I X0TY	
0410	TAD K0240	
0411	JMS I X0TY	
0412	JMS I XWATKY	/WAIT FOR RECORD LENGTH KEY
0413	AND K0374	
0414	TAD KX7520	
0415	SZA CLA	/IS KEY FOR RECORD LENGTH 0-1-2-3
0416	JMP I XTSP3	/NO, PRINT "?"
0417	TAD CHARIN	/YES
0420	RTL	/MOVE RECORD LENGTH INTO POSITION
0421	RTL	
0422	AND K0060	
0423	TAD PASSWS	/COMBINE RECORD LENGTH WITH PAR AND PAT
0424	DCA PASSWS	/SAVE IT
0425		
0426	JMS I XTSP3	
0427	JMS I XWATKY	/WAIT FOR WRITE STOP MODE KEY
0430	AND K0374	
0431	TAD KX7520	/IS KEY FOR WRITE STOP MODE 0-1-1-3
0432	SZA CLA	/NO, PRINT "?"
0433	JMP I XTSP3	
0434	TAD CHARIN	
0435	AND K0003	
0436	TAD K7775	
0437	SNA CLA	/IS KEY AN INVALID 3?
0440	JMP I XTSP3	/YES, PRINT "7"
0441	TAD CHARIN	/NO
0442	RTL	/MOVE INTO POSITION
0443	RTL	
0444	AND K0300	
0445	TAD PASSWS	/COMBINE WRITE STOP MODE WITH RECORD LENGTH, PAR, PAT
0446	DCA PASSWS	/SAVE IT
0447	JMS I XTSP3	
0450	JMS I XWATKY	/WAIT FOR READ MODE KEY
0451	AND K0374	
0452	TAD KX7520	
0453	SZA CLA	/IS KEY FOR READ STOP MODE 0-1-2-3
0454	JMP I XTSP3	/NO, PRINT "?"
0455		

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 XTSYQS	/YES, PRINT "7"
0463	1054	TAD CHARIN	
0464	7004	RAI	/MOVE INTO POSITION
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	SZA	
0475	5305	JMP .+10	
0476	1020	TAD PASSWS	/SAVE TEST PARAMETERS
0477	3416	DCA I 16	
0500	1021	TAD PASSWS+1	/SAVE TEST PARAMETERS
0501	3416	DCA I 16	
0502	2040	ISE NUMTST	/++ TO TESTS COUNTED
0503	4555	JMS I XTEXT	
0504	6750	TEXT32	
0505	5706	JMP I .+1	/NO,K,"
0506	0265	SLISTS+7	
0507	0310	TSYQS, TSYQS	
0510	0260	K0260, 260	
0511	0270	K270, 270	
0512	7520	K07520, 7520	
0513	0374	K0374, 374	
0514	0000	/TABLE OF TEST POINTERS	
0515	7200	TESTX, 0	
0516	1042	CLA EXETST	/TEST NUMBER
0517	1323	TAD TBLTST	/+ TEST POINTER
0520	3321	DCA .+1	
0521	4724	JMS I TBLTST+1	/MODIFIED, JMS TO TEST X
0522	5714	JMP I TESTX	
0523	4724	TBLTST, JMS I .+1	
0524	1400	TEST0	
0525	1414	TEST1	
0526	1437	TEST2	
0527	1462	TEST3	
0530	1506	TEST4	
0531	1535	TEST5	
0532	1600	TEST6	
0533	1645	TEST7	
0534	2000	TEST10	
0535	2200	TEST11	
0536	0000	L0TEXT, 0	
0537	4562	JMS I	XTSR
0540	1501	TEXT	"MAINDEC-08-DHTMD-A"
0541	1116		

0542 0405
0543 0355
0544 0070
0545 5504
0546 1024
0547 1504
0550 5501
0551 0000
0552 4561
0553 5736

JMS I XTIN
JMP I LBTEXT

[illegible]

```

/SEE IF READ MODE IS TO CHANGE
0645 7604 LAS
0646 7010 RAR
0647 7620 SNL CLA
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
0661 7041 CIA
0662 1112 TAD K0030
0663 7640 SZA CLA
0664 5225 JMP TSRUNL
0665 1021 TAD PASSWS+1
0666 0112 AND K0030
0667 3031 DCA READMO

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

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

```

```

0727 7604 /SEE IF PATTERN IS TO CHANGE
CHGPAT, LAS
AND K0040 /CHANGE PATTERN IF AC SW 7=1
SNA CLA /NO
JMP CHRPAR /+1 TO PATTERN
ISZ PATNUM
TAD PATNUM
AND K0010
SNA CLA /DONE ALL PATTERNS?
JMP TSRUNL /NO, EXECUTE THIS PATTERN
TAD PASSWS /YES, REINITIALIZE PATTERN
AND K0007
DCA PATNUM
/SEE IF PARITY IS \O CHANGE
CHRPAT, LAS
AND K0020 /CHANGE PARITY IF AC SW 6=1
SNA CLA /NO
JMP RPTTST /CHANGE PARITY
TAD PARBT1
CMA
AND K0010
DCA PARBT1
TAD PASSWS
AND K0010
CIA
TAD PARBT1
SZA
JMP TSRUNL /BACK TO ORIGINAL PARITY
TEST NUMBER /NO, EXECUTE THIS PARITY
RPTTST, ISZ TSTDEX /+1 TO TEST NUMBER
ISZ TBLCNT /+1 TO TABLE COUNT
TAD TBLCNT
CIA
TAD NUMTST
SZA CLA
JMP I, +4
HLT
JMP I, +1
EXECUT
EXECUT+5 /NUMBER OF TIMES TO BE EXECUTED,
EXECNT, 0 /POINTER TO GET TEST,
TSTDEX, 0
0730 0113
0731 7650
0732 5343
0733 2024
0734 1024
0735 0107
0736 7650
0737 5225
0740 1020
0741 0106
0742 3024
0743 7604
0744 0111
0745 7650
0746 5361
0747 1025
0750 7040
0751 0107
0752 3025
0753 1020
0754 0107
0755 7041
0756 1025
0757 7440
0760 5225
0761 2375
0762 2041
0763 1041
0764 7041
0765 1040
0766 7640
0767 5773
0770 7402
0771 5772
0772 0601
0773 0606
0774 0000
0775 0000

```

```

1000      *1000
1000      /SAVE DRIVE RECORD AND ERROR COUNTERS
1001      SVCTRS, 0
1002      JMS CTRDEX
1003      TAD I 10
1004      DCA I 11
1005      ISZ 12
1006      JMP I-3
1007      JMP I SVCTRS
1008      /SAVE DRIVE COUNTERS

1009      /RESET DRIVE COUNTERS BACK INTO PROGRAM
1010      MVCTRS, 0
1011      JMS CTRDEX
1012      TAD I 11
1013      DCA I 10
1014      ISZ 12
1015      JMP I-3
1016      JMP I MVCTRS
1017      /RESTORE DRIVE COUNTERS

1018      /SET UP INDEX REGISTERS FOR MOVE AND SAVE COUNTERS
1019      CTRDEX, 0
1020      CLA SKP
1021      WRCHEK-1
1022      TAD I-1
1023      DCA 10
1024      TAD K7751
1025      DCA 12
1026      CLA SKP
1027      DRVADR-1
1028      TAD I-1
1029      TAD CDRIVE
1030      DCA 17
1031      TAD I 17
1032      DCA 11
1033      JMP I CTRDEX
1034      /CLEAR ALL DRIVES
1035      CLRALL, 0
1036      JMS I XRSFOV
1037      JMS I XRWIND
1038      JMS I XCLRTB
1039      JMS SVCTRS
1040      JMS I XCHGDV
1041      JMP I-4
1042      CLA CMA
1043      DCA EOSFLG
1044      DCA I +2
1045      JMP I CLRALL
1046      T11FLG
1047      /RESET TO FIRST DRIVE
1048      /REWIND
1049      /CLEAR READ AND WRITE TABLES
1050      /SAVE COUNTERS
1051      /DONE ALL DRIVES?
1052      /NO

```

1051	0000		/RESET DRIVE SELECTION TO LOWEST DRIVE NUMBER
1052	7200	CLA	RSFORV, 0
1053	3023	DCA	START WITH 0
1054	1313	TAD K4030	
1055	3270	DCA	SAVE BIT FOR 0
1056	1270	TAD	MSBITS
1057	0022	AND	MSBITS
1058	7640	SEA	CLA
1059	5266	JMP	+5
1060	2023	ISZ	CDRIVE
1061	1270	TAD	CDRVT
1062	7110	CLL	RAR
1063	5255	JMP	RSFORV+4
1064	4315	JMS	SETFUN
1065	5651	JMP	I RSFORV
1066	0000	CDRVT, 0	
1067			
1068			
1069			
1070			
1071	0000		/SELECT NEXT DRIVE
1072	7200	CLA	CHGDRV, 0
1073	1270	TAD	CDRVT
1074	7110	CLL	RAR
1075	2023	ISZ	CDRIVE
1076	0314	AND	K7760
1077	7440	SEA	
1100	5304	JMP	+4
1101	4251	JMS	RSFORV
1102	2271	ISZ	CHGDRV
1103	5671	JMP	I CHGDRV
1104	3270	DCA	CDRVT
1105	1270	TAD	CDRVT
1106	0022	AND	MSBITS
1107	7450	SNA	
1110	5272	JMP	CHGDRV+1
1111	4315	JMS	SETFUN
1112	5671	JMP	I CHGDRV
1113	4000	K4000,	
1114	7760	K7760,	
1115			
1116			
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1190			
1191			
1192			
1193			
1194			
1195			
1196			
1197			
1198			
1199			
1200			

/SET UP FUNDAMENTAL COMMAND

```

1115 0000
1116 7200
1117 1026
1118 0104
1119 3026
1120 6224
1121 1026
1122 3026
1123 1023
1124 7100
1125 7012
1126 7012
1127 1026
1128 1026
1129 3026
1130 1026
1131 1026
1132 1026
1133 3026
1134 1026
1135 7040
1136 1122
1137 1026
1138 3035
1139 5715

```

```

SETFUN, 0
CLA
TAD DRVDEN
AND K0003
DCA DRVDEN
RIF
TAD DRVDEN
DCA DRVDEN
TAD CDRIE
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
1148 5347
1149 3054
1150 1054
1151 5742
1152 1200

```

```

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

```

/ECHO CHARACTER

*1200
/INITIALIZE TEST PARAMETERS
/PATNUM=PARBT1-DRVDEN=RLTROL=MODBIT=READMO
PARAMS, 0

```

1200 0000
1201 7200
1202 1020
1203 0106
1204 3024
1205 1020
1206 0107
1207 3025
1208 1020
1209 0235
1210 3026
1211 1021
1212 0104
1213 1026
1214 1121
1215 3026
1216 6224
1217 1026

```

```

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 5000 JCA READMO
1235 7000 JMP I PARAMS
      K7000, 7000
      /
      /TEST FOR ALL DRIVES TO HAVE REACHED EOT
      ALLEOT, 0
      CLA
      TAD RECSYS
      SZA
      TRDEOT
      JMP I XRSFOV
      JMS I XMVCTR
      TAD WRTEOT
      SNA
      ALLEOS
      JMP I XCHGCV
      JMP ALLEOT+6
      ISZ ALLEOT
      JMP I ALLEOT
      TRDEOT, JMS I XRSFOV
      JMS I XMVCTR
      TAD RDEOT
      SNA
      ALLEOS
      JMP I XCHGCV
      JMP TRDEOT+1
      ISZ ALLEOT
      JMP I ALLEOT
      ALLEOS, LAS
      RAL
      SNL
      JMP I ALLEOT
      TAD EOSFLC
      SZA
      JMP I ALLEOT
      ISZ ALLEOT
      JMS I +2
      JMP I ALLEOT
      CTROMP
      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
      /GET FIRST DRIVE
      /GET COUNTERS
      /GET READ TO EOT
      /THIS DRIVE AT EOT?
      /NO
      /ALL AT EOT?
      /NO
      /YES
  
```

/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
RFSR
AND K0037
SZA CLA
JMP .+4
RMSR
AND K3767
SZA CLA
ISZ LBE0T1
JMP I LBE0T1
K0037, 37
K3767, 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
CLA
TAD STATRE
AND K0037
SZA CLA
JMP .+4
TAD STATRD
AND K3767
SZA CLA
ISZ LBE0T2
JMP I LBE0T2

/ROUTINE TO SAVE STATUS REGISTERS,

LBSAV, 0
1327 0000
1330 6714
1331 3052
1332 6716
1333 3053
1334 5727
RMSR
DCA STATRD
RFSR
DCA STATRE
JMP I LBSAV

/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
SKEF
SKP
JMP I LBINT
SKTD
HLT
JMP I LBINT

/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

/ TM8E DATA RELIABILITY TEST - TAPE 3 (9 TRACK)
444400

1400

#1400

/WRITE TO EOT
/REWIND GO TO NEXT DRIVE
TEST0, 0

1400	0000
1401	7200
1402	3033
1403	3032
1404	4552
1405	4535
1406	4542
1407	4540
1410	4534
1411	4547
1412	5205
1413	5600

```

CLA      EXITMO      /SET EXIT EOT
DCA      RECSYS      /NO READ PASS
JMS      I XCLRAL    /CLEAR ERROR COUNTERS
JMS      I XCLRRTB   /CLEAR READ AND WRITE TABLE
JMS      I XGENPT    /GENERATE PATTERN
JMS      I XWRIT      /WRITE
JMS      I XRWIND     /REWIND
JMS      I XCHGDV     /ANY MORE DRIVES?
JMP      TESTO+5      /YES
JMP      I TESTO      /NO, EXIT

```

WRITE 1 RECORD LENGTH SEQUENCE OR 255 RECORDS
/CHANGE DRIVES, GO TO EOT
TEST1, 0

1414	0000
1415	7200
1416	1115
1417	3053
1420	3052
1421	4552
1422	4551
1423	4545
1424	1072
1425	7430
1426	5242
1427	4542
1430	4540
1431	4544
1432	4547
1433	5223
1434	4550
1435	5222
1436	5614

```

CLA      K0100
TAD      EXIT10
DCA      RECSYS
JMS      I XCLRAL
JMS      I XRSFOV
JMS      I XNVCTR
TAD      WRTEOT
SZA      +4
JMP      I XGENPT
JMS      I XWRIT
JMS      I XSVCTR
JMS      I XCHGQDV
JMP      TEST1+7
JMS      I XALEOT
JMP      TEST1+6
JMP      I TEST1
/EXIT WRITE ROUTINE AT END OF RLS
/NO READ PASS
/CLEAR ERROR COUNTERS
/GET DRIVE COUNTERS
/IS THIS ONE AT EOT?
/YES
/GENERATE PATTERN
/WRITE
/SAVE COUNTERS THIS DONE
/DONE 1 RLS ALL DRIVES?
/NO, DO NEXT DRIVE
/ALL DRIVES AT EOT?
/NO
/YES, EXIT

```

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

1437 0000
 1440 7200
 1441 1117
 1442 3033
 1443 3032
 1444 4532
 1445 4531
 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 4532
 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 IVE
1510 1115 TEST14, 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 XSVCTR
1521 1072 JMS I XGENPT
1522 7440 CLA
1523 5330 TAD WRTEOT
1524 4540 SZA
1525 4536 JMP I XWRIT
1526 4537 JMS I XGOBKW
1527 4544 JMS I XROIT
1530 4547 JMS I XSVCTR
1531 5316 JMS I XCHGOV
1532 4550 JMP TEST4+10
1533 5315 JMS I XALEOT
1534 5706 JMP TEST4+7
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 TEST15, 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 JMS I XSVCTR
1551 7440 CLA
1552 5330 TAD WRTEOT
1553 4540 SZA
1554 4536 JMP I XWRIT
1555 4537 JMS I XGOBKW
1556 4544 JMS I XROIT
1557 4547 JMS I XSVCTR
1560 5345 JMS I XCHGOV
1561 4550 JMP TEST5+10
1562 5344 JMS I XALEOT
1563 5735 JMP TEST5+7
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
```

```
1535 0000 /WRITE PASS, HEAD RECOVER
1536 7200 /CLEAR ALL COUNTERS
1537 1117 /GENERATE PATTERN
1540 3033
1541 1122
1542 3032
1543 4552
1544 4551
1545 4542
1546 4545
1547 7200
1550 1072
1551 7440
1552 5330
1553 4540
1554 4536
1555 4537
1556 4544
1557 4547
1560 5345
1561 4550
1562 5344
1563 5735
```

```

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

      *1600
      /
      /WRITE 1 RLS, CHANGE DRIVES, REPEAT
      /BACKSPACE, CHANGE DRIVES, REPEAT
      /READ, CHANGE DRIVES, REPEAT
      TEST6, 2
      CLA
      TAD K0100
      DCA EXITMO
      TAD K2400
      DCA RECSYS
      JMS I XCLRAL
      JMS I XRSFDV
      JMS I XGENPT
      JMS I XMVCTR
      CLA
      TAD WRTTOT
      SZA
      JMP :+3
      JMS I XWRIT
      JMS I XSVCTR
      JMS I XCHGOV
      JMP :-10
      JMS I XMVCTR
      CLA
      TAD RDEOT
      SNA
      JMS I XGOBKH
      JMS I XSVCTR
      JMS I XCHGOV
      JMP :-7
      JMS I XMVCTR
      CLA
      TAD RDEOT
      SNA
      JMS I XRDIT
      JMS I XSVCTR
      JMS I XCHGOV
      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
    
```


1712	0000	LBSET, 0	/SET UP INTERRUPT LINKS.
1713	6201	0000	/DF=0,
1714	1340	TAD Z1	/RMF IO LOC1, FLD 0,
1715	3735	DCA I P1	
1716	1341	TAD Z2	/JMP I 3 TO LOC 2, FLD 0,
1717	3736	DCA I P2	
1720	7001	IAC	/1 TO LOC 3, FLD 0;
1721	3737	DCA I P3	
1722	6224	RIF	
1723	1313	TAD LBSET+1	/CHANGE TO PROG FLD,
1724	3325	DCA ,+1	
1725	6201	0000	
1726	1342	TAD Z3	
1727	3001	DCA 1	/JMP I 2 TO LOC 1, PF,
1730	7430	SZL	
1731	5712	JMP I LBSET	
1732	4355	JMS I XTEXT	/TITLE TEXT,
1733	1743	TEXTLB	/EXIT,
1734	5712	JMP I LBSET	
1735	0001	1	
1736	0002	2	
1737	0003	3	
1740	6244	RMF	
1741	5403	5403	
1742	5402	5402	
1743	0000	TEXTLB, 0	/TM8E DATA RELIABILITY 9 TRK
1744	4561	JMS I XTIN	
1745	4562	JMS I XTSR	
1746	2415	2415	
1747	7005	7005	
1750	4004	4004	
1751	0124	0124	
1752	0140	0140	
1753	2205	2205	
1754	1411	1411	
1755	0102	0102	
1756	1114	1114	
1757	1124	1124	
1760	3140	3140	
1761	7140	7140	
1762	2422	2422	
1763	1300	1300	
1764	4561	JMS I XTIN	
1765	4561	JMS I XTIN	
1766	4777	JMS I (LBTEXT	
1767	5743	JMP I TEXTLB	

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
2001 7200
2002 1030
2003 7640
2004 5207
2005 1115
2006 7410
2007 1117
2008 3033
2009 1122
2010 3032
2011 4552
2012 4542
2013 4551
2014 4545
2015 1066
2016 3074
2017 1067
2018 3075
2019 4544
2020 4547
2021 5216
2022 7240

CLA
TAD MODBIT /GET WRITE MODE
SZA CLA /IS MODE NONSTOP OR START STOP
JMP .+3 /NON STOP
TAD K0100 /START STOP
SKP
TAD K0200
DCA EXITMO
TAD K0400
DCA RECSYS
JMS I XCLRAL
JMS I XGENPT
JMS I XSF0V
JMS I XSVCTR
TAD RECORD
DCA WRRECR
TAD RECORD+1
DCA WRRECR+1
JMS I XSVCTR
JMS I XCHGDV
JMP .-7
CLA CMA

TS10L2,

/RESET ALL DRIVES?
/NO, SAVE LAS RCR NEXT DRIVE

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

DCA EOSFLG
JMS I XRSFOV
JMS I XNVCTR
CLA
TAD WRTEOT
SZA CLA
JMP TS10LS
TAD WRRECR
DCA SVRECR
TAD WRRECR+1
DCA SVRECR+1
JMS I XWRIT
CLA
TAD SVRECR
DCA WRRECR
TAD SVRECR+1
DCA WRRECR+1
JMS I XSVCTR

TS10L1,

/SET TO 0 AT END OF RLS

/HAS DRIVE WRITTEN TO EOT
/YES, DONT WRITE ANYMORE

/SAVE START OF RLS

/WRITE

/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 XNVCTR

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 XNVCTR /GET COUNTERS
2067 1103 TAD RDEOT
2070 7450 SNA /DRIVE READ TO EOT
2071 4536 JMS I XGOBKW /NO, BACK UP
2072 4544 JMS I XSVCTR /ALL DRIVES BACKED UP?
2073 4547 JMS I XCHGOV /NO
2074 5265 JMP .-7 /START 1ST DRIVE AGAIN
2075 4551 JMS I XRSFDV /GET DRIVE COUNTERS
2076 4545 JMS I XNVCTR
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 /READ TO LAST RECORD WRITTEN?
2104 1066 TAD RECORD /YES
2105 7640 SZA CLA /SAVE LAST RECORD
2106 5314 JMP .+6
2107 1071 TAD LASRCR+1
2110 7041 CIA RECORD+1
2111 1067 TAD CLA
2112 7650 SNA T10RND
2113 5341 JMP T10RND
2114 1070 TAD LASRCR
2115 3045 DCA SVRECR
2116 1071 TAD LASRCR+1
2117 3046 DCA SVRECR+1
2120 1031 TAD READMO
2121 7650 SNA CLA
2122 5332 JMP .+10 /GET READ MODE
2123 1066 TAD RECORD /NON STOP OR START STOP?
2124 3070 DCA LASRCR /NON-STOP
2125 1067 TAD RECORD+1 /START STOP
2126 3071 DCA LASRCR+1
2127 2070 ISZ LASRCR
2130 7410 SKP
2131 2071 ISZ LASRCR+1

```

2132	4537	JMS I XRDIT	/READ
2133	7200	CLA	
2134	1045	TAD SVRECR	
2135	3070	DCA LASRCR	/RESTORE LAST WRITTEN
2136	1046	TAD SVRECR+1	
2137	3071	DCA LASRCR+1	
2140	4544	JMS I XSVCTR	/SAVE COUNTERS
2141	4547	JMS I XCHGOV	/DONE ALL DRIVES
2142	5276	JMP T10RDP	/NO
2143	4545	JMS I XMVCTR	/GET CURRENT COUNTERS
2144	7200	CLA	
2145	1070	TAD LASRCR	
2146	7041	CIA	
2147	1066	TAD RECORD	
2150	7440	SEA	/AT
2151	5357	JMP .+6	
2152	1071	TAD LASRCR+1	
2153	7041	CIA	
2154	1067	TAD RECORD+1	
2155	7650	SNA CLA	
2156	5275	JMP T10RDP-1	/NOT AT EOS, READ AGAIN
2157	4547	JMS I XCHGOV	/TEST FOR ALL READ TO EOT
2160	5343	JMP T10RND+2	/NO
2161	4550	JMS I XALEOT	/ALL AT EOT?
2162	5214	JMP TS10L2	/NO
2163	5600	JMP I TEST10	/YES, EXIT

T10RND,

```

2200      *2200
2200      /READ PASS ONLY
2200      /RANDOM PATTERN SELECTION IS INVALID
2200      TEST11, 0
2200      JMS I XCLRAL      /CLEAR COUNTERS
2200      TAD K0400
2200      DCA RECSYS
2200      TAD K0200
2200      DCA EXITMO
2200      CLA CMA
2200      DCA T11FLG
2200      JMS I XWRIT
2200      CLA
2200      TAD EOSFLG
2200      SZA
2200      JMS I XTSINC
2200      CLA
2200      TAD RECORD
2200      DCA T11INC
2200      TAD RECORD+1
2200      DCA T11INC+1
2200      DCA RECORD
2200      TAD PATNUM
2200      CIA
2200      TAD K0007
2200      SZA
2200      JMS I XGENPT
2200      CLA CMA
2200      DCA EOSFLG
2200      JMS I XRSFDV
2200      JMS I XMVCTR
2200      TAD RDEOT
2200      SZA
2200      JMP ,+10
2200      TAD RECORD
2200      TAD T11INC
2200      DCA LASRCR
2200      TAD RECORD+1
2200      TAD T11INC+1
2200      DCA LASRCR+1
2200      JMS I XSVCTR
2200      JMS I XCHGCV
2200      JMP T11LPI+3
2200      JMS I XRSFDV
2200      JMS I XMVCTR
2200      TAD RDEOT
2200      SZA
2200      JMP T11END
2200      TAD LASRCR
2200      DCA SVRECR
2200      TAD LASRCR+1
2200      DCA SVRECR+1

2200      /WRITE EXIT EVERY RECORD
2200      /SET TEST11 WRITE EXIT
2200      /SET UP RECORD LENGTHS
2200      /GET EOSFLAG
2200      /INCREMENT TO END?
2200      /NO
2200      /SAVE SEQUENCE LENGTH

2200      /IF RANDOM PATTERN DON'T GENERATE
2200      /GENERATE PATTERN
2200      /SET START OF SEQUENCE
2200      /GET COUNTERS FOR THIS DRIVE
2200      /IS THIS DRIVE AT EOT
2200      /YES
2200      /CURRENT RECORD + SEQUENCE LENGTH TO READ EXIT

2200      /SAVE COUNTERS FOR THIS DRIV
2200      /DONE ALL DRIVES
2200      /NO
2200      /THIS DRIVE AT EOT?
2200      /YES, DONT READ
2200      /SAVE END OF RLS RECORDS

```

2261	1031	TAD READMO	
2262	7650	SNA CLA	/NONSTOP OR START STOP?
2263	5273	JMP .+10	/NON STOP
2264	1066	TAD RECORD	
2265	3070	DCA LASRCR	
2266	1067	TAD RECORD+1	
2267	3071	DCA LASRCR+1	/+1 TO EXIT READ AFTER 1 RECORD
2270	2070	ISZ LASRCR	
2271	7410	SKP	
2272	2071	ISZ LASRCR+1	
2273	4537	JMS I XRDIT	/READ 1 RECORD OT TO END RLS
2274	7200	CLA	
2275	1045	TAD SVRECR	
2276	3070	DCA LASRCR	/RESTORE END RECORD
2277	1046	TAD SVRECR+1	
2300	3071	DCA LASRCR+1	
2301	4544	JMS I XSVCTR	
2302	4547	JMS I XCHGDV	/DONE ALL DRIVES?
2303	5251	JMP T11RDL	/NO
2304	4550	JMS I XALEOT	/ALL DRIVES AT EOT
2305	7410	SKP	
2306	5000	JMP I TEST11	
T11END,			
2307	4551	JMS I XRSFOV	
2310	4545	JMS I XMVCTR	/GET COUNTERS AGAIN
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	/AT END OF RLS?
2322	7650	SNA CLA	/YES
2323	3044	DCA EOSFLG	/CHECKED ALL DRIVES?
2324	4547	JMS I XCHGDV	
2325	5310	JMP T11LP2	
2326	7200	CLA	
2327	1044	TAD EOSFLG	/AT END OF RLS?
2330	7440	SZA	/NO
2331	5251	JMP T11RDL	/TEST EOS DUMP SWITCH
2332	4550	JMS I XALEOT	
2333	5230	JMP T11LP1	
2334	5600	JMP I TEST11	/EXIT
2335	2000	T11INC, 0	
2336	0000	0	
2337	0000	T11FLG, 0	

/DUMP ERROR COUNTERS ON ALL DRIVES

2340	4544
2341	4344
2342	7402
2343	5342
2344	0000
2345	4551
2346	4545
2347	1330
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

ERROMP, JMS I XSVCTR
JMS CTROMP

5

CTRDMP,

JMS I XRSFDV
JMS I XMVTRS
TAD T11FLG

SNA COMEND-5
JMP I XTEXT
JMS

TEXT34
JMS I XTEXT

TEXT 36
CLASS 5KP

UNCLAS I -1 TAD RECSYS

SVN COMEND

UNSUB I XTEXT
TEXT35

[illegible]

CLA SKP
READMP

JMS I 1-1 XCHGOV

PAUSE

```

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

STRTES, STL
7120 JMS I XLBSET
4570 LAS
7604 AND KX7000
2403 0243
2404 1356
2405 3026
2406 6224
2407 1026
2410 3026
2411 4534
2412 7604
2413 3020
2414 7604
2415 0110
2416 3024
2417 3025
2420 7402
2421 7604
2422 3021
2423 4535
2424 3043
2425 7402
2426 4542
2427 4540
2430 1032
2431 7650
2432 5235
2433 4536
2434 4537
2435 6714
2436 0107
2437 7650
2440 5226
2441 7402
2442 5201
2443 7000

STR1,
7120 JMS I XLBSET
4570 LAS
7604 AND KX7000
2403 0243
2404 1356
2405 3026
2406 6224
2407 1026
2410 3026
2411 4534
2412 7604
2413 3020
2414 7604
2415 0110
2416 3024
2417 3025
2420 7402
2421 7604
2422 3021
2423 4535
2424 3043
2425 7402
2426 4542
2427 4540
2430 1032
2431 7650
2432 5235
2433 4536
2434 4537
2435 6714
2436 0107
2437 7650
2440 5226
2441 7402
2442 5201
2443 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 PATTERN
/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
/HLT END OF TEST
/RESTART FIRST WORD

```

```

2444 5244 /SET UP WRITE SEQUENCE
2445 7200 /GET INFO FROM JMS+1 AND JMS+2
2446 1066 WRITSEQ, JMP .
2447 7640 CLA
2448 1066 TAD RECORD
2449 7640 SZA CLA /DOING RECORD 0
2450 5324 JMP NOINCR /NO
2451 1067 TAD RECORD+1
2452 7640 SZA CLA /4K FLAG * 0
2453 5324 JMP NOINCR /YES NOT BLK 0
2454 1043 TAD SWTEST
2455 7640 SZA CLA /TEST SMS
2456 5270 JMP NOTSMS /NO
2457 7410 /ENTER HERE IF PARAMETERS WERE SUPPLIED THRU THE AC SWITCHES
2458 1200 SKP
2459 1200 PARAMS
2460 4660 JMS I .+1
2461 1020 TAD PASSWS
2462 0122 AND K0400
2463 3032 DCA RECSYS
2464 1021 TAD PASSWS+1
2465 0121 AND K0300
2466 3033 DCA EXITMO
2467 1027 /ENTER HERE IF PARAMETERS WERE SUPPLIED THRU THE KEYBOARD
2470 0111 NOTSMS, TAD RLTR0L /GET RECORD LENGTH BITS
2471 7640 AND K0020
2472 1131 SZA CLA /MIN LENGTH STRY IS SKP
2473 7450 TAD MAXLEN /MAX LENGTH SELECTED
2474 1132 SNA /MIN LENGTH SELECTED
2475 7041 TAD MINLEN
2476 3034 CMA IAC
2477 3036 DCA STRLEN
2478 1027 DCA BLKING
2479 0113 TAD RLTR0L /CLR LENGTH INCREMENTER
2480 7450 AND K0040
2481 5322 SNA CLA /CHNGING LENGTH
2482 1026 JMP NOINCR-2 /NO
2483 1044 TAD DRVDEN /DENSITY
2484 1347 AND K0003
2485 3011 TAD TADING
2486 1350 DCA .+1 /TO GET INCREMENTER
2487 3036 TAD INCTBL /GET DENSITY INC +
2488 3036 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, TAD PARBT1	
2526	7006	CLL RTL	
2527	7004	RTL	
2530	1026	RAL	/PAR + DRV + DENSITY
2531	3035	TAD DRVDEN	
2532	1066	DCA COMAND	
2533	3074	TAD RECORD	/SAVE STARTING RECORD
2534	1067	DCA WRECR	
2535	3075	TAD RECORD+1	
2536	2755	DCA WRECR+1	
2537	7410	ISZ I X11FLG	
2540	5644	SKP I WRTSEQ	
2541	7001	JMP I WRTSEQ	
2542	3755	IAC	
2543	1125	DCA I X11FLG	
2544	3037	TAD K770	/SET 8 PASS COUNTER
2545	5746	DCA WRPASS	/WRT SEQUENCE
2546	2600	JMP I +1	
2547	1350	STRTOP	
2550	0010	TAD INC, TAD INCTBL	
2551	0004	INCTBL, 10	/24 CHARACTER 200 BPI
2552	0002	4	/12 CHARACTER 556 BPI
2553	0002	2	/6 CHARACTER 800 BPI
2554	5644	2	/IN CASE OF SWITCH GOOF
2555	2337	WSEQXT, JMP I WRTSEQ	
2556	0303	X11FLG, T11FLG	
		K0303, 303	

```

2600      *2600
2601      /PERFORM WRITE SEQUENCE OPERATION
2602      STRIOP, TAD COMAND      /LOAD CM WHEN CONTROL READY,
2603      SKCB
2604      JMP ,.-1
2605      CLF
2606      LCMR
2607      SKTR
2608      JMP ,.-1
2609      NONSTP, CLF
2610      TAD      COMAND
2611      LCMR
2612      TAD WRTLEN
2613      LMCB
2614      TAD WRBUF
2615      LCMR
2616      TAD XTSTST
2617      DCA 2
2618      TAD K4100
2619      LFGR
2620      TAD PATNUM
2621      TAD K7771
2622      SNA CLA
2623      JMS STRPAT      /YES SEE IF REGEN VALID
2624      /PROGRAM STAYS IN THIS LOOP UNTIL INTERRUPT
2625      ION
2626      CLA
2627      JMP I ,+1
2628      CAMON
2629      XTSTST, TSISTP
2630      /AT PROG INT COMES TO TSISTP
2631
2632      TSTSTP, JMS I XLBINT
2633      RMSR
2634      SPA CLA
2635      JMP WRTERR
2636      TAD WRPASS
2637      TAD K0010
2638      SNA CLA
2639      JMP NSTSEL-3
2640      TAD WRPASS
2641      SKP
2642      ISZ PERMB5
2643      TAD ,.-1
2644      DCA ,+1
2645      ISZ RECV1
2646      TAD K7770
2647      DCA WRPASS
2648      TAD MODBIT
2649      SZA
2650      JMP STOPOP
2651
2652      /READ STATUS
2653      /EF = 1
2654      /YES SEE IF EOT
2655      /ERR REC PASS
2656      /NO
2657      /CONSTANT
2658      /ISZ PERMB5 = WRITE PASS
2659      /TO +1 RECV1 TO RECV7
2660      /RESET 8 PASS COUNTER
2661      /AC = 0 IS NONSTOP
2662      /START STOP SELECTED

```

```

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

2663 0117 STOPOP, AND K0200
2664 7640 SZA CLA
2665 4273 JMS RANSTP
2666 1037 TAD WRPASS
2667 1107 TAD K0010
2670 7650 SNA CLA
2671 4541 JMS I XTSINC
2672 5200 JMP STRTOP
/NO INCR BLOCK NUMBER
/GO AGAIN

/ERROR RECVR PASS
/SELECTION IS RANDOM START STOP STALL
RANSTP, JMP
/GET RANDOM NUMBER
/MASK 0 TO 127
/MAKE -1 TO -128
/SAVE IT
/4
/4 = RAN COUNT
/1 TO 4
/IS GO NONSTOP

2673 5273 JMS I XTRANUM
2674 4533 AND K0177
2675 0116 CMA
2676 7040 DCA DELAY1
2677 3050 TAD K0004
2700 1105 TAD DELAY1
2701 1050 SNA CLA
2702 7700 JMP NSTSEL
2703 5256 TAD K7443
2704 1123 DCA DELAY
2705 3047 ISZ DELAY
2706 2047 JMP -1
2707 5306 ISZ DELAY1
2710 2050 JMP -5
2711 5304 JMP I RANSTP
2712 5673 /SEE IF APPROPRIATE TO REGENERATE RANDOM DATA
STRPAT, JMP
/READ PASS SELECTED
/YES DON'T REGEN

2713 5313 TAD RECSYS
2714 1032 SZA CLA
2715 7640 JMP I STRPAT
2716 5713 TAD WRPASS
2717 1037 TAD K0010
2720 1107 SNA CLA
2721 7650 JMS I XGENPT
2722 4542 JMP I STRPAT
2723 5713 /NO REGENERATE PATTERN
/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 /NO
2735 5345 JMP TESREC /PRINT TEXT
2736 4555 JMS I XTEXT /TYPE STANDARD DATA INFORMATION
2737 6200 TEXT1
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 TESREC, LAS
2747 7640 AND K0400 /TEST AC SW 3#1
2750 5765 SZA CLA /STATISTICAL RECOVERY
2751 1032 JMP I XSTREC /YES TRY 7 MORE TIMES
2752 7440 TAD RECSYS
2753 4766 SZA I XRCXRG /READ PASS SELECTED
2754 1125 JMS I XRCXRG /YES WRITE XING
2755 3037 TAD K7770 /RESET WRITE COUNTER
2756 6714 DCA WRPASS
2757 0107 RMSR
2760 7640 AND K0010
2761 5763 SZA CLA /EOT # 1
2762 5253 JMP I XENDTP /YES TYPE EOT INFO /TEST STOP MODE
2763 4600 JMP NSTSEL-3
2764 4100 XENDTP, ENDTAP
2765 5275 K4100, 4100
2766 3000 XSTREC, STAREC
XRCXRG, XRGREC

```

```

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

3000      CLA
3001      TAD K7774
3002      DCA WRPASS /COUNT 4 REWRITES
3003      LAS
3004      RAL /TEST AC SW1=1
3005      SPA CLA
3006      JMP XRGRCO
3007      JMS I XBACK1
3008      CLA
3009      TAD COMAND /LOAD CM WHEN CONTROL READY,
3010      SKCB
3011      JMP .-1
3012      CLF
3013      LCMR
3014      SKTR
3015      JMP .-1
3016      CLF
3017      TAD COMAND
3018      LCMR
3019      TAD WRTLEN /LOAD WC.
3020      LWCR /LOAD CA.
3021      TAD WRBUF
3022      LCMR
3023      TAD XRG1 /SET UP INTERRUPT,
3024      DCA 2 /WRITE WITH XIRG.
3025      TAD K4500
3026      LFGR
3027      ION
3028      CLA
3029      JMP I .+1
3030      CAMON
3031      XRG1, XRG1
3032      /RETURN HERE AFTER PROGRAM INTERRUPT
3033      XRG1, XRG1
3034      JMS I XLBINT /SAVE STATUS.
3035      JMS I XLBSAV
3036      TAD STATRD
3037      CLA
3038      CLA
3039      CLA
3040      CLA
3041      CLA
3042      CLA
3043      CLA

```

3044	7710	SPA CLA	/HAVE EF?
3045	5251	JMP .+4	/YES
3046	1125	TAD K7770	
3047	3037	DCA WRPASS	/RESET 7 COUNTER
3050	5600	JMP I XRGREC	
3051	4564	JMS I XLEOT2	/EOT ONLY?
3052	5246	JMP XRGRCO	/YES,
3053	2037	IS2 WRPASS	/DONE 4 XIRG?
3054	5204	JMP XRGREC+4	/NO
		/TYPEOUT STATUS EVERY 4 XIRG	
3055	4555	JMS I XTEXT	/WRITE STATUS ERROR
3056	6200	TEXT1	/TYPE STANDARD DATA INFORMATION
3057	4554	JMS I XTYPOT	
3060	4555	JMS I XTEXT	
3061	6442	TEXT14	/4TH EXTENDED RECORD GAP
3062	1052	TAD STATRD	
3063	0107	AND K0010	
3064	7650	SNA CLA	/EOT=1
3065	5201	JMP XRGREC+1	/NO
3066	1026	TAD DRVDEN	
3067	6725	CLF	
3070	6705	LQMR	
3071	1276	TAD K5100	
3072	6706	LFGR	/WRITE EOF,
3073	4567	JMS I XLBWAT	/WAIT DONE,
3074	4565	JMS I XLBSAV	/SAVE STATUS,
3075	5600	JMP I XRGREC	
3076	5100	K5100,	
3077	4500	K4500,	
3100	4514	XBACK1,	
3101	7774	K7774,	

```

/SEE IF RECORD LENGTH SHOULD BE CHANGED
TESINC, 0
3102 0000
3103 2066
3104 7410
3105 2067
3106 7300
3107 1036
3110 7450
3111 5342
3112 1073
3113 3073
3114 1073
3115 7500
3116 5323
3117 1132
3120 7700
3121 5335
3122 5327
3123 1131
3124 7001
3125 7710
3126 5335
3127 1033
3130 0117
3131 7450
3132 5702
3133 5734
3134 2554
3135 1034
3136 3073
3137 3044
3140 1033
3141 5331
3142 7200
3143 1066
3144 0350
3145 7650
3146 5337
3147 5327
3150 0377

ISZ RECORD
SKP RECORD+1
CLA CLL
TAD BLKINC
SNA
JMP TES2K
TAD WRTLEN
DCA WRTLEN
TAD WRTLEN
SMA
JMP .+5
TAD MINLEN
SMA CLA
JMP RESETL
JMP CWCKOK
TAD MAXLEN
IAC
SPA CLA
JMP RESETL
TAD EXITMO
AND K0200
SNA
JMP I TESINC
JMP I .+1
WSEQXT
TAD STRLEN
DCA WRTLEN
DCA EOSFLG
TAD EXITMO
JMP RESETL-4
CLA
TAD RECORD
AND K377
SNA CLA
JMP RESETL+2
JMP RESETL-6
377 PAUSE

/GET INCREMENTER
/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

```

RELIABILITY TEST (9 TRACK)	MAINDEC-08-DHTMD-A	PAL12	V141	16
4200	/TAPE 5 (9 TRACK)			
*4200	/DATA RELIABILITY READ/COMPARE SEQUENCE			
READIT, 0				
4200	CLA RECORD			
4201	TAD READLN			
4202	SZA CLA			
4203	JMP I+3			
4204	TAD RECORD+1			
4205	SZA CLA			
4206	JMP I+3			
4207	TAD STRLEN			
4210	DCA READLN	/SET UP INITIAL READ LENGTH		
4211	TAD K7775			
4212	DCA ROPASS			
4213	SKCB	/WAIT FOR CONTROL,		
4214	JMP I-1			
4215	CLA	/LOAD CM,		
4216	TAD COMAND			
4217	CLF	/WAIT FOR TRANSPORT,		
4220	LCMR			
4221	SKIR			
4222	JMP I-1			
4223	CLA			
4224	TAD COMAND			
4225	CLF			
4226	TAD			
4227	LCMR			
4230	TAD READLN	/LOAD WC,		
4231	LWCR	/LOAD CA,		
4232	TAD WRBUF	/SET UP INTERRUPT,		
4233	LCAR	/READ/COMP = GO,		
4234	TAD XRDRET			
4235	DCA 2			
4236	TAD K3100			
4237	LFGR			
4240	ION			
4241	CLA			
4242	JMP I+1			
4243	CANON	/CA MONITOR		
4244	XRDRET, RDRET			
4245	/AT PROGRAM INTERRUPT RETURN IS HERE			
4566	RDRET, JMS I XLBINT	/CHECK CAUSE OF INTERRUPT,		
4565	JMS I XLBSAV	/SAVE STATUS,		
4247	TAD STATRD			
4250	SPA	/ANY ERRORS?		
4251	JMP RDRERO	/YES		
4252	AND K0010			
4253	SZA CLA			
4254	JMP I XRDTP	/YES, READ DUMP		
4255				

```

4255 1031 RTSSTP, TAD READMO /GET READ MODE BITS
4256 7440 SZA /NON STOP?
4257 5275 JMP ROSTPC NO
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

/GO AGAIN COMPARE TO ONE

4275 0111 ROSTPC, AND K0020 /MASK READ RANDOM STOP
4276 7440 SZA /TEST FOR START STOP OR RANDOM
4277 4315 JMS RNRDRS /RANDOM
4300 4543 JMS I XRDINC /NORMAL START STOP
4301 7200 CLA
4302 1066 TAD RECORD
4303 7041 CMA IAC
4304 1070 TAD LASRCR
4305 7440 SZA
4306 5313 JMP .+5
4307 1067 TAD RECORD+1
4310 7041 CIA
4311 1071 TAD LASRCR+1
4312 7440 SZA
4313 5214 JMP ROSTPD
4314 5600 JMP I READIT /GO AGAIN

/RANDOM READ START STOP
RNRDRS, 0

4315 0000 JMS I XRANDOM /GET RANDOM NUMBER
4316 4533 AND K0177 /MASK 0 TO 127
4317 0116 CMA /MAKE -1 TO -128
4320 7040 DCA DELAY1 /TO COUNT MILLISEC
4321 3050 TAD DELAY1
4322 1050 TAD K0004
4323 1105 SMA CLA
4324 7700 JMP RTSSTP+3
4325 5260 TAD K7443
4326 1123 DCA DELAY
4327 3047 ISZ DELAY
4330 2047 JMP .-1
4331 5330 ISZ DELAY1
4332 2050 JMP .-5
4333 5326 JMP I RNRDRS
4334 5715

/ K3100, 3100
4335 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, RNDIAP		

```

4377 4400
      *4400
      RDBERR, TAD K0003
      TAD RDPASS
      SZA CLA
      JMP I+14
      TAD STATRD
      CLL RTR
      SNL
      JMP I+7
      AND K0040
      SNA CLA
      JMP I+3
      ISZ CMPERR
      SKP
      ISZ RNBSTA
      ISZ RDBERR
      CLA
      JMS I XRDINC
      LAS
      AND K0100
      SNA RPNAS3
      JMP RPNAS3
      CLA
      TAD K7775
      DCA RDPASS
      TAD STATRD
      AND K0010
      SZA
      JMP I XRDTP2
      TAD RECORD
      CMA IAC
      TAD LASRCR
      SZA CLA
      JMP I+6
      TAD RECORD+1
      CIA
      TAD LASRCR+1
      SNA
      JMP I+2
      JMP I+2
      RDBEXIT
      RDBSTPD
      /SEE IF ALL RE-READS HAVE BEEN MADE
      RPNAS3, ISZ RDPASS
      JMP I+3
      ISZ NRREAD
      JMP RPNAS3
      JMS I XSTBAK
      JMS BACK1
      JMP I RPNAS3-1
      XRDTP2, RNDTAP+1
      XSTBAK, SETBAK
      /DONE ALL RE-HEADS?
      /NO
      /+1 NON REC READ
      /DO NEXT RECORD
      /PUT POINTERS BACK THIS ONE
      /BACK UP
      /GO AGAIN
      /1ST PASS?
      /NO, DO NOT UPDATE ERROR COUNTERS,
      /YES, R/C?
      /NO, NOT A DATA ERROR,
      /YES, PARITY ERROR?
      /YES, UPDATE ATA ERROR,
      /NO, UPDATE DATA NO STATUS,
      /ALWAYS UPDATE READ ERROR ON 1ST PASS
      /TEST AC SW 5 = 1
      /DELETE ERROR RECOVERY?
      /NO
      /RESET PASS COUNTER
      /IS EOT=1
      /YES, PRINT EOT

```

```

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
4470 2067 SKP RECORD+1
4471 1036 TAD BLKING
4472 7450 SNA
4473 5662 JMP I RDINCR
/RECORD LENGTH IS CHANGING, COUNT IT
TAD READLN
DCA READLN
TAD READLN
SMA
JMP +5
TAD MINLEN
SMA CLA
JMP RESTRL
JMP I RDINCR
TAD MAXLEN
IAC
SMA CLA
JMP I RDINCR
RESTRL, TAD STRLEN
DCA READLN
JMP I RDINCR
/BACKSPACE 1 RECORD
/OR GET BACK IN SYNC FOR NONSTOP RE-READ
BACK1, 0
SKTR
JMP -1
CLF
CLA CMA
LWCR
TAD DRVDEN
LCMR
TAD K7100
LFGR
JMS I XLBWAT
JMP I BACK1
5714

4474 1076 /SET UP POINTERS FOR NEXT RECORD
4475 3076 RDINCR, 0
4476 1076 CLA
4477 7500 TAD READLN
4500 5305 DCA SETBAK+2
4501 1132 ISZ RECORD
4502 7700 SKP RECORD+1
4503 5311 TAD BLKING
4504 5662 SNA
4505 1131 JMP I RDINCR
4506 7001 /RECORD LENGTH IS CHANGING, COUNT IT
4507 7700 TAD READLN
4510 5662 DCA READLN
4511 1034 TAD READLN
4512 3076 SMA
4513 5662 JMP +5
TAD MINLEN
SMA CLA
JMP RESTRL
JMP I RDINCR
TAD MAXLEN
IAC
SMA CLA
JMP I RDINCR
RESTRL, TAD STRLEN
DCA READLN
JMP I RDINCR
/BACKSPACE 1 RECORD
/OR GET BACK IN SYNC FOR NONSTOP RE-READ
BACK1, 0
SKTR
JMP -1
CLF
CLA CMA
LWCR
TAD DRVDEN
LCMR
TAD K7100
LFGR
JMS I XLBWAT
JMP I BACK1
5714

4514 0000 /SET UP POINTERS FOR NEXT RECORD
4515 6724 RDINCR, 0
4516 5315 CLA
4517 6725 TAD READLN
4520 7240 DCA SETBAK+2
4521 6701 ISZ RECORD
4522 1026 SKP RECORD+1
4523 6705 TAD BLKING
4524 1354 SNA
4525 6706 JMP I RDINCR
4526 4567 /RECORD LENGTH IS CHANGING, COUNT IT
4527 5714 TAD READLN
DCA READLN
TAD READLN
SMA
JMP +5
TAD MINLEN
SMA CLA
JMP RESTRL
JMP I RDINCR
TAD MAXLEN
IAC
SMA CLA
JMP I RDINCR
RESTRL, TAD STRLEN
DCA READLN
JMP I RDINCR
/BACKSPACE 1 RECORD
/OR GET BACK IN SYNC FOR NONSTOP RE-READ
BACK1, 0
SKTR
JMP -1
CLF
CLA CMA
LWCR
TAD DRVDEN
LCMR
TAD K7100
LFGR
JMS I XLBWAT
JMP I BACK1
5714

```

```

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

/SET RECORD POINTERS BACK
SETBAK, 0 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
4601      ENDIAP,      ISZ RECORD      /WRITE PASS IS AT EOT
4602      7410      SKP RECORD+1
4603      2067      ISZ RECORD+1
4604      4555      JMS I XTEXT
4605      6221      TEXT2
4606      4212      JMS WRTDMP
4607      7240      CLA CMA
4608      3072      DCA WRTEOT
4609      5611      JMP I ,+1
4610      2554      WSEQXT
4611      0000      WRTDMP, 0
4612      7300      CLA CLL
4613      1030      TAD MODBIT
4614      7012      RTR
4615      7012      RTR
4616      4723      JMS I XCDMP
4617      4555      JMS I XTEXT
4618      6400      TEXT10
4619      1055      TAD WRCHEK
4620      4553      JMS I XDCPRT
4621      1126      TAD K7771
4622      3010      DCA 10
4623      7410      SKP
4624      0055      RECV1-1
4625      1227      TAD ,+1
4626      3011      DCA 11
4627      3012      DCA 12
4628      2012      ISZ 12
4629      1411      TAD I 11
4630      3013      DCA 13
4631      1013      TAD 13
4632      7450      SNA
4633      5251      JMP TYRALL
4634      4561      JMS I XTIN
4635      4555      JMS I XTEXT
4636      6413      TEXT12
4637      1012      TAD 12
4638      4557      JMS I XOC71
4639      4560      JMS I XTSP3
4640      1013      TAD 13
4641      4553      JMS I XDCPRT
4642      2012      ISZ 12
4643      2010      ISZ 10
4644      5234      JMP TYRECV
4645      1065      TAD PERMBS
4646      7450      SNA
4647      5263      JMP ,+5
4648      4555      JMS I XTEXT
4649      6425      TEXT13
4650      1065      TAD PERMBS
4651      4553      JMS I XDCPRT
4652      5612      JMP I WRTDMP
```

```

4664 4543 /READ PASS IS AT END OF TAPE
4665 4553 RNDIAP, JMS I XRDINC
4666 6517 JMS I XTEXT
4667 4555 TEXT20
4670 6221 JMS I XTEXT
4671 4274 TEXT2
4672 5673 JMS READMP
4673 4274 JMP I ,+1
      RDEXIT
/READ DUMP
READMP, 3 TAD READMO
      CLL RAR
      JMS I XCMDMP, /COMMON DUMP FOR REA. AND WRITE

4700 4555 JMS I XTEXT
4701 6530 TEXT21
4702 1102 TAD RDERRS
4703 4553 JMS I XDCPRT
4704 4555 JMS I XTEXT
4705 6000 TEXT22
4706 1101 TAD NRHEAD
4707 4553 JMS I XDCPRT
4710 4555 JMS I XTEXT
4711 6615 TEXT23
4712 1100 TAD CMPERR
4713 4553 JMS I XDCPRT
4714 4555 JMS I XTEXT
4715 6630 TEXT24
4716 1077 TAD RNOSTA
4717 4553 JMS I XDCPRT
4720 7240 CLA CMA
4721 3103 DCA RDEOT
4722 5674 JMP I READMP
4723 5000 XCMDMP, COMDMP

/READ ERROR =
/NDN RECOVERED =
/ DATA ERRORS =
/ DATA NO STAT =

```

```

5000      *5000
          /COMMON DUMP FOR READ AND WRITE
          COMDMP, 0
          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 K0003
          TAD CDMPI
          JMS CDMPI
          TAD DELAY
          TAD CDMPI
          JMS CDMPI
          TAD RECORD
          JMS I XUDPRT
          RECORD+1
          TAD RLITROL
          RTR
          RTR
          AND K0003
          TAD CDMPI
          JMS CDMPI
          JMP I COMDMP
          TAD DENTYP
          TAD MODTYP
          TAD LTHIBL
          0
          DCA .+1
          0
          DCA .+2
          JMS I XTEXT
          0
          JMP I COMPI
          COMPI,
          COMPI2,
          COMPI3,
          COMPI4,
          5040 1256
          5041 1252
          5042 1262
          5043 0000
          5044 3245
          5045 0000
          5046 3250
          5047 4555
          5050 0000
          5051 5643

          /PRINT DRIVE NUMBER
          /PRINT PATTERN NUMBER
          /PRINT PARITY
          /MODIFIED - TAD I (DENTYP, OR MODTYP, OR LTHBL)
          /MODIFIED - APPROPRIATE TEXT - SEE BELOW

```

5052	6263	MODTYP,	TEXT7	/NON-STOP
5053	6272		TEXT8	'START=STOP
5054	6301		TEXT9	RANDOM
5055	6301		TEXT9	RANDOM
5056	6236	DENTYP,	TEXT4	/TYPE 200 BPI
5057	6245		TEXT5	/TYPE 556 BPI
5060	6234		TEXT6	/TYPE 800 BPI
5061	6254		TEXT6	/TYPE 800 BPI
5062	6310	LTHIBL,	TYPMIN	/TYPE MINIMUM LENGTH
5063	6320		TYPMAX	/TYPE MAXIMUM LENGTH
5064	6331		TYPAV1	/TYPE AVE 1 LENGTH
5065	6346		TYPAV2	/TYPE AVE 2 LENGTH
			PAUSE	

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

/

/

/CLEAR READ AND WRITE TABLES

5066 0000

5067 7610

5070 0054

5071 1270

5072 3010

5073 1124

5074 3011

5075 3410

5076 2011

5077 5275

5100 5666

CLRTBL, 0

CLA SKP

WRCHK=1

TAD -1

DCA 10

TAD K7751

DCA 11

DCA 1 10

ISZ 11

JMP -2

JMP 1 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

JMS I XTSP3

RFSR

JMS I XOCprt

JMS I XTSP3

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

RECORD+1

JMP 1 TYPOAT

XOCprt, OCIPRT

XUDprt, UDPRNT

5125 6011

5126 5200

```

5127 0000 /GO BACKWARD
5130 7200 GOBKWD, 0
5131 1066 CLA
5132 3070 TAD RECORD
5133 1067 DCA LASHCR
5134 3071 TAD RECORD+1
5135 1074 DCA LASHCR+1
5136 3066 TAD WRRECR
5137 1075 DCA RECORD
5140 3067 TAD WRRECR+1
5141 1066 DCA RECORD+1
5142 7640 TAD RECORD
5143 5346 SZA CLA
5144 1067 JMP .+3
5145 7640 TAD RECORD+1
5146 5351 SZA CLA
5147 4534 JMP .+3
5150 5727 JMS I XRWIND
5151 6722 JMP I GOBKWD
5152 5351 SKGB
5153 6725 JMP .-1
5154 1070 CLF
5155 7041 TAD LASHCR
5156 1066 CIA
5157 6701 TAD RECORD
5160 1035 LACR
5161 6705 TAD COMAND
5162 6724 LCMR
5163 5362 SKTR
5164 1370 JMP .-1
5165 6706 TAD P7100
5166 4567 LFGR
5167 5727 JMS I XLBWAT
5170 7100 JMP I GOBKWD

/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,

P7100, 7100 /EXIT

```

/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	/PICK UP ADDRESS OF HIGH-ORDER WORD	
1600	TAD I UDPRNT		
3261	DCA UDGET		
1661	TAD I UDGET	/PICK UP BOTH WORDS FOR USE IN SUBROUTINE	
3253	DCA UDHIGH	/INITIALIZE DIGIT COUNTER FOR "5"	
1247	TAD UDLOOP		
3252	DCA UDCNT	/INITIALIZE TO TABLE OF POWERS OF TEN	
1250	TAD UDADDR		
3262	DCA UDPTR	/INDEX LINKAGE FOR CORRECT RETURN	
2200	ISZ UDPRNT	/PICK UP CURRENT POWER OF TEN FOR	
1662	TAD I UDPTR	/USE IN SUBTRACTION	
2262	ISZ UDPTR		
3255	DCA UDHSUB		
1662	TAD I UDPTR		
2262	ISZ UDPTR		
3256	DCA UDLSUB		
7100	CLL	/DOUBLE PRECISION SUBTRACTION	
1256	TAD UDLSUB		
1254	TAD UDLOW		
3260	DCA UDTEML		
7004	RAL		
1255	TAD UDHSUB		
1253	TAD UDHIGH		
7420	SNL		
5237	JMP UDOUT	/DID IT UNDERFLOW?	
2257	ISZ UDBOX	/NO, COUNT IS DONE	
3253	DCA UDHIGH	/YES, COUNT NOT DONE YET, INDEX DIGIT	
1260	TAD UDTEML	/DEPOSIT REMAINING PORTIONS OF WORD	
3254	DCA UDLOW		
5221	JMP UDDO	/GO BACK AND SUBTRACT AGAIN	
7200	CLA		
1257	TAD UDBOX		
1251	TAD UDTWO	/PICK UP RESULTING DIGIT	
4556	JMS I XOTY	/ADD "260" TO IT	
3257	DCA UDBOX		
2252	ISZ UDCNT	/INITIALIZE DIGIT TO "0"	
5213	JMP UDARND	/HAVE WE TYPED "5" DIGITS	
5600	JMP I UDPRNT	/NO, DETERMINE NEXT DIGIT	
7773	-5	/YES, SUBROUTINE DONE, RETURN	
5263	UDADDR, UDCON1	/COUNT OF "5" DIGITS	
0260	UDTWO, 260	/INITIAL ADDRESS OF POWERS OF TEN	
0000	UDCNT, 0	/ICODE FOR DIGITS	
0000	UDHIGH, 0	/STORAGE LOCATIONS	
0000	UDLOW, 0		
0000	UDHSUB, 0		
0000	UDLSUB, 0		
0000	UDBOX, 0		
0000	UDTEML, 0		

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	

```
5275 2037 /SWS SAY STATISTICAL RECOVERY
5276 5301 STAREC, IS2 WRPASS /DONE 7 REWRITES
5277 2065 JMP .+3 /NO
5300 5711 IS2 PERMBS /+1 PERM BAD SPOTS
5301 4312 JMP I BACK2-1 /RESTART
5302 6714 JMS BACK2 /BACKSPACE 2
5303 0342 RMSR
5304 7650 AND K1000
5305 4332 SNA CLA /AT BOT
5306 7200 JMS SPAFW1 /NO SPACE FWD1
5307 5710 CLA /GO AGAIN
5310 2653 JMP I .+1
5311 2751 NSTSEL-3
TESREC+4
/BACKSPACE 2 RECORDS
BACK2, JMP .
5312 5312 SKCB
5313 6722 JMP .-1
5314 5313 CLF
5315 6725 TAD K7776
5316 1343 LWCR
5317 6701 TAD COMAND
5320 1035 LCMR
5321 6705 SKTR
5322 6724 JMP .-1
5323 5322 TAD Q7100
5324 1331 LFGR
5325 6706 JMS I XLBWAT
5326 4567 CLA
5327 7200 JMP I BACK2
5330 5712 /EXIT BACKSPACE 2
5331 7100 Q7100, 7100
/
/SPACE FORWARD 1 RECORD
SPAFW1, JMP .
5332 5332 CLF
5333 6725 CLA CMA
5334 7240 LWCR
5335 6701 TAD K6100
5336 1344 LFGR
5337 6706 JMS I XLBWAT
5340 4567 JMP I SPAFW1
5341 5732 /EXIT SPACE FWD
5342 1000 K1000, 1000
5343 7776 K7776, 7776
5344 6100 K6100, 6100
/REWIND DRIVE TO LOAD POINT
/CALL WITH DRIVE SELECT IN AC
REWIND, 0
5345 0000 SKCB
5346 6722 JMP .-1
5347 5346 CLA
5350 7200 TAD DRV DEN
5351 1026 CLF
5352 6725 LCMR
5353 6705 SKTR
5354 6724
```

/WAIT FOR CONTROL,
/LOAD WC # -2
/LOAD CM,
/WAIT TRANSPORT,
/SPC REV 2,
/WAIT DONE,
/EXIT BACKSPACE 2
/CLEAR STATUS,
/LOAD WC # -1,
/SPC FWD 1,
/WAIT DONE,
/EXIT SPACE FWD
/WAIT FOR CONTROL,
/LOAD CM,
/WAIT FOR TRANSPORT,

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

```

5400      *5400
5401      GENPAT, JMP I XSTSTR
5402      TAD PATNUM      /GET PATTERN NUMBER
5403      TAD PARBT1
5404      TAD JMPTBL      /* JMP I
5405      DCA ,+1          /TO BE EXECUTE
5406      JMP I JMPTBL+1
5407      JMP I ,+1      /TO GET TO PATTERNS
5408      JMPTBL, JMP I ,+1
5409      GNEVN0
5410      GNEVN1
5411      GNEVN2
5412      GNEVN3
5413      GNEVN4
5414      GNEVN5
5415      GNEVN6
5416      GNEVN7
5417      GNODD0
5418      GNODD1
5419      GNODD2
5420      GNODD3
5421      GNODD4
5422      GNODD5
5423      GNODD6
5424      GNODD7
5425      /EVEN PATTERN 0 HIGH FREQ SKEW
5426      GNEVN0, TAD ,+2
5427      JMP GNODD6+1
5428      0014
5429      /EVEN PATTERN 2 HIGH FREQ EVERY OTHER TRK
5430      GNEVN2, TAD ,+2
5431      JMP GNODD6+1
5432      0103
5433      /ODD PATTERN 2 COMPLEMENT OFF EVEN 2
5434      GNODD2, TAD ,+2
5435      JMP GNODD6+1
5436      0274
5437      /ODD AND EVEN PATTERN 6 ALL TRACKS
5438      GNEVN6, NOP
5439      GNODD6, CMA
5440      AND K0377
5441      DCA 12
5442      TAD 12
5443      DCA I 10
5444      ISZ 11
5445      JMP ,+3
5446      JMP I GENPAT
5447      /EVEN PARITY PATTERN 3 HIGH REQ, INSIDE HALF OUTSIDE
5448      GNEVN3, TAD ,+2
5449      JMP GNODD6+1
5450      0273
5451
5452      1254
5453      5243
5454      0273

```

5455 1257 /ODD PARITY PAT 0 HALF FREQ OUTSIDE TRACKS
5456 5243 GNODD00, TAD ,+2
5457 0004 JMP GNODD6+1
0004

5460 1262 /EVEN PATTERN 4 INCREMENTING CHARACTER NO 00
5461 5265 GNEVN4, TAD ,+2 /GET SNA TO THROW 00
5462 7450 JMP GNODD4+1 /GENERATE PATTERN
5463 7410 SNA
SKP

5464 1263 /ODD PATTERN 4 SAVE 00 CODES
5465 3316 GNODD4, TAD ,+1 /GET SKP TO SAVE 00
5466 3014 DCA INC0CH /DEPOSIT SKP OR SNA
5467 4312 DCA 14 /00 TO 14 START
5470 3410 JMS GENING /GET NEXT CHAR
5471 2011 DCA I 10 /STORE IT
5472 5267 ISZ 11 /DONE ALL WORDS
5473 5600 JMP GNODD4+3 /NO GET NEXT
JMP I GENPAT /EXIT

5474 4533 /EVEN RANDOM PATTERN 7
5475 0366 GNEVN7, JMS I XTRANUM
5476 7450 AND K0377
5477 5274 SNA
JMP GNEVN7

5500 3410 DCA I 10
5501 2011 ISZ 11
5502 5274 JMP GNEVN7
5503 5600 JMP I GENPAT

5504 4533 /ODD RANDOM PATTERN 7
5505 0366 GNODD7, 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 1014 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 GN0DD1, 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

/STORE 9 WORD SUBROUTINE EVN AND ODD 1
ST9WRD, JMP
CLA CMA
TAD ST9WRD
DCA 12
TAD K7767
DCA 13
ST9A, TAD I 12 /GET NEXT WORD
DCA I 10 /STORE IN WRITE BUFFER
ISE 11 /FILLED BUFFER
SKP /NO
ST9B, JMP I GENPAT /BUFFER FULL EXIT
ISE 13 /DONE 9
JMP ST9A /NOT 9 YET GET NEXT
JMP ST9WRD+1 /START OVER FROM FIRST OF 9

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

```

5600 *5600

/000 PATTERN 5 EACH TRAIL 3 FRAMES EVERY 27
GN0005, JMS STHALF

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

/000 PATTERN 3 3 ONES 3 ZEROS THREE ONES
GN0003, 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
5625 7200
5626 1233
5627 3011
5630 1130
5631 3010
5632 5624

CLA
TAD BLENTH
DCA 11 /WORD COUNT IN 11
TAD WRBUF
DCA 10 /WRITE BUFFER -1 IN 10
JMP I SETSTR

BLENTH, -400 /READ-WRITE BUFFER LENGTH,

5633 7400

```

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 12 /DEPOSIT DATA WORD IN TABLE
5647 2011 ISZ 11 /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
5655 5561 EXITGN, ST9B
5656 0000 STHF1, 0
    
```

```

5662 4234 /EVEN PATTERN 5 EACH TRACK ON A 0 FOR 3 FRAMES
5663 0377 GNEVN5, JMS STHALF
5664 0177 0377
5665 0277 2177
5666 0337 2277
5667 0357 2337
5670 0367 0357
5671 0373 2367
5672 0375 0373
5673 0376 0375
5674 7767 KX7767, 7767
    
```

```

5675 5275 /RANDOM NUMBER GENERATOR
5676 7200 RANGEN, JMP .
5677 1337 TAD RANTND /GET CURRENT TABLE ADDRESS
5700 1324 TAD RANDEX /END TABLE
5701 7640 SZA CLA /AT END OF TABLE
5702 5312 JMP RANTAD /NO
5703 1326 TAD RANTBL
5704 3324 DCA RANDEX /RESET TABLE ADDRESS
5705 1325 TAD RANCON /GET ROTATING WORD
5706 7104 CLL RAL /1 LEFT
5707 7430 SZL /SAD BT 11=1
5710 7001 IAC /YES
5711 3325 DCA RANCON /RESET ROTATING
5712 1325 TAD RANCON /GET CYCLIC
5713 1724 TAD I RANDEX /T NEXT TABLE
5714 3724 DCA I RANDEX /RESET IT
5715 1340 TAD RANSV /GET LAST RANDOM
5716 7010 RAR /USE LINK AND 11 BITS
5717 1724 TAD I RANDEX /T RANDOM BIAS
5720 2324 ISZ RANDEX /STEP FOR NEXT NUMBER
5721 3340 DCA RANSV /TO GENERATE NEXT
5722 1340 TAD RANSV
5723 5675 JMP I RANGEN /EXIT AC=RANDOM

5724 5737 /TABLE TO GENERATE RANDOM NUMBERS
5725 6543 RANDEX, RANTND /TO GET INDIRECT
5726 5727 RANCON, +1 /CYCLIC
5727 6543 RANTBL, 6543 /TO RESET RANDEX TO STRT
5730 3210 3210 /TABLE
5731 0765 0765 /OF 8
5732 5432 5432 /NUMBERS
5733 2107 2107
5734 7654 7654
5735 4321 4321
5736 1076 1076
5737 2041 2041
5740 0000 RANTND, -1 /TO DETERMINE END
RANSV, 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
/ TEXTX, 0
CLA
TAD I, -2 /GET TEXT POINTER
DCA, +2 /SAVE
SKP
0000
JMS I, -1 /JMS TO TEXT
ISZ TEXTX /+1 TO RETURN AFTER TEXT POINTER
JMP I TEXTX

/ PRINT OCTAL NUMBER IN AC
OCTPRT, 0
DCA VALUE
TAD VALUE
RTL
RTL OCT1 /PRINT 1ST CHARACTER
JMS OCT1
TAD VALUE
RTR
RTR OCT2 /PRINT 2ND CHARACTER
JMS OCT2
TAD VALUE
RTR
RAR OCT3 /PRINT 3RD CHARACTER
JMS OCT3
TAD VALUE
JMS OCT4 /PRINT 4TH CHARACTER
JMP I OCTPRT

/ OCT1, 0
AND K0007 /MASK OCTAL BIT
TAD K260 /MAKE ASCII
JMS I XOTY /PRINT CHARACTER
JMP I OCT1

/ TYPE 3 SPACES
TSP3, 0
CLA
TAD K0240
JMS I XOTY
TAD K0240
JMS I XOTY
TAD K0240
JMS I XOTY
JMP I TSP3

```

```

/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
CCL 7100
TAD VALUE
TAD TENPWR /SUBTRACT POWER OF TEN
SEL 7430 /DEVELOP BCD DIGIT
ISZ DIGIT
SEL JMP ARROW=3 /LOOP
CLA /HAVE DIGIT
TAD DIGIT
TAD K260 /PRINT
JMS I XOTY
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
VALUE, 0
DIGIT, 0
CNTRZB, 0
K77, 77
K0212, 212
K215, 215
K260, 260
K0340, 340
K7740, 7740
KX7774, 7774
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

```

```

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 3000
6141 0000
6142 0313
6143 7450
6144 5417
6145 1320
6146 7500
6147 5352
6150 1317
6151 7410
6152 1120
6153 4556
6154 5741

/TYPE A STRING OF CHARACTERS
/CHARACTERS MUST BE STORED IN INTERNAL STRIPPED ASCII, 2 CHARACTERS PER WORD,
TSR,
0
CLA CMA
TAD TSR
DCA 17
TAD I 17
DCA TSR1
TAD TSR1
RTR
RTR
RTR
JMS TSR2
TAD TSR1
JMS TSR2
JMP TSR+4
0
TSR1,
TSR2,
0
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
TAD K0342
SKP
TAD K0240
JMS I X0TY
JMP I TSR2

/TYPE THE ASCII CHARACTER IN AC
QTY,
0
TLS
CLA CLL
TSF
JMP -1
TCF
JMP I QTY

/TYPE CARRIAGE RETURN, LINE FEED
TIN,
0
CLA
TAD K215 /CR
JMS I X0TY
TAD K0212 /LF
JMS I X0TY
JMP I TIN

```

```
6200
6201 0000
6202 4561
6203 4562
6204 2722
6205 1124
6206 0540
6207 2324
6208 0124
6209 2523
6210 4005
6211 2222
6212 1722
6213 0000
6214 SKP
6215 TEXT25
6216 JMS I '1
6217 JMP I TEXT1
6220

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

```

6236 0000 /200 FOR 200 BPI
6237 4562 TEXT4, 0
6240 4040 JMS I XTSR
6241 4062 4040
6242 6060 4062
6243 0000 6060
6244 5636 0000
        JMP I TEXT4
/
6245 0000 /556 FOR 556 BPI
6246 4562 TEXT5, 0
6247 4040 JMS I XTSR
6250 4065 4040
6251 6566 4065
6252 0000 6566
6253 5645 0000
        JMP I TEXT5
/
6254 0000 /800 FOR 800 BPI
6255 4562 TEXT6, 0
6256 4040 JMS I XTSR
6257 4070 4040
6260 6060 4070
6261 0000 6060
6262 5654 0000
        JMP I TEXT6
/
6263 0000 /NSIP FOR NONSTOP MODE
6264 4562 TEXT7, 0
6265 4016 JMS I XTSR
6266 2324 4016
6267 2040 2324
6270 0000 2040
6271 5663 0000
        JMP I TEXT7
/
6272 0000 /SSTP FOR START STOP MODE
6273 4562 TEXT8, 0
6274 4023 JMS I XTSR
6275 2324 4023
6276 2040 2324
6277 0000 2040
6300 5672 0000
        JMP I TEXT8
/
6301 0000 /RNDM FOR RANDOM START STOP MODE
6302 4562 TEXT9, 0
6303 4022 JMS I XTSR
6304 1604 4022
6305 1540 1604
6306 0000 1540
6307 5701 0000
        JMP I TEXT9

```

```

6310 0000
6311 4562
6312 4040
6313 4062
6314 6440
6315 1511
6316 1600
6317 5710

/24 MIN
TYPMIN, 0 JMS I XTZR
4040
4062
6440
1511
1600
JMP I TYPMIN

/4008 MAX
TYPMAX, 0 JMS I XTZR
4040
4064
6060
7040
1501
3000
JMP I TYPMAX

/2016 MIN TO MAX
TYPV1, 0 JMS I XTZR
4040
4062
6061
6640
1511
1640
2417
4015
0130
0000
JMP I TYPV1

/2016 MAX TO MIN
TYPV2, 0 JMS I XTZR
4040
4062
6061
6640
1501
3040
2417
4015
1116
0000
JMP I TYPV2

```

```

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

```

```

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

```

```
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
```

```

/ XIRC WRITTEN 4 TIMES
TEXT14, 2
JMS I XTIR
4030
1122
3740
2722
1124
2405
1640
6440
2411
1505
2300
JMP I TEXT14
5642
    
```

```

/ READ STATUS ERROR
/ COMD FUNCIN STATUS RECORD LENGTH
TEXT15, 2
JMS I XTIR
JMS I XTIR
2205
2104
4023
2401
2425
2340
2522
2217
2200
SKP
TEXT25
JMS I XTIR
JMP I TEXT15
5660
    
```

```
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

/READ DATA ERROR
/COMD FUNCIN STATUS RECORD LENGTH
TEXT16, 0
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
JMS I XTIN
JMS I XTJR
2205
0104
4020
0123
2300
JMP I TEXT20

/READ ERRORS =
TEXT21, 0
JMS I XTIN
JMS I XTJR
2205
0104
4005
2222
1722
2375
0000
JMP I TEXT21

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

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

```

6600      *6600
/      /NON RECOVERABLE *
TEXT22, 0
JMS I XTIN
JMS I XTISR
1617
1640
2205
2317
2605
2201
2214
2575
0000
JMP I TEXT22

```

```

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

```

```

/      /DATA ERROR WITH NO STATUS ERROR
TEXT24, 0
JMS I XTIN
JMS I XTISR
2401
2401
4016
1740
2324
0124
2523
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      2523
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 2523
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 XTIR
0317
1504
4006
2516
0324
1640
2324
0124
2523
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 XTJR
        2305
        1405
        0324
        4004
        2211
        2605
        2340
        0000
        JMP I TEXT30

        /SELECT TESTS
        /TST PAT PAR DEN RLS WMO RMO
        TEXT31, 0
        JMS I XTIN
        JMS I XTJR
        2305
        1405
        0324
        4024
        0523
        2423
        0000
        JMS I XTIN
        JMS I XTJR
        2423
        2440
        2201
        2440
        2201
        2240
        0405
        1640
        2214
        2340
        2715
        1740
        2215
        1720
        JMP I TEXT31

        /O.K.
        TEXT32, 0
        JMS I XTJR
        1756
        1356
        0200
        JMP I TEXT32
    
```

```

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

6756	0000	/TEST	
6757	4561	TEXT33, 0	
6760	4562	JMS I XTIN	
6761	2405	JMS I XTSR	
6762	2324		
6763	4000		
6764	5756	JMP I TEXT33	
/WRITE DUMP			
6765	0000	TEXT34, 0	
6766	4561	JMS I XTIN	
6767	4562	JMS I XTSR	
6770	2722		
6771	1124		
6772	0540		
6773	0425		
6774	1520		
6775	0000		
6776	5765	JMP I TEXT34	
	7000	*7000	
/READ DUMP			
7000	0000	TEXT35, 0	
7001	4561	JMS I XTIN	
7002	4562	JMS I XTSR	
7003	2205		
7004	0104		
7005	4004		
7006	2515		
7007	2000		
7010	5600	JMP I TEXT35	

/DRV PAT PAR DEN MODE RECORDS LENGTH

TEXT36, 0

JMS I XTIN

JMS I XTSR

0422

2640

2001

2440

2001

2240

0405

1640

1517

2405

4022

0503

1722

0423

4014

0516

0724

1000

JMS I XTIN

JMP I EXT36

DR0TAB=7100

DR1TAB=40

DR2TAB=DR0TAB+DR1TAB

DR3TAB=DR2TAB+DR1TAB

DR4TAB=DR3TAB+DR1TAB

DR5TAB=DR4TAB+DR1TAB

DR6TAB=DR5TAB+DR1TAB

DR7TAB=DR6TAB+DR1TAB

TSTIBL=DR7TAB+DR1TAB

DRVADR, DR0TAB

DR1TAB

DR2TAB

DR3TAB

DR4TAB

DR5TAB

DR6TAB

DR7TAB

7011 0000

7012 4561

7013 4562

7014 0422

7015 2640

7016 2001

7017 2440

7020 2001

7021 2240

7022 0405

7023 1640

7024 1517

7025 2405

7026 4022

7027 0503

7030 1722

7031 0423

7032 4014

7033 0516

7034 0724

7035 1000

7036 4561

7037 5611

7100

7040

7140

7200

7240

7300

7340

7400

7440

7500

7040

7041

7042

7043

7044

7045

7046

7047

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

\$

4000 4100

[illegible][illegible]

4680	11111111	11111111	11111111	11111111	11111111
4700	11111111	11111111	11111111	11111111	11111111

[illegible][illegible]

5402 11111111 11111111 11111111 11111111 11111111

5600 11111111 11111111 11111111 11111111 11111111

[illegible][illegible]

6522 11111111 11111111 11111111 11111111 00000000 00000000 00000000

670E :11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

[illegible]

7200
7302

7400
7400
7500

ADDR2A	6103	ERRGRP	2340	K0303	2556	LWCR	6701
ALLEOS	1265	EXECNT	0774	K0340	6117	MAXLEN	0131
ALLEOT	1236	EXECUT	0601	K0370	0365	MINLEN	0132
ARROW	0064	EXETST	0042	K0374	0513	MODBIT	0030
BACK1	4514	EXITGN	0660	K0376	0564	MODTYP	5052
BACK2	5312	EXITMC	0033	K0377	5966	MSBITS	0022
BLENTH	5633	GENINC	5512	K0400	0122	MVCTRS	1007
BLKINC	0036	GENPAT	5420	K1000	5342	NOINCR	2524
BAYON	7050	GNEVN0	5430	K1100	5370	NONSTP	2607
CCAR	6704	GNEVN1	5523	K215	6115	NOTSWS	2470
CDF	6201	GNEVN2	5433	K260	6116	NRREAD	0101
COMP1	5040	GNEVN3	5452	K270	0511	NSTSEL	2656
COMP2	5041	GNEVN4	5460	K3100	4335	NUMTST	0040
COMP3	5042	GNEVN5	5662	K3767	1313	OCOT1	6033
COMP4	5043	GNEVN6	5441	K377	3150	OCIPRT	6011
CORIVE	0023	GNEVN7	5474	K4000	1113	OTV	6155
CORVBT	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	5600	K7100	4554	PARBT1	0025
CURALL	1035	GN0006	5442	K7443	0123	PASSWS	0020
CLRTBL	5066	GN0007	5504	K7520	2366	PATNUM	0024
CLT	6712	GOBKWD	5127	K77	6113	PERMBS	0065
CMERR	0100	GOTST	0043	K7740	6120	Q7100	5331
CNTRZ8	6112	INC2CH	5516	K7751	0124	RANCON	5725
COMMAND	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
DELAY1	0050	K0020	0111	KX7520	0512	RDBR	6717
DENTYP	5056	K0030	0112	KX7767	5674	RDEOT	2103
DIGIT	6111	K0037	0113	KX7774	6121	RDERRO	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	LBIINT	1335	RDEERR	4400
DR4TAB	7300	K0200	0117	LBSAV	1327	RDPASS	0051
DR5TAB	7340	K0212	0114	LBSET	1712	RDRET	4245
DR6TAB	7400	K2215	0360	LBTEXTI	0536	RDSSTPC	4275
DR7TAB	7440	K0240	0120	LBWAT	1344	RDSSTPD	4214
DR1NCR	0040	K2254	0361	LCAR	6703	READGO	4224
DRVADR	7040	K0260	0510	LCMR	6705	READIT	4200
DRVDEN	0026	K2270	0362	LDBR	6707	READLN	0076
ENDIAP	4600	K0277	0363	LFGR	6706	READMO	0031
EOSFLG	0044	K2300	0121	LTHTBL	5062	READMP	4674

RECORD	0066	STRTES	2420	TEXT4	6236	WRPASS	0037
RECSYS	0032	STRTCP	2620	TEXT5	6245	WRRECR	0074
RECV1	0056	SVCTRS	1222	TEXT6	6254	WRIDMP	4612
RECV2	0057	SVRECR	2045	TEXT7	6263	WRTEOT	0072
RECV3	0060	SWTEST	2243	TEXT8	6272	WRTERR	2724
RECV4	0061	T10RDP	2276	TEXT9	6301	WRILEN	0073
RECV5	0062	T10RND	2141	TEXTLB	1743	WRYSEQ	2444
RECV6	0063	T11END	2322	TEXTX	6000	WSEQXT	2554
RECV7	0064	T11FLG	2337	TIN	6164	X11FLG	2555
RELI	0225	T11INC	2335	TRDEOT	1254	XALEOT	0150
RELIAB	0200	T11LP1	2230	TS10L1	2030	XBACK1	3100
RESETL	3135	T11LP2	2310	TS10L2	2014	XCHGDV	0147
RESTR	4511	T11RDL	2251	TS10L5	2051	XCLRAL	0152
REWIND	5345	TADINC	2547	TSP3	6040	XCLRTB	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
RMF	6244	TES2K	3142	TSRUNL	0025	XGENPT	0142
RMSR	6714	TESINC	3132	TSTDEX	0775	XG08KW	0136
RNDORS	4315	TESREC	2745	TSTSTP	2633	XLBINT	0166
RNDIAP	4664	TEST0	1400	TSTTBL	7500	XLBSAV	0165
RNSTA	0077	TEST1	1414	TSTYQS	0310	XLBSET	0170
RNASN3	4451	TEST10	2200	TYPAV1	6331	XLBWAT	0167
RPASS3	4425	TEST11	2220	TYPAV2	6346	XLEOT1	0163
RPTIST	0761	TEST12	1437	TYPDAT	5101	XLEOT2	0164
RSFORV	1251	TEST3	1462	TYPMAX	6320	XMVCTR	0145
RTSSTP	4255	TEST4	1506	TYPMIN	6310	XOCPR1	5125
RWCR	6711	TEST5	1535	TYRALL	4651	XOCT1	0157
SBRM	6727	TEST6	1600	TYRECV	4634	XOTY	0156
SOLE	6726	TEST7	1645	UDADDR	5250	XRANUM	0133
SET3AK	4530	TESTX	2514	UDARND	5213	XRCXRG	2766
SETFUN	1115	TEXT1	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	XRGCRD	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
ST9ARD	5547	TEXT22	6600	UDOUT	5237	XSTBAK	4461
STAREC	5275	TEXT23	6615	UDPRN1	5202	XSTREC	2765
STAIRO	0052	TEXT24	6632	UDPTR	5262	XSTSTR	5565
STAIRE	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
SIRPAT	2713	TEXT36	7011	WRCHK	0055	XTSTST	2632

XTSYQS 3507
XTYPOT 3154
XUDPRT 5126
XWATKY 3146
XWRIT 3140
XXRG1 3040
Z1 1740
Z2 1741
Z3 1742

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 23 SECONDS

3K CORE USED