digital

MAINDEC CHANGE
NOTICE

276 MCN

Ø8-DHTMB-A-1
CHANGE NO.

Sheet 1 of 1

AUTHOR Len Beyersdorfer	PROGRAM DATE	PRODUCT LINE	MAINDEC NUMBER
DATE 1/26/73 EXT. 2537	12/4/72	8 Family V-96C-06806	Ø8-DHTMB-A

PROGRAM NAME TM8-E Control Test Part 2 **DEVICE** TM8-E DECmagtape

ITEM	
Ø.	Release announcement--new release. This program continues testing the TM8-E control and verifies proper handling of all transports in the system.
1. 4/5/73	**PROBLEM:** Test 3Ø (T3ØC,D,E) currently uses WRITE, WEOF, and RDCOMP to test the error detection logic for File Protect; however the software never sets the "GO" bit. The latest changes to the TM8-E require the "GO" bit set to a 1 for this error detection to work properly.

CORRECTION: Change the program as indicated:

LOCATION	OLD CONTENTS	NEW CONTENTS	SYMBOLIC
3664	4000	4100	WRITE + GO
3677	5000	5100	WEOF + GO
3712	3000	3100	RDCOMP + GO

516-864-4002

IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHTM8-A-D

PRODUCT NAME: TM8-E CONTROL TEST PART 2 *TM CON2*

DATE CREATED: DECEMBER 4, 1972

MAINTAINER: DIAGNOSTIC GROUP

AUTHOR: LEONARD E. BEYERSDORFER

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
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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-28-DHTMF)

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1. ABSTRACT

   THE TM8-E CONTROL TEST PART 2 IS AN INTEGRATED SERIES OF SUB-
   TESTS DESIGNED TO AID IN THE CHECKOUT AND MAINTENANCE OF THE
   TM8-E DECMAGTAPE CONTROL AND TU10 MASTER/SLAVE TRANSPORT SYS-
   TEM. VERSATILITY OF USEAGE IS AFFORDED THROUGH A MODEST KEY-
   BOARD MONITOR AND SWITCH REGISTER CONTROL OPTIONS.

   THIS PROGRAM CONSISTS OF 12 MAJOR TESTS (TEST 15 THROUGH TEST
   30) EACH OF WHICH CONSISTS OF A NUMBER OF SUBTESTS DESIGNATED
   BY THE LETTERS A THROUGH Z. THESE TESTS PROGRESS FROM THE
   FUNCTIONS TESTED IN THE TM8-E CONTROL TEST PART 1 AND REQUIRE
   A TU10 TRANSPORT SYSTEM TO BE ON LINE FOR PROPER EXECUTION.

2. REQUIREMENTS

2.1 HARDWARE

    PDP-8/E, 8/M, 8/F
    TELETYPE OR COMPATIBLE DEVICE (TTY)
    TM8-E DECMAGTAPE CONTROL
    TU10 MASTER/SLAVE TRANSPORT SYSTEM

2.2 MEMORY

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

2.3 PRELIMINARY PROGRAMS

    ALL PROCESSOR/MEMORY DIAGNOSTICS
    TM8-E CONTROL TEST PART 1

3.

CONVENTIONS

IN THE DESCRIPTION OF ANY KEYBOARD COMMANDS GIVEN IN THIS MAN-
UAL, THE BACK ARROW (←) CORRESPONDS TO DEPRESSING THE RETURN
KEY, AND THE NUMBER SIGN (#) CORRESPONDS TO DEPRESSING THE
LINE-FEED KEY. A LETTER PRECEDED BY AN UP ARROW (↑) SHOULD
BE TYPED WITH THE "CTRL" KEY DEPRESSED. THE PROGRAM PRINTS A
LEFT BRACKET ([) WHEN IT IS READY TO ACCEPT A KEYBOARD
COMMAND.

WHEN THE PROGRAM PRINTS:

            SETUP DRV N (N TRK)

THE OPERATOR MUST ENSURE THAT THE FOLLOWING STEPS ARE CARRIED
OUT.

A. MOUNT A SPARE REEL OF INDUSTRY COMPATIBLE MAGNETIC TAPE
    ON THAT DRIVE WITH THE FILE PROTECT RING IN PLACE
    (WRITE ENABLED).

B. LOAD THE TAPE AND POSITION AT BOT.

C. SET THE DRIVE SELECTOR SWITCH TO THE CORRECT DRIVE
    POSITION.

D. SWITCH THAT DRIVE ON LINE.

E. ENSURE THAT ALL OTHER DRIVES ARE OFF LINE.

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4. PROGRAM LOADING PROCEDURE

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

5. PROGRAM STARTING PROCEDURE

A. LOAD ADDRESS 2200.

B. LOAD THE EXTENDED ADDRESS WITH THE PROGRAM FIELD.

C. CLEAR ALL SWITCHES.

D. DEPRESS CLEAR, THEN CONTINUE.

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 6.

NOTE: THE PROGRAM MAY BE RESTARTED AT ANY TIME AT ADDRESS
      0201. IN THIS CASE THE PROGRAM BYPASSES ALL
      PROGRAM INITIALIZATION AND GOES DIRECTLY TO THE PRO-
      GRAM MONITOR TO ACCEPT KEYBOARD COMMANDS.

6. STANDARD TEST PROCEDURE

USE OF THE STANDARD TEST PROCEDURE ENSURES PROPER TM8-E/TU10
CHECKOUT. ANY ERROR OCCURRENCE RESULTS IN AN ERROR REPORT
ON THE TTY AND IN A RETURN TO THE PROGRAM MONITOR. ALL OP-
TIONAL TEST PROCEDURES AFFORDED BY PROGRAM MONITOR AND SWITCH
REGISTER CONTROL ARE DESCRIBED IN PARAGRAPH 7. ERROR RE-
COVERY PROCEDURES AND RELATED INFORMATION ARE GIVEN IN PARAGRAPH 8.

6.1 DRIVE SELECTION

TO SPECIFY THE DRIVE TO BE TESTED, CARRY OUT THE FOLLOWING
STEPS.

A. EITHER START THE PROGRAM AT 0200 AS DESCRIBED IN PARAGRAPH 5,
   OR WITH THE PROGRAM MONITOR IN CONTROL TYPE "I4".

B. RESPOND TO "DRIVE?" BY TYPING THE DRIVE NUMBER (0-7).

C. RESPOND TO "7 OR 9 TRACK?" BY TYPING "7" OR "9".

D. TAKE THE ACTION DESCRIBED IN PARAGRAPH 3 TO "SETUP DRV
   N (N TRK)".

6.2   TEST PROCEDURE

THE FOLLOWING STEPS ARE TO BE ACCOMPLISHED FOR EACH DRIVE
IN THE SYSTEM UNDER TEST.

A.   SELECT THE DRIVE UNDER TEST AS DRIVE 0 AND ACCOMPLISH THE
     SETUP (REFER TO 6.1).

B.   SET THE SWITCH REGISTER (SR) TO 0000.

C.   TYPE "TA⊕" WHICH RESULTS IN THE EXECUTION OF TEST 15
     THROUGH TEST 30.   SEVERAL PASSES WILL BE MADE OF EACH
     TEST WITH THE EXCEPTION OF TEST 30. DURING TEST 30 FOL-
     LOW THE DIRECTIONS AS PRINTED BY THE PROGRAM. WHEN
     EACH STEP HAS BEEN CARRIED OUT, TYPE "C⊕" TO CON-
     TINUE IN THE TEST.

D.   WHEN ALL TESTS ARE COMPLETED, "SELECTED TESTS DONE" WILL
     BE PRINTED AND THE PROGRAM MONITOR WILL BE READY TO
     ACCEPT A NEW COMMAND.

E.   USING THE SAME DRIVE, SELECT THAT DRIVE AS DRIVE 1
     (REFER TO 6.1).

F.   SET THE SR TO 4000.

G.   TYPE "TAX⊕" WHICH RESULTS IN THE EXECUTION OF TEST 15
     THROUGH TEST 27. ONLY ONE PASS WILL BE MADE OF EACH
     TEST.

H.   WHEN ALL TESTS ARE COMPLETED, "SELECTED TESTS DONE" WILL
     BE PRINTED AND THE PROGRAM MONITOR WILL BE READY TO
     ACCEPT A NEW COMMAND.

I.   USING THE SAME DRIVE, EXECUTE STEPS E THROUGH H WITH
     THAT DRIVE SELECTED AS DRIVE 2, 3, 4, 5, 6 AND 7.

J.   FOR EACH ADDITIONAL DRIVE ON THE SYSTEM REPEAT STEPS A
     THROUGH I.

7. PROGRAM CONTROLS

THE FOLLOWING SUBPARAGRAPHS DESCRIBE THOSE CONTROLS WHICH
THE USER HAS OVER THE PROGRAM.

THERE ARE TWO MAIN SOURCES OF PROGRAM CONTROL: A) PROGRAM
MONITOR CONTROL VIA KEYBOARD COMMANDS; AND B) SWITCH RE-
GISTER CONTROL.

7.1 PROGRAM MONITOR CONTROL VIA KEYBOARD COMMANDS

THE PROGRAM MONITOR KEYBOARD COMMANDS ARE DESCRIBED BELOW.
IF A COMMAND ERROR IS DETECTED, MONITOR PRINTS "?"
AND THE COMMAND MUST BE RETYPED. COMMANDS MAY BE INPUT AFTER
MONITOR HAS PRINTED A LEFT BRACKET ([). TEST INTERRUPT
COMMANDS MAY BE TYPED AT ANY TIME.

THE PROGRAM MONITOR IS ENTERED UNDER ANY OF THE FOLLOWING
CONDITIONS.

A. AFTER PROGRAM STARTUP.

B. AN ERROR OCCURS AND SR2=0.

C. ALL SELECTED TESTS ARE DONE.

D. A TEST INTERRUPT COMMAND (REFERENCE PARAGRAPH 7.1.3) IS
   TYPED BY THE USER.

7.1.1 TEST SELECTION COMMANDS

THE FOLLOWING COMMANDS ARE USED TO SELECT FROM ONE TO TWELVE
TESTS FOR EXECUTION. REGARDLESS OF THE ORDER IN WHICH A TEST
SELECTION IS MADE, THOSE TESTS ARE EXECUTED IN NUMERICAL ORDER.
IF A GIVEN TEST IS SPECIFIED TWICE IN THE SAME SELECTION,
IT WILL BE DELETED FROM THAT SELECTION.

COMMAND	RESULT
TA←	RUN ALL TESTS (TEST 15 THROUGH TEST 30)
TAX←	RUN ALL TESTS EXCEPT TEST 30 (MANUAL INTERVENTION TEST)
T15T22TNN←	RUN THE TEST(S) INDICATED. T15 THROUGH T30 IN OCTAL ARE THE VALID SELECTIONS. IF THE USER SELECTS OTHER THAN T15 THROUGH T30 THE PROGRAM WILL EXECUTE ONE OF THE VALID TESTS (UNDETERMINED).

7.1.2   TEST CONTINUATION COMMANDS

THE FOLLOWING COMMANDS ARE USED TO CONTINUE IN THE TEST SE-
QUENCE IF THAT SEQUENCE HAS BEEN INTERRUPTED BY AN ERROR
WITH SR2=0, OR AS IN THE CASE OF TEST 30 WHERE THE USER MUST
CARRY OUT SOME MANUAL INTERVENTION.

COMMAND   RESULT
-------   ------

C-   CONTINUE IN THE TEST SEQUENCE. IF NO TESTS
                 ARE SELECTED, MONITOR WILL PRINT "?". IF
                 THIS OCCURS A NEW TEST SELECTION MUST BE
                 MADE.

EX-   CONTINUE WITH THE NEXT SUBTEST IF THE CURRENT
                 SUBTEST IS FAILING AND SEVERAL SETS OF DATA
                 REMAIN TO BE USED IN THAT SUBTEST. THIS
                 COMMAND ENABLES THE USER TO EXIT A FAILING
                 DATA SUBTEST AND CONTINUE WITH THE NEXT SUBTEST.
                 AFTER THE CURRENT "EX-" COMMAND HAS BEEN
                 UTILIZED FOR A FAILING DATA SUBTEST EXIT, IT
                 IS NO LONGER EFFECTIVE. IF NO TESTS ARE
                 SELECTED, MONITOR WILL PRINT "?". IN THIS
                 CASE A NEW TEST SELECTION MUST BE MADE.

SNN-   MINI SCOPE LOOP. THIS COMMAND SHOULD BE USED
                 ONLY WHEN AN ERROR HAS OCCURRED IN A SUBTEST
                 WHICH TESTS TIME SEQUENCED OPERATIONS. "NN"
                 IS THE BIT NUMBER (IN OCTAL) IN THE ERROR
                 STATUS WORD (ERSTAT) WHICH INDICATES A FAILURE.
                 SR5 MUST BE SET TO A 1 TO UTILIZE THIS FEATURE
                 CORRECTLY. REFER TO PARAGRAPH 6 FOR MORE
                 INFORMATION.

7.1.3 TEST INTERRUPT COMMANDS

THE FOLLOWING COMMANDS MAY BE USED TO INTERRUPT TESTING AND
RETURN TO THE PROGRAM MONITOR. IN MOST CASES, ALL TEST
SELECTIONS WILL BE DELETED AND THE USER MUST RESELECT
THE TESTS TO BE EXECUTED. THE MOST COMMON USES OF THESE COM-
MANDS ARE TO REWIND THE SELECTED DRIVE, AND TO EXIT A MINI
SCOPE LOOP.

COMMAND	RESULT
ALTMODE KEY	INTERRUPT TEST EXECUTION. RESPONDS TO "ALT" AND "ESC" KEYS.
↑R	INTERRUPT TEST EXECUTION, DELETE ALL TEST SE-LECTIONS, AND REWIND THE SELECTED DRIVE TO BOT.
↑C	INTERRUPT TEST EXECUTION. DELETE ALL TEST SELECTIONS, AND FORCE A DUMP OF ALL TM8-E REGISTERS ON THE TTY. (THE REGISTER DUMP FORMAT IS A MODIFIED ERROR REPORT FORMAT.)

7.1.4 MISCELLANEOUS COMMANDS

COMMAND	RESULT
I↓	INITIALIZE AND ALLOW NEW DRIVE SELECTION.
TR	TRACE THE PROGRAM FLOW USING THE ERROR RE-PORT FORMAT (MODIFIED). THIS COMMAND IS A PRE-FIX TO ALL "TEST SELECTION" AND "TEST CONTINUATION" COMMANDS, AND RESULTS IN A MODIFIED ERROR REPORT FOR EACH SUBTEST THAT PASSES. TRACE REPORTS ARE CONTROLLED VIA SR BITS 3 AND 4 IN THE SAME MANNER AS ERROR REPORTS. "TR" REMAINS IN EFFECT UNTIL THE NEXT ENTRY TO THE PROGRAM MONITOR.
DMNNNN↓	DUMP THE CONTENTS OF MEMORY LOCATION NNNN IN FIELD M ON THE TTY. LINE-FEED DUMPS THE CON-TENTS OF THE NEXT LOCATION; CARRIAGE RETURN RETURNS TO THE PROGRAM MONITOR. TEST SE-LECTION IS UNAFFECTED.

7.2 SWITCH REGISTER CONTROL OPTIONS
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SR BIT	STATE	FUNCTION
0	0	RUN ALL TESTS NORMALLY (SEVERAL PASSES OF EACH SELECTED TEST EXCEPT TEST 30).
	1	QUICK VERIFY (ONE PASS IS MADE OF EACH SE-LECTED TEST).
1	0	ENABLE TEST IN PROGRESS REPORTS, AS SOON AS A TEST IS STARTED THE TEST NUMBER (TESTNN) IS PRINTED ON THE TTY.
	1	DISABLE TEST IN PROGRESS REPORTS.
2	0	RETURN TO PROGRAM MONITOR ON ANY ERROR OCCURRENCE.
	1	RETURN TO PROGRAM MONITOR ONLY IF A FATAL ERROR HAS OCCURRED.
3	0	ENABLE ERROR AND TRACE REPORTS.
	1	DISABLE
4	0	ERROR AND TRACE REPORTS INCLUDE APPLICABLE DATA ONLY.
	1	FORCE ERROR AND TRACE REPORTS TO INCLUDE ALL POSSIBLE DATA.
5	0	DISABLE SUBTEST LOOP.
	1	LOOP ON CURRENT SUBTEST. ALL VARIABLE DATA REMAINS CONSTANT. THIS SWITCH MUST ALSO BE SET TO ENTER A "MINI SCOPE LOOP".
6-9	0	INHIBIT LOOPS 6-9 RESPECTIVELY.
	1	ENABLE LOOPS 6-9 RESPECTIVELY. LOOPS 6-9 AL-LOW THE USER TO LOOP ON A SMALL GROUP OF SUB-TESTS WITHIN THE CURRENT TEST THEREBY ENABLING INCREASING THE TESTING FREQUENCY OF A SMALL SET OF FUNCTIONS. THE LISTING MUST BE REFERENCED TO DETERMINE WHICH SUBTESTS ARE INCLUDED IN EACH LOOP. THE END OF EACH LOOP IS MARKED AS "*****LOOP N*****".
10	0	INHIBIT LOOP ON CURRENT TEST (TEST 15 - TEST 32).
	1	ENABLE LOOP ON CURRENT TEST.
11	0	TERMINATE TESTING UPON COMPLETION OF ALL SELECTED TESTS AND DELETE TEST SELECTION.
	1	RUN ALL SELECTED TESTS CONTINUOUSLY, AT THE COMPLETION OF EACH PASS THROUGH THE EN-TIRE TEST SELECTION, THE NUMBER OF PASSES EX-ECUTED (IN OCTAL) IS PRINTED (PASS NNNN).

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8.   ERRORS

8.1   ERROR HALTS

THERE ARE NO ERROR HALTS IN THIS PROGRAM. IF AN ERROR SHOULD
OCCUR AND SR2=0, THE PROGRAM WILL STOP TESTING AND RETURN TO
THE PROGRAM MONITOR TO AWAIT A USER COMMAND. REFER TO PARAGRAPH
7.1 FOR AVAILABLE COMMANDS.

8.2 ERROR REPORTS

WHEN SR4=0, ERROR REPORTS INCLUDE ONLY THAT INFORMATION
WHICH APPLIES DIRECTLY TO THE ERROR.   IF SR4=1, ALL POSSIBLE
INFORMATION IS PRINTED WHETHER APPLICABLE OR NOT. AN EX-
AMPLE OF A MAXIMUM INFORMATION ERROR REPORT IS SHOWN BELOW.

*ER15D PC:0250 I1:6706 I2:6716 GD:0000 BD:7777 OD:7777
WC:1234 CA:2345 CM:0000 FS:0000 MS:0000 DB:0000 AC:0000

THE SYMBOLS USED IN THE ERROR REPORTS ARE DEFINED BELOW.

SYMBOL   DEFINITION
------   ----------

*ERNNX   ERROR OCCURRED IN TEST NN, SUBTEST X. (IF NN=31, THE
          ERROR OCCURRED OUTSIDE OF A FORMAL TEST.)

*FENNX   FATAL ERROR

TR*NNX   TRACE REPORT INDICATOR. NO ERROR OCCURRED BUT TRACE
          IS ENABLED OR THE "*C" COMMAND WAS TYPED BY THE USER.

PC:NNNN   ADDRESS IN PROGRAM AT WHICH ERROR WAS DETECTED.

I1:NNNN   OCTAL CODE FOR IOT1 IN A VARIABLE SUBTEST.

I2:NNNN   OCTAL CODE FOR IOT2 IN A VARIABLE SUBTEST.

THE FOLLOWING THREE SYMBOLS ARE FURTHER DEFINED IN THE PRO-
GRAM LISTING IN THE SUBTEST COMMENTS.

GD:NNNN   GOOD TEST VALUE

BD:NNNN   REAL TEST VALUE (BAD)

OD:NNNN   PREVIOUS GOOD TEST VALUE (OLD)

THE FOLLOWING SYMBOLS INDICATE THE CONTENTS OF THE SPECIFIED
REGISTER AT THE TIME THE ERROR WAS DETECTED.

WC:NNNN   WORD COUNT REGISTER

CA:NNNN   CURRENT ADDRESS REGISTER

CM:NNNN   COMMAND REGISTER

FS:NNNN   FUNCTION/STATUS REGISTER

MS:NNNN   MAIN STATUS REGISTER

DB:NNNN   DATA BUFFER REGISTER

AC:NNNN   PROCESSOR ACCUMULATOR (VALID ONLY FOR ILLEGAL SKIP
          ERRORS.)

8.3 STANDARD ERROR RECOVERY PROCEDURE

THE STANDARD ERROR RECOVERY PROCEDURE ASSUMES THAT THE STANDARD
TEST PROCEDURE IS BEING USED; THAT IS, THAT ALL ERROR OCCURRENCES
RESULT IN AN ERROR REPORT AND IN A RETURN TO THE PROGRAM
MONITOR.

WHEN AN ERROR OCCURS, USE THE FOLLOWING STEPS AS A GUIDE FOR
RECOVERY REFERRING TO PARAGRAPH 8.2 FOR ERROR REPORT SYMBOL
DEFINITIONS.

A. REFERENCE THE POINT IN THE PROGRAM LISTING INDICATED BY
    THE "PC:" NUMBER.

B. THE ERROR CODE IN THE LISTING SHOULD MATCH THE CODE IN THE
    ERROR REPORT (ERNNX OR FENNX).

C. COMMENTED IMMEDIATELY BELOW THE ERROR CODE IN THE LIST-
    ING IS AN EXPLANATION OF THE NUMBERS PRINTED AFTER THE
    GD, BD AND OD SYMBOLS.

D. IN THE IMMEDIATE VICINITY OF THE ERROR CODE AND RELATED
    SUBTEST A DESCRIPTION OF THE SUBTEST WILL BE FOUND.

E. IF THE SYMBOLS "GD" AND "BD" ARE DEFINED AS THE GOOD AND
    REAL (BAD) VALUES OF ERSTAT (ERROR STATUS WORD), THAT SUB-
    TEST TESTS TIME SEQUENCED OPERATIONS. IN THIS CASE, ANY
    BITS WHICH DIFFER BETWEEN GD AND BD INDICATE WHICH TIME
    SEQUENCED OPERATION(S) FAILED. THE TIME SEQUENCED OP-
    ERATIONS ARE COMMENTED WITH THE BIT POSITION TO WHICH THEY
    CORRESPOND AND EXACTLY WHAT IS BEING TESTED AT THAT TIME.

F. IF THE ERROR IS FATAL (FENNX), THERE IS NO STANDARD RE-
    COVERY. THE CAUSE OF THE FAILURE MUST BE DETERMINED
    THROUGH STATIC MEANS.

G. IF THE ERROR IS NON-FATAL (ERNNX), THE USER MAY ELECT TO
    CONTINUE IN THE TEST SEQUENCE (C-), OR TO ENTER A SUB-
    TEST OR MINI SCOPE LOOP AS DESCRIBED BELOW.

H. IF THE FAILING SUBTEST DOES NOT TEST TIME SEQUENCED OPER-
    ATIONS, ENTER A SUBTEST LOOP AS DESCRIBED IN 8.3.1 BELOW.

I. IF THE FAILING SUBTEST DOES TEST TIME SEQUENCED OPERATIONS,
    THE USER MAY ENTER A SUBTEST LOOP AS DESCRIBED IN 8.3.1
    OR A MINI SCOPE LOOP AS DESCRIBED IN 8.3.2.

8.3.1 SUBTEST LOOPS

TO ENTER A SUBTEST LOOP, CARRY OUT THE FOLLOWING STEPS.

A. SET SR BITS 2, 3 AND 5=1.

B. TYPE "C←".

TO EXIT A SUBTEST LOOP, RESTORE THE SWITCHES TO THEIR NORMAL
POSITION.

8.3.2 MINI SCOPE LOOPS

NOTE: MINI SCOPE LOOPS WILL WORK ONLY FOR SUBTESTS WHICH
       TEST TIME SEQUENCED OPERATIONS.

TO ENTER A MINI SCOPE LOOP, CARRY OUT THE FOLLOWING STEPS.

A. SET SR BITS 2, 3 AND 5=1.

B. TYPE "SNN←" WHERE NN IS THE BIT NUMBER (IN OCTAL) OF THE
    FIRST FAILING TIME SEQUENCED OPERATION. THE PROGRAM
    WILL LOOP CONTINUOUSLY FROM THE LAST "SET" COMMAND
    THROUGH THE TIME SEQUENCED OPERATION TEST SPECIFIED IN
    "SNN←". A "CLEAR TRANSPORT" (CLT) IS ISSUED AFTER THE
    COMPLETION OF EACH LOOP.

TO EXIT A MINI SCOPE LOOP, TYPE "←R" WHICH WILL INTERRUPT THE
LOOP, DELETE ALL TEST SELECTIONS, REWIND THE SELECTED
DRIVE, AND RETURN TO THE PROGRAM MONITOR.

9. RESTRICTIONS

   ONLY ONE DRIVE MAY BE TESTED AT ONE TIME.
   ALL OTHER DRIVES MUST BE OFF LINE.

10. EXECUTION TIME

   EXECUTION TIME VARIES DEPENDENT UPON THE TYPE OF DRIVE BEING
   TESTED. ONE LONG PASS OF A FULL TEST SELECTION FOR A 9 TRACK
   DRIVE TAKES APPROXIMATELY 15 MINUTES.

11. TEST ABSTRACTS

   TEST 15 CHECKS BASIC TM8-E CONTROL FUNCTIONS THAT DO
   REQUIRE A DRIVE TO BE ON LINE. NO TAPE MOTION, HOWEVER, IS
   INITIATED.

   TEST 16 CHECKS TIME SEQUENCED CONDITIONS INCLUDING TAPE
   MOTION FOR WRITE, READ, READ-COMPARE, SPACE FORWARD, SPACE
   REVERSE AND REWIND FUNCTIONS. ALL OPERATIONS ARE DONE AT
   800 BPI WITH 9 TRACK DRIVES IN CORE DUMP MODE.

   TEST 17 VERIFIES THAT RECORDS WRITTEN IN ONE PARITY MODE, THEN
   READ IN THE OTHER MODE CAUSE LATERAL (VERTICAL) PARITY ERRORS.

   TEST 20 VERIFIES THE ABILITY OF THE DRIVE TO WRITE A FILE
   MARK AND ALSO THE ABILITY TO RECOGNIZE A FILE MARK.

   TEST 21 EXERCISES VARIOUS COMBINATIONS OF WRITE, WRITE FILE MARK
   AND SPACE REVERSE.

TEST 22 CONTINUES VARIOUS POSITIVE AND NEGATIVE TESTING SEQUENCES
ON THE TM8-E CONTROL UTILIZING TAPE MOTION.

TEST 23 VERIFIES THE PROPER OPERATION OF THE CONTINUOUS MODE OF
SINGLE DRIVE OPERATION UTILIZING VARIOUS COMBINATIONS OF DRIVE
FUNCTIONS.

TEST 24 TESTS THE CHANGE DIRECTION MODE OF OPERATION UTILIZING
VARIOUS COMBINATIONS OF FUNCTIONS WHICH CAUSE DIRECTION RE-
VERSAL.

TEST 25 IS A BASIC TEST OF THE ABILITY OF THE TM8-E/TU10 TO PASS DATA
CORRECTLY.

TEST 26 VERIFIES THE PROPER GENERATION OF THE CYCLIC REDUN-
DANCY CHECK CHARACTER (CRCC) BY COMPARING SIMULATED VALUES
TO THOSE VALUES GENERATED BY THE HARDWARE AND WRITTEN ON TAPE.
THIS TEST IS RUN ON 9 TRACK DRIVES ONLY.

TEST 27 VERIFIES THE UNIQUENESS OF CORE DUMP AND COMPATIBLE
MODES OF OPERATION ON 9 TRACK DRIVES ONLY.

TEST 30 IS A MANUAL INTERVENTION TEST WHICH TESTS SUCH THINGS
AS FILE PROTECT, THE OFF LINE FUNCTION AND THE PROPER EF-
FECT ON THE CONTROL BY THE PROCESSOR "INITIALIZE" SIGNAL.

12.   LISTING (ATTACHED)

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/TMBE CONTROL TEST PART 2  MAINDEC-08-DHTMB-A-L
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS,


/**************************************************************************
/       WARNING:        THIS PROGRAM SHOULD NOT BE STOPPED UNLESS
/                       MONITOR HAS TYPED "C",
/**************************************************************************

/THIS DIAGNOSTIC PROGRAM TESTS THE TMBE CONTROL AND THE TRANSPORT SYSTEM
/CONNECTED, AND MAY RESIDE IN ANY EXISTING MEMORY FIELD,

/BASIC STARTING PROCEDURE:
        /LOAD THE PROGRAM INTO THE DESIRED MEMORY FIELD WITH THE BINARY LOADER,
        /LOAD THE INSTRUCTION AND DATA FIELDS WITH THE PROGRAM FIELD,
        /LOAD ADDRESS 200,
        /CLEAR ALL SWITCHES,
        /SET ANY SR OPTIONS DESIRED,
        /DEPRESS "CLEAR", THEN "CONTINUE",
        /ANSWER THE QUESTIONS ASKED BY THE PROGRAM, WHEN READY, SELECT
        /TESTS USING THE MONITOR,

/SWITCH REGISTER CONTROL OPTIONS,

        /SR BIT STATE   CONTROL
        /0:     0       RUN ALL TESTS NORMALLY,
        /       1       RUN QUICK VERIFY,
        /               (1 PASS OF EACH SELECTED TEST),
        /1:     0       TEST PROGRESS REPORTS,
        /       1       NO TEST PROGRESS REPORTS,
        /2:     0       GO TO MONITOR ON ANY ERROR OCCURRENCE,
        /       1       GO TO MONITOR ONLY UPON FATAL ERROR,
        /3:     0       PRINT ERROR MESSAGES AND IF "TR" IS PENDING ENABLE TRACE MESSAGES,
        /       1       PRINT ONLY FATAL ERROR MESSAGES,
        /4:     0       ERROR MESSAGES DISPLAY NECESSARY DATA ONLY,
        /       1       ERROR MESSAGES DISPLAY ALL DATA WHETHER APPLICABLE
        /               OR NOT,
/NOTE:  IF SR5=1 WHEN EXITING MONITOR TO RUN A NEW TEST SELECTION,
/THE PROGRAM MAY APPEAR TO HANG, MOMENTARILY RELEASE SR5 TO CONTINUE,
        /5:     0       NO SUBTEST LOOP,
        /       1       LOOP ON SUBTEST,  (SCOPE LOOP)
        /6-9:   0       NO LOOP 6-9 RESPECTIVELY,




        /       1       LOOP 6-9 RESPECTIVELY,  (LOOP ON SMALL GROUP
        /               OF SUBTESTS),
        /10:    0       NO LOOP ON CURRENT TEST (T01-T14),
        /       1       LOOP ON CURRENT TEST (T01-T14),
        /11:    0       NO LOOP ON COMPLETE TEST AS SELECTED,
        /       1       LOOP ON COMPLETE TEST AS SELECTED
        /               (OCTAL PASS NUMBER TYPED AT END OF EACH PASS),
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/

/TTY KEYBOARD COMMAND CONTROL,

        /1.   THE FOLLOWING COMMANDS MAY BE ENTERED ANYTIME THAT THE
/PROGRAM IS RUNNING AND AUTOMATICALLY KILL ALL TESTS SELECTED, WHEN
/THE COMMAND ACTION IS COMPLETED, THE PROGRAM GOES TO MONITOR,
        /1.1
/COMMAND   RESULT
/-------   ------
/"+C" (CONTROL C)   GENERATES CLT AND STOPS THE TRANSPORT AT PRESENT POSITION,
/"+R" (CONTROL R)   CARRIES OUT "+C" THEN REWINDS TO BOT,

        /2,   IN ADDITION TO "+C" AND "+R" THE FOLLOWING COMMANDS MAY
/BE USED AS INDICATED,
        /NOTES! 1, THE FOLLOWING COMMANDS MAY BE ENTERED WHEN "[" IS
/TYPED,
        /2, "+" INDICATES "RETURN" KEY; "RUBOUT" ABORTS A COMMAND STRING
/PRIOR TO "+"; "SPACE" MAY BE INPUT AT ANY POINT,
        /3, "ALTMODE" INTERRUPTS THE MAIN PROGRAM AND RETURNS TO MONITOR
/ONLY DURING TESTS NOT INVOLVING TAPE MOTION,

/COMMAND   RESULT
/-------   ------
/"T15116T17TNN+"RUN THE TESTS INDICATED, IF A TEST NUMBER IS INPUT 2
/   TIMES, THAT TEST IS NOT RUN,
/"TA+"   RUN ALL TESTS,
/"TAX+"   RUN ALL TESTS EXCEPT MANUAL INTERVENTION TESTS,
/"C+"   CONTINUE FROM POINT OF INTERRUPTION, IF NO TESTS ARE
/   PENDING OR A FATAL ERROR OCCURS, "C+" RESULTS IN
/   SYNTAX ERROR,
/"EX+"   IF A SUBTEST CONTAINS A LOOP TO CHECK OUT VARYING DATA
/   PATTERNS, AND IF ERRORS KEEP OCCURING PREVENTING CONTINUING
/   ON QUICKLY WITH THE NEXT SUBTEST, DEPRESS "ALTMODE",
/   THEN "EX+", THIS WILL EXIT THE CURRENT SUBTEST AFTER
/   THE NEXT ERROR ALLOWING THE TEST TO CONTINUE AT THE NEXT
/   SUBTEST, THE "EXITFL" WHICH IS SET BY "EX+"
/   IS CLEARED AS SOON AS IT IS UTILIZED FOR AN
/   ESCAPE,   IF NO TESTS ARE PENDING OR A FATAL ERROR
/   OCCURS, "EX+" RESULTS IN SYNTAX ERROR,
/"TR"   TRACE USING ERROR MESSAGE FORMAT WHETHER ERROR OCCURS
/   OR NOT, "TR" MAY PRECEED "TA","TNN","C", OR "EX" COMMANDS,
/   TRACE REMAINS IN EFFECT UNTIL "[" IS DISPLAYED AGAIN,
/   IT RESULTS IN A MODIFIED ERROR MESSAGE BEING DISPLAYED
/   FOR EACH SUBTEST RUN IF THAT TEST PASSES, THESE
/   PRINTOUTS ARE CONTROLLED BY THE SAME SR OPTIONS AS
/   ERROR MESSAGES,
/"I+"   REPEAT OPENING DIALOGUE TO ALLOW USER TO SELECT NEW
/   DRIVE, ETC,, THEN REINITIALIZE,
/"SNN+"   ENABLE SCOPE LOOP "NN" WHERE "NN" IS THE BIT NUMBER
/   IN OCTAL IN THE ERROR WORD WHICH IS FAILING, THE PROCEDURE
/   TO FOLLOW IS! WHEN AN ERROR OCCURS ENABLE RETURN TO
/   MONITOR, SET SR5 TO A 1 (SUBTEST LOOP) AND TYPE
/   "S(THEN THE BIT NUMBER)+", THE RESULT WILL BE A LOOP
/   STARTING AT THE BEGINNING OF THE SUBTEST THROUGH THE
/   BIT N CHECK, THE ONLY WAY TO EXIT FROM A LOOP OF THIS TYPE
/   IS BY "+C" OR "+R", A SYNTAX ERROR WILL OCCUR WILL OCCUR

/   IF NO SUBTESTS ARE PENDING,
/"DN!MMMM"   DISPLAY THE CONTENTS OF MEMORY LOCATION MMMM IN FIELD N,
/   IF A LINE FEED IS TYPED THE NEXT SEQUENTIAL MEMORY
/   LOCATION IS TYPED, WHEN THE ADDRESS OVERFLOWS THE
/   NEXT MEMORY FIELD WILL BE REFERENCED AND THE
/   CONTENTS DISPLAYED, A CARRIAGE RETURN ALLOWS THE INPUT
/   OF A NEW COMMAND,

```
/ERRORS:

/IF AN ERROR OCCURS, REFER TO THE ERROR PRINTOUT AND THE PROGRAM
/LISTING FOR THE SUBTEST FAILURE DESCRIPTION,

/ERROR PRINTOUTS:

/HEADER          DEFINITION
/------          ----------

/*ERNNX          ERROR OCCURRED IN TEST NN SUBTEST X(TNNX),
/*FENNX          SAME AS ABOVE EXCEPT FATAL ERROR,
/TR*NNX          TRACE PRINTOUT (FROM "TR" MONITOR COMMAND),
/PC:NNNN         ADDRESS IN PROGRAM AT WHICH ERROR OCCURRED;
/I1:NNNN         OCTAL CODE FOR IOT1,
/I2:NNNN         OCTAL CODE FOR IOT2,
/GD:NNNN         GOOD TEST VALUE, DESCRIBED IN SUBTEST LISTING,
/BD:NNNN         BAD OR ACTUAL TEST VALUE, DESCRIBED IN SUBTEST LISTING;
/OD:NNNN         USUALLY PREVIOUS GOOD, DESCRIBED IN SUBTEST LISTING,
/THE FOLLOWING DISPLAY THE CONTENTS OF THE INDICATED REGISTER:
/WC:NNNN         WORD COUNT,
/CA:NNNN         CURRENT ADDRESS,
/CM:NNNN         COMMAND.
/FS:NNNN         FUNCTION - STATUS,
/MS:NNNN         MAIN STATUS,
/DB:NNNN         DATA BUFFER,
/AC:NNNN         ACCUMULATOR (USED FOR SKIP ERRORS ONLY),
```

```
              /PROGRAM DIRECTORY:
              NOPUNCH
      7600    *7600
                      /REFER TO THE ASSEMBLY LISTING JUST TO THE LEFT OF THE MNEMONIC FOR THE
                      /ABSOLUTE STARTING ADDRESS OF THAT PARTICULAR PROGRAM SEGMENT,
                      /(THIS IS FOR REFERENCE ONLY, DO NOT USE THESE STARTING ADDRESSES,)

              /MNEMONIC - PROGRAM SEGMENT,

                      /TEST SECTION:
7600  0203    TEST15  /BASIC CONTROL TESTS NOT INVOLVING TAPE MOTION;
7601  0600    TEST16  /BASIC TAPE MOTION TEST,
7602  1200    TEST17  /LATERAL PARITY TEST,
7603  1427    TEST20  /WEOF TEST,
7604  1600    TEST21  /COMBINED FUNCTION TEST,
7605  2000    TEST22  /ADDITIONAL TESTS FOR IF AND EF,
7606  2400    TEST23  /CONTINUE MODE TEST,
7607  2600    TEST24  /CHANGE DIRECTION TEST,
7610  3000    TEST25  /BASIC DATA TEST,
7611  3200    TEST26  /CRCC GENERATION TEST (9 TRACK ONLY);
7612  3400    TEST27  /CORE DUMP MODE TEST (9 TRACK ONLY),
7613  3600    TEST30  /MANUAL INTERVENTION TEST,

                      /PROGRAM CONTROL:
7614  4400    EXEC    /EXECUTIVE,
7615  4600    MONIT   /KEYBOARD MONITOR,
7616  5600    INTSEV  /INTERRUPT SERVICE,

                      /ERROR HANDLERS:
7617  5200    ERRORS  /ERROR HANDLING ROUTINE,
7620  0473    COMP    /ERROR DETECTOR,
7621  6451    FE31A   /ERROR TABLE,

                      /UTILITIES:
7622  4016    SLWCR   /TMBE IOT SUBROUTINES,
                      /IF THE DEVICE CODES ARE NOT 70-72 IN YOUR SYSTEM, CHANGE
                      /ONLY THE IOT CODES IN EACH OF THESE 18 SUBROUTINES,
7623  7413    WAIT1R  /WAIT ROUTINES,
7624  4200    TSKEFR  /LITTLE TEST ROUTINES,
7625  6200    SET1R   /SET UP ROUTINES INCLUDING CONTNU MODE;
7626  2737    AMGBE   /TEXT HANDLERS,
7627  6105    EDIT

                      /DATA SECTION:
7630  6665    ERMSG   /ERROR MESSAGE INSERT BLOCK,
7631  6776    MSG1    /MESSAGE TEXTS,
              ENPUNCH
```

3

```
              0000    *0000
      0020   2000              0                       /LOCATIONS 1-3 ARE ASSEMBLED SET
      0001   5001              JMP      1              /UP FOR HIGH SPEED DUMP,  THEY
      0002   0002              2                       /ARE CHANGED FOR INTERRUPT HANDLING
      0003   0003              3                       /BY THE PROGRAM,
      0004   3541    SRBSWP,  SRBSW                     /BSW
      0005   3554    SRMQLP,  SRMQL                     /MQL
      0006   3557    SRMQAP,  SRMQA                     /MQA
      0007   4400    EXECP,   EXEC

              0010    *0010
                      /AUTO INDEXERS!
      0010   0000    AUTO10,  0
      0011   0000    AUTO11,  0
      0012   0000    AUTO12,  0
      0013   0000    AUTO13,  0
      0014   0000    AUTO14,  0
      0015   0000    AUTO15,  0
      0016   0000    AUTO16,  0
      0017   0000    AUTO17,  0

              0020    *0020
                      /WIDE USEAGE NUMERIC CONSTANTS,  (POSITIVE)
      0020   0002    K2,      2
      0021   0004    K4,      4
      0022   0007    K7,      7
      0023   0010    K10,     10
      0024   0014    K14,     14
      0025   0017    K17,     17
      0026   0040    K40,     40
      0027   0077    K77,     77
      0030   0100    K100,    100
      0031   0200    K200,    200
      0032   0215    K215,    215
      0033   0400    K400,    400
      0034   1000    K1000,   1000
      0035   4040    K4040,   4040

                      /WIDE USEAGE NUMERIC CONSTANTS,  (NEGATIVE)
      0036   7776    M2,      -2
      0037   7774    M4,      -4
      0040   7773    M5,      -5
      0041   7764    M14,     -14
      0042   7740    M40,     -40
      0043   7735    M43,     -43
      0044   7575    M203,    -203
      0045   7556    M222,    -222
      0046   7520    M260,    -260
      0047   7510    M270,    -270

                      /WIDE USEAGE INSTRUCTIONAL CONSTANTS!
      0050   6201    KCDF,    CDF

                      /TRIAL BUFFER AREA,
```

```
      0051   7342    XBUFF,   T25BUF
      0052   7343             T25BUF+1
      0053   7344             T25BUF+2
      0054   7345             T25BUF+3
      0055   7346             T25BUF+4
      0056   7347             T25BUF+5

                      /WIDE USEAGE POINTERS
      0057   4375    SCDFP,   SCDF
      0060   2737    AMGBEP,  AMGBE
      0061   4600    MONITP,  MONIT
      0062   6105    EDITP,   EDIT
      0063   6132    EDTEMP,  EDTEM
      0064   2571    BELLP,   BELL
      0065   6167    CRLFP,   CRLF
      0066   6665    ERMSGP,  ERMSG
      0067   2553    TYPEP,   TYPE
      0070   6140    CONTCP,  CONTC
      0071   6377    CONTRP,  CONTR

                      /TMBE IOT SUBROUTINE POINTERS,
      0072   4016    SLWCRP,  SLWCR              /LWCR
      0073   4022    SLCARP,  SLCAR              /LCAR
      0074   4026    SLCMRP,  SLCMR              /LCMR
      0075   4032    SLFGRP,  SLFGR              /LFGR
      0076   4036    SLDBRP,  SLDBR              /LDBR
      0077   4042    SRWCRP,  SRWCR              /RWCR
      0100   4046    SRCARP,  SRCAR              /RCAR
      0101   4052    SRMSRP,  SRMSR              /RMSR
      0102   4056    SRCMRP,  SRCMR              /RCMR
      0103   4062    SRFSRP,  SRFSR              /RFSR
      0104   4066    SRDBRP,  SRDBR              /RDBR
      0105   4072    SSKEFP,  SSKEF              /SKEF
      0106   4077    SSKCBP,  SSKCB              /SKCB
      0107   4104    SSKIDP,  SSKTD              /SKTD
      0110   4111    SSKTRP,  SSKTR              /SKTR
      0111   4116    SCLFP,   SCLF               /CLF
      0112   4122    SCLTP,   SCLT               /CLT
      0113   4126    SSDLEP,  SSDLE              /SDLE
      0114   4132    SSBRMP,  SSBRM              /SBRM

                      /PSEUDO MNEMONIC SUBROUTINE POINTERS,
      0115   4332    CLR1P,   CLR1               /CLEAR1
      0116   4353    CLR4P,   CLR4               /CLEAR4
      0117   4357    CLR5P,   CLR5               /CLEAR5
      0120   1141    LAS5P,   LAS5               /LOOP5
      0121   1147    LAS6P,   LAS6               /LOOP6
      0122   1155    LAS7P,   LAS7               /LOOP7
      0123   1163    LAS8P,   LAS8               /LOOP8
      0124   1171    LAS9P,   LAS9               /LOOP9
      0125   2473    COMPP,   COMP               /COMPAR
      0126   5200    ERRORP,  ERRORS             /ERROR
      0127   1742    LOPTP,   LOPT               /LOADPT
      0130   6200    SET1RP,  SET1R              /SET1
```

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0131  6207    SET2RP, SET2R              /SET2
0132  6216    SET3RP, SET3R              /SET3
0133  6224    SET4RP, SET4R              /SET4
0134  6331    CONTNP, CONTNR             /CONTNU
0135  4200    TSKEFP, TSKEFR            /TSKEF
0136  4206    TSKTDP, TSKTDR            /TSKTD
0137  4214    TSKCBP, TSKCBR            /TSKCB
0140  4222    TSKTHP, TSKTRR            /TSKTH
0141  4230    TMSP,   TMSR              /TMS
0142  4243    TFSP,   TFSR              /TFS
0143  4256    TWCP,   TWCR              /TWC
0144  7413    WAIT1P, WAIT1R            /WAIT1
0145  7420    WAIT2P, WAIT2R            /WAIT2

              /WIDE USEAGE TEMPORARIES,
0146  0000    GOOD,   0                 /GOOD DATA,
0147  0000    BAD,    0                 /BAD DATA
0150  0000    OLD,    0                 /OLD DATA,
0151  0000    TXXTM1, 0                 /THREE TEMPORARIES FOR
0152  0000    TXXTM2, 0                 /FORMAL TEST USEAGE ONLY,
0153  0000    TXXTM3, 0
0154  0000    SAVEAC, 0                 /AC SAVED,
0155  0000    SAVEL,  0                 /LINK SAVED,
0156  0000    PRGFLD, 0                 /MEMORY FIELD WHICH PROGRAM OCCUPIES,
0157  0000    SLKNST, 0                 /BIT NUMBER FOR SCOPE LOOP,
0160  0000    SLADDR, 0                 /SUBTEST SET UP ADDRESS FOR SCOPE LOOP,
0161  0000    TRK9,   0                 /SET IF SELECTED DRIVE IS 9 TRACK,
0162  0000    ERSTAT, 0                 /CONTAINS CONDITION BITS FROM LITTLE TESTS,
0163  0000    KCMD,   0                 /CORRECTION TO CM CONSTANT FOR DRIVE  SELECTED,
0164  0000    ERTAL,  0                 /CURRENT ERSTAT BIT POSITION,
0165  0000    ALTENA, 0                 /SET IF ALTMODE INTERRUPT ENABLED,
0166  0000    IOT1,   0                 /IOT'S IN USE IN GENERALIZED TESTS,
0167  0000    IOT2,   0
0170  0000    ACLOC,  0                 /CONTENTS OF AC FOR ILLEGAL SKIP,
0171  0000    EXPEOF, 0                 /0=EOF, -1=NO EOF

              /WIDE USEAGE SOFTWARE FLAGS AND INDICATORS,
0172  0000    TRACE,  0                 /SET IF "TR" PENDING,
0173  0000    TTOFLG, 0                 /SET IF TTO FLAG GETS SET,
0174  0000    EXITFL, 0                 /SET IF AUTO-EXIT "EX-",
0175  0000    ACTFLG, 0                 /SET IF TEST IN PROGRESS,
0176  0000    TSTAT,  0                 /BIT N SET MEANS RUN TEST
                                        /N+15 (IN OCTAL),
0177  0000    TSTNUM, 0                 /CURRENT TEST NUMBER,
```

```
              /THIS IS WHERE THE PROGRAM STARTS,
              /--------------------------------

      0200    *200

0200  5407    START,  JMP I   EXECP      /START HERE, GO TO EXEC,
0201  7120            STL
0202  5407            JMP I   EXECP
```

```
/TEST SECTION:

/THE TEST SECTION IS COMPOSED OF 12 TESTS (T15-T30) EACH OF WHICH IS
/MADE UP OF SUBTESTS DESIGNATED BY THE LETTERS A-Z.

/THE SUBTEST FORMAT IS DESCRIBED BELOW,

/T15Z,  INST    /HOUSEKEEP TO SET UP LOOPS AND SPECIAL LOCATIONS
/       INST    /SUCH AS "GOOD" AND "OLD",
/       RUN TEST
/       AT THE END OF THE TEST, AC SHOULD CONTAIN SOME PREDETERMINED
/       VALUE.
/       COMPAR  /COMPARE THE VALUE IN AC WITH THE VALUE IN "GOOD",
/               /IF EQUAL, CHECK FOR SUBTEST LOOP, IF NOT EQUAL, GO TO
/               /ERROR HANDLER AND TAKE THE REQUIRED
/               /ACTION.
/       ER15Z   /ADDRESS OF ERROR STATUS WORDS,
/       JMP     T15Z    /SUBTEST LOOP JUMP.
/       INST    /POINT OF CONTINUATION OR GET MORE DATA, IF THIS IS
/               /A DATA SUBTEST, "EX-" ENABLES SKIPPING THIS INSTRUCTION,

/SOME SUBTESTS CHECK MANY CONDITIONS IN A TIME ORDERED SEQUENCE,
/TO FACILITATE SUCH A TESTING PROCEDURE, A DICTIONARY OF LITTLE TEST
/ROUTINES HAS BEEN INCLUDED, IN GENERAL, THESE SUBTESTS MOVE TAPE AND HAVE
/THE FOLLOWING FORMAT,

/       SETN    /CALL TO ONE OF FOUR SET UP ROUTINES,
/       NNNN    /CONSTANT TO STORE IN GOOD,
/       NNNN    /WC CONSTANT,
/       NNNN    /CA CONSTANT,
/       NNNN    /DATA TO BE STORED IN CA+1,
/       NNNN    /CM CONSTANT(USUALLY INCLUSIVELY OR'ED WITH KCMD),
/       NNNN    /FR CONSTANT(USUALLY INCLUSIVELY OR'ED WITH KFUNC),
/       TMS     /N:M    /LITTLE TEST ROUTINES FOLLOW, THE METHOD HERE
/IS TO PRESET GOOD WITH THE EXPECTED VALUE OF ERSTAT AT THE END OF
/THE SUBTEST, THE FIRST LITTLE TEST ROUTINE STORES ITS RESULT IN
/BIT 0 OF ERSTAT; THE 2ND IN BIT 1, ETC., UP TO 12 BITS, CONSULT
/THE LITTLE TEST ROUTINES FOR INFORMATION CONCERNING BIT SETTING AND CLEARING,
/THEN ERSTAT AND GOOD ARE COMPARED, EACH LITTLE TEST IS COMMENTED
/"N:M" WHICH INDICATES THE ERSTAT BIT NUMBER(N) AND EXPECTED BIT
/SETTING(M=1 OR 0).
/       TAD     ERSTAT
/       COMPAR
/       ETC,
```

```
/TEST 15,        BASIC CONTROL TEST NOT INVOLVING TAPE MOTION,

                /TESTS ARE RUN ON DRIVES THAT SHOULD BE OFF LINE
                /THEN SOME MORE CONTROL TESTS ARE MADE ON THE SELECTED DRIVE
                /WITHOUT ISSUING "GO", (THE AVAILABILITY OF BOT ENABLES
                /CHECKING OUT A FEW MORE GATES IN THE CONTROL,)

                /LOOPS 6-9:
                /LOOP 6 CYCLES ON THE OFFLINE DRIVES TESTS (T15A-T15C),
                /LOOP 7 CYCLES ON T15D-T15H
                /LOOP 8 CYCLES ON T15I-T15J,

0203  0000    TEST15, 0

              /VERIFY SKTR DOES NOT SKIP WHEN AN OFF LINE
              /DRIVE IS SELECTED.
0204  7240    T15A,   STA
0205  3146            DCA     GOOD
0206  4767            JMS I   T15X1           /SELECT AN OFF LINE DRIVE
0207  4510            SKTR                    /SHOULD NOT SKIP,
0210  7240            STA
0211  4525            COMPAR
0212  6463            ER15A
0213  5770            JMP I   T15X2           /SUBTEST LOOP
0214  4771            JMS I   T15X3           /SELECT ANOTHER DRIVE,

              /VERIFY NO BOT BIT ON ANY OFF LINE DRIVE,
0215  3146    T15B,   DCA     GOOD
0216  4767            JMS I   T15X1           /SELECT AN OFF LINE DRIVE,
0217  4501            RMSR                    /BOT SHOULD NOT BE SET,
0220  0034            AND     K1000
0221  4525            COMPAR
0222  6465            ER15B
              /GD=GOOD BOT BIT; BD=REAL BOT BIT
0223  5770            JMP I   T15X2           /SUBTEST LOOP,
0224  4771            JMS I   T15X3           /SELECT ANOTHER OFF LINE DRIVE,

              /VERIFY SELECT REMOTE BIT SET FOR OFF LINE DRIVES,
0225  1033    T15C,   TAD     K400
0226  3146            DCA     GOOD
0227  4767            JMS I   T15X1           /SELECT AN OFF LINE DRIVE
0230  4501            RMSR                    /SELECT REMOTE SHOULD BE SET
0231  0033            AND     K400
0232  4525            COMPAR
0233  6467            ER15C
              /GD=GOOD SELECT REMOTE BIT; BD=REAL SELECT REMOTE BIT
0234  5770            JMP I   T15X2           /SUBTEST LOOP
0235  4771            JMS I   T15X3           /SELECT ANOTHER DRIVE

0236  4521            LOOP6
0237  5204            JMP     T15A            /******LOOP 6******

              /VERIFY SKTR AND SKCB SKIP FOR ON LINE DRIVE
```

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              0240  3146    T15D,   DCA     GOOD
              0241  4772            JMS I   T15X4           /GET AN IOT
              0242  0445            T15LS1
              0243  7776            -2
              0244  3245            DCA     .+1
              0245  0000            0                       /SKTR OR SKCB (I1)  SHOULD SKIP
              0246  7240            STA
              0247  4525            COMPAR
              0250  6471            ER15D
                      /I1=IOT CURRENTLY BEING TESTED
              0251  5773            JMP I   T15X5           /SUBTEST LOOP
              0252  4774            JMS I   T15X6           /GET ANOTHER IOT


                      /VERIFY BOT BIT IS ONLY MAIN STATUS BIT SET FOR ON LINE DRIVE
              0253  1034    T15E,   TAD     K1000
              0254  3146            DCA     GOOD
              0255  4515            CLEAR1                  /CLEAR ALL AND SELECT ON LINE DRIVE
              0256  4501            RMSR                    /BOT BIT IS ONLY BIT THAT SHOULD BE SET
              0257  4525            COMPAR
              0260  6473            ER15E
                      /GD=GOOD MAIN STATUS; BD=REAL MAIN STATUS
              0261  5255            JMP     T15E+2          /SUBTEST LOOP

                      /VERIFY 9 TRACK BIT SET FOR 9 TRACK DRIVE; CLEAR FOR 7 TRACK
                      /DRIVE;  ON LINE DRIVE SELECTED.
              0262  1161    T15F,   TAD     TRK9
              0263  7640            SZA CLA
              0264  1026            TAD     K40
              0265  3146            DCA     GOOD
              0266  4515            CLEAR1                  /CLEAR AND SELECT ON LINE DRIVE
              0267  4502            RCMR                    /ENSURE DENSITY 3 IS SELECTED
              0270  7001            IAC
              0271  4474            LCMR
              0272  4503            RFSR                    /FUNCTION/STATUS =40 FOR 9, 00 FOR 7
              0273  0027            AND     K77
              0274  4525            COMPAR
              0275  6475            ER15F
                      /GD=GOOD FUNCTION/STATUS; BD=REAL FUNCTION/STATUS
              0276  5266            JMP     T15F+4          /SUBTEST LOOP

                      /VERIFY SKEF, SKTD, SBRM, SDLE AND CLF DO NOT SKIP WHEN
                      /ON LINE DRIVE IS SELECTED.
              0277  7240    T15G,   STA
              0300  3146            DCA     GOOD
              0301  4772            JMS I   T15X4           /GET AN IOT
              0302  0447            T15LS1+2
              0303  7773            -5
              0304  3305            DCA     .+1
              0305  0000            0                       /IOT IN "I1" SHOULD NOT SKIP
              0306  7240            STA
              0307  4525            COMPAR
              0310  6477            ER15G
                      /I1=IOT BEING TESTED
              0311  5773            JMP I   T15X5           /SUBTEST LOOP
```

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              0312  4774            JMS I   T15X6           /GET ANOTHER IOT

                      /VERIFY CLF CLEARS NON-STATUS REGISTERS SINCE TAPE UNIT IS READY
                      /CURRENT ADDRESS USED.
              0313  3146    T15H,   DCA     GOOD
              0314  4515            CLEAR1                  /CLEAR ALL AND SELECT ON LINE DRIVE
              0315  7240            STA
              0316  4473            LCAR                    /SET UP CURRENT ADDRESS
              0317  4511            CLF                     /SHOULD CLEAR CURRENT ADDRESS
              0320  4500            RCAR
              0321  4525            COMPAR
              0322  6501            ER15H
                      /GD=GOOD CURRENT ADDRESS
              0323  5314            JMP     T15H+1          /SUBTEST LOOP

              0324  4522            LOOP7
              0325  5236            JMP     T15D-2          /*****LOOP 7*****


                      /VERIFY SPCREV AT BOT SETS IF AND EF
              0326  4532    T15I,   SET3
              0327  4000            4000    /GD
              0330  0000            0       /WC
              0331  0000            0       /CM
              0332  7100            SPCREV+GO/FS
              0333  4541            TMS             /011    EF AND IF SHOULD BE SET
              0334  4001            4001
              0335  4536            TSKTD           /110    SKTD SHOULD NOT SKIP
              0336  1162            TAD     ERSTAT
              0337  4525            COMPAR
              0340  6503            ER15I
                      /GD=GOOD ERSTAT; BD=REAL ERSTAT
              0341  5326            JMP     T15I            /SUBTEST LOOP

                      /VERIFY BOT AND A FUNCTION OTHER THAN SPCREV DOES NOT SET IF OR EF
              0342  4772    T15J,   JMS I   T15X4           /GET A FUNCTION
              0343  0457            T15LS2
              0344  7771            -7
              0345  3352            DCA     .+5
              0346  4532            SET3
              0347  0000            0       /GD
              0350  3000            0       /WC
              0351  0000            0       /CM
              0352  0000            0       /FS             /FUNCTION SUBSTITUTED
              0353  4535            TSKEF           /010    THERE SHOULD BE NO ERROR
              0354  4541            TMS             /110    IF SHOULD NOT BE SET
              0355  0001            1
              0356  4536            TSKTD           /210    MTTF SHOULD NOT BE SET
              0357  1162            TAD     ERSTAT
              0360  4525            COMPAR
              0361  6505            ER15J
                      /GD=GOOD ERSTAT; BD=REAL ERSTAT
              0362  5773            JMP I   T15X5           /SUBTEST LOOP
              0363  4774            JMS I   T15X6           /GET ANOTHER FUNCTION
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0364  4523              LOOP8
0365  5324              JMP     T151-2           /*****LOOP 8*****

0366  5603              JMP I   TEST15
0367  0430    T15X1,    T15EX1
0370  0413    T15X2,    T15EX2
0371  0417    T15X3,    T15EX3
0372  0423    T15X4,    T15EX4
0373  0434    T15X5,    T15EX5
0374  0437    T15X6,    T15EX6

      0400              PAGE
0400  0000    T15EX1,   0
0401  1163              TAD     KCMD             /GET CM CONSTANT WITH CORRECT
0402  4405              MQL                      /DRIVE NUMBER, ETC,,
0403  1272              TAD     K3               /ENSURE BITS 10 AND 11 ARE SET TO AVOID
0404  4406              MQA                      /9CH ERRORS, AND SAVE,
0405  3151              DCA     TXXTM1
0406  1270              TAD     M7
0407  3153              DCA     TXXTM3           /THEN SET UP FOR 7 OFFLINE DRIVES
0410  1151              TAD     TXXTM1           /GET CM CONSTANT AND UPDATE
0411  1034              TAD     K1000            /DRIVE NUMBER BY 1 DISREGARDING
0412  3151              DCA     TXXTM1           /OVERFLOW, AND SAVE,
0413  4515    T15EX2,   CLEAR1                   /GENERATE "INITIALIZE",
0414  1151              TAD     TXXTM1           /LOAD CM WITH UNSELECTED DRIVE,
0415  4474              LCMR
0416  5600              JMP I   T15EX1           /RUN TEST,
0417  0000    T15EX3,   0                        /ENTER AT END OF TEST,
0420  2153              ISZ     TXXTM3           /ANY MORE DRIVES ON THIS MASTER?
0421  5210              JMP     T15EX2-3              /YES, RETURN AND GET NEXT DRIVE,
0422  5617              JMP I   T15EX3           /END OF SUBTEST, EXIT,

0423  0000    T15EX4,   0                        /
0424  1623              TAD I   T15EX4           /GET LIST STARTER AND
0425  3151              DCA     TXXTM1           /SAVE,
0426  2223              ISZ     T15EX4
0427  1623              TAD I   T15EX4           /GET NUMBER OF ITEMS AND
0430  3152              DCA     TXXTM2           /SAVE,
0431  2223              ISZ     T15EX4           /UPDATE TO RETURN,
0432  1551              TAD I   TXXTM1           /GET A LIST ITEM,
0433  3166              DCA     IOT1             /STASH FOR AN "I:1" PRINTOUT,
0434  4515    T15EX5,   CLEAR1                   /GENERATE "INITIALIZE",
0435  1166              TAD     IOT1             /GET ITEM AND PUT IN AC,
0436  5623              JMP I   T15EX4           /GO TO SUBTEST,
0437  0000    T15EX6,   0                        /ENTER AT END OF SUBTEST,
0440  2151              ISZ     TXXTM1           /UPDATE LIST POINTER,
0441  2152              ISZ     TXXTM2           /ALL ITEMS USED?
0442  5232              JMP     T15EX5-2              /NO, GET NEXT ITEM,
0443  5637              JMP I   T15EX6           /YES, EXIT,
0444  0000    T15TM1,   0
0445  4510    T15LS1,   SKTR
0446  4506              SKC8
0447  4505              SKEF
0450  4507              SKTD
0451  4514              SBRM
```

```
0452  4513              SDLE
0453  4511              CLF
0454  4474              LCMR
0455  4475              LFGR
0456  4476              LDBR
0457  0000    T15LS2,   OFFLIN
0460  1000              REWIND
0461  2000              READ
0462  3000              RDCOMP
0463  4000              WRITE
0464  5000              WEOF
0465  6000              SPCFWD
0466  2000              READ
0467  3000              RDCOMP
0470  7771    M7,       -7
0471  7770    M10,      -10
0472  0003    K3,       3
```

```
                        /COMPARE AND ERROR DETECTION ROUTINE.

                            /ENTER WITH "BAD" IN AC.
                            /USE THE FOLLOWING CALLING SEQUENCE.

                            /COMPAR              CALL COMPARE.
                            /ERNNX               ADDRESS OF ERROR. (ERROR CODE).
                            /JMP      ADDR        LOOP JUMP
                            /.....CONTINUATION          TEST CONTINUE.

                        /COMPARE DOES THE FOLLOWING:
                            /1. COMPARE "GOOD" AND "BAD".
                            /2. IF NOT EQUAL APPEARS TO GO TO ERRORS FROM POINT IN TEST
                            /   WHERE ERROR OCCURRED.
                            /3. IF EQUAL. CHECKS CURRENT SUBTEST LOOP.

    0473  0000     COMP,   0
    0474  3147             DCA    BAD            /SAVE AC IN BAD.
    0475  1146             TAD    GOOD           /COMPARE GOOD AND BAD.
    0476  7041             CIA
    0477  1147             TAD    BAD
    0500  7650             SNA CLA
    0501  5305             JMP    .+4
    0502  1273             TAD    COMP           /ERROR. SET UP AND GO TO
    0503  3526             DCA I  ERRORP         /ERRORS AND DON'T
    0504  5732             JMP I  ERR1P          /RETURN HERE.
    0505  1172             TAD    TRACE          /TRACE REQUESTED?
    0506  7700             SMA CLA
    0507  5324             JMP    COMPF
    0510  7604             LAS                   /YES, TRACE INHIBITED?
    0511  0033             AND    K400
    0512  7640             SZA CLA
    0513  5324             JMP    COMPF
    0514  1273     CONTCB, TAD    COMP           /NO, GET ERROR POINTER
    0515  3526             DCA I  ERRORP         /AND PUT IN ERRORS.
    0516  1673             TAD I  COMP           /GET STAT1 ADDRESS AND
    0517  3734             DCA I  TRPP           /PUT IN PRNT.
    0520  1336             TAD    K4324
    0521  3466             DCA I  ERMSGP
    0522  1335             TAD    K2252
    0523  4733             JMS I  PRNTP          /FAKE AN ERROR PRINTOUT.
    0524  2273     COMPF,  ISZ    COMP           /UPDATE RETURN JUMP TO SUBTEST LOOP JUMP.
    0525  4520             LOOP5                 /SUBTEST LOOP?
    0526  7410             SKP
    0527  2273             ISZ    COMP           /NO, UPDATE ONE MORE.
    0530  4515             CLEAR1
    0531  5673             JMP I  COMP           /EXIT.
    0532  5201     ERR1P,  ERRORS+1
    0533  5254     PRN1P,  PRNT
    0534  5347     TRPP,   ERRPTR
    0535  2252     K2252,  2252
    0536  4324     K4324,  4324
```

```
                        /TEST 16.        BASIC MOTION TEST.

                            /TESTS ALL TIME SEQUENCED CONDITIONS FOR WRITE, READ, READ-COMPARE,
                            /SPACE FORWARD AND REVERSE, AND REWIND. ALL TESTS ARE BASED UPON 2 WORD
                            /RECORD (4 CHARC FRAMES IN 7 TRK OR 9TRK CORE DUMP) WRITTEN FROM BOT BY T16A.

          0600            PAGE
    0600  0000     TEST16, 0

                        /WRITE A 2 WORD RECORD FROM BOT AND CHECK BASIC TIME SEQUENCED
                        /OPERATIONS.
    0601  4530     T16A,   SET1
    0602  0570             0570     /GD
    0603  7776             -2       /WC
    0604  7342             T25BUF   /CA
    0605  0000             0        /MEM
    0606  0400             ODD      /CM
    0607  4100             WRITE+GO/FS             /WRITE RECORD
    0610  4535             TSKEF          /010    EF SHOULD NOT SET
    0611  4537             TSKCB          /110    SKCB SHOULD NOT SKIP
    0612  4540             TSKTR          /210    SKTR SHOULD NOT SKIP
    0613  4543             TWC            /311    WC SHOULD INCREMENT TO 7777
    0614  7777             -1
    0615  4545             WAIT2                  /WAIT FOR BOT TO GO AWAY
    0616  0000             0
    0617  4541             TMS            /410    BOT SHOULD GO AWAY BY NOW
    0620  1000             1000
    0621  4545             WAIT2                  /WAIT FOR MTTF
    0622  0001             1
    0623  4536             TSKTD          /511    MTTF SHOULD BE SET BY NOW
    0624  7000             NOP
    0625  4537             TSKCB          /611    SKCB SHOULD SKIP
    0626  4544             WAIT1                  /WAIT FOR TUR
    0627  0001             1
    0630  4540             TSKTR          /711    SKTR SHOULD SKIP BY NOW
    0631  7000             NOP
    0632  4543             TWC            /811    WC SHOULD BE 0000
    0633  0000             0000
    0634  4535             TSKEF          /910    THERE SHOULD BE NO ERROR
    0635  1162             TAD    ERSTAT
    0636  4525             COMPAR
    0637  6507             ER16A
                        /GD=GOOD ERSTAT; BD=REAL ERSTAT
    0640  5201             JMP    T16A            /SUBTEST LOOP

                        /SPACE REVERSE 2 RECORDS TO BOT.  REFER TO "TSPREV" ROUTINE BELOW
                        /FOR DEFINITIONS OF ERSTAT BITS.
    0641  4756     T16B,   JMS I  TSPREP          /GO TO TSPREV ROUTINE
    0642  4525             COMPAR
    0643  6511             ER16B
                        /GD=GOOD ERSTAT; BD=REAL ERSTAT
    0644  5241             JMP    T16B            /SUBTEST LOOP
```

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                    /READ-COMPARE A RECORD FROM BOT,  REFER TO "TMOFWD" ROUTINE BELOW
                    /FOR DEFINITIONS OF ALL ERSTAT BITS,
        0645  4755  T16C.   JMS I   TMOFWP          /GO TO TMOFWD ROUTINE
        0646  3100          RDCOMP+GO               /TO DO READ-COMPARE
        0647  4525          COMPAR
        0650  6513          ER16C
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0651  5245          JMP     T16C            /SUBTEST LOOP

                    /SPACE REVERSE 2 RECORES TO BOT, REFER TO "TSPREV" ROUTINE BELOW
                    /FOR ERSTAT BIT DEFINITIONS,
        0652  4756  T16D,   JMS I   TSPREP          /GO TO TSPREV ROUTINE
        0653  4525          COMPAR
        0654  6515          ER16D
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0655  5252          JMP     T16D            /SUBTEST LOOP

        0656  4521          LOOP6                   /STATUS BIT DEFINITIONS,
        0657  5201          JMP     T16A            /*****LOOP 6*****

                    /READ A 2 WORD RECORD FROM BOT, REFER TO "TMOFWD" ROUTINE BELOW
                    /FOR ERSTAT BIT DEFINITIONS,
        0660  4755  T16E,   JMS I   TMOFWP          /GO TO TMOFWD ROUTINE
        0661  2100          READ+GO                 /TO READ A RECORD,
        0662  4525          COMPAR
        0663  6517          ER16E
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0664  5260          JMP     T16E            /SUBTEST LOOP

                    /SPACE REVERSE 2 RECORDS TO BOT,  REFER TO "TSPREV" ROUTINE BELOW
                    /FOR ERSTAT BIT DEFINITIONS,
        0665  4756  T16F,   JMS I   TSPREP          /GO TO TSPREV ROUTINE
        0666  4525          COMPAR
        0667  6521          ER16F
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0670  5265          JMP     T16F            /SUBTEST LOOP

        0671  4522          LOOP7
        0672  5256          JMP     T16E-2          /*****LOOP 7*****

                    /SPACE FORWARD 1 RECORD FROM BOT,  REFER TO "TSPFWD" ROUTINE BELOW
                    /FOR ERSTAT DEFINITIONS,
        0673  4757  T16G,   JMS I   TSPFWP          /TO TSPFWD ROUTINE
        0674  4525          COMPAR
        0675  6523          ER16G
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0676  5273          JMP     T16G            /SUBTEST LOOP

                    /SPACE REVERSE 2 RECORDS TO BOT,  REFER TO "TSPREV" ROUTINE BELOW
                    /FOR ERSTAT DEFINITIONS,
        0677  4756  T16H,   JMS I   TSPREP          /TO TSPREV ROUTINE
        0700  4525          COMPAR
        0701  6525          ER16H
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0702  5277          JMP     T16H            /SUBTEST LOOP
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        0703  4523          LOOP8
        0704  5271          JMP     T16G-2          /*****LOOP 8*****

                    /SPACE FORWARD 1 RECORD FROM BOT,  REFER TO "TSPFWD" ROUTINE BELOW
                    /FOR ERSTAT BIT DEFINITIONS,
        0705  4757  T16I,   JMS I   TSPFWP          /TO TSPFWD ROUTINE
        0706  4525          COMPAR
        0707  6527          ER16I
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0710  5305          JMP     T16I            /SUBTEST LOOP

                    /REWIND OVER 1 RECORD TO BOT,
        0711  4532  T16J,   SET3
        0712  3524          3524    /GO
        0713  7777          -1      /WC
        0714  0400          0DD     /CM
        0715  1100          REWIND+GO/FS
        0716  4535          TSKEF           /0!0   SKEF SHOULD NOT SKIP
        0717  4541          TMS             /1!1   REWIND STATUS SHOULD BE SET
        0720  2000          2000
        0721  4536          TSKTD           /2!1   MTTF SHOULD BE SET AND SKTD SHOULD SKIP
                                            /SINCE REWIND STAT,REWIND FUNCTION
        0722  4537          TSKCB           /3!1   SKCB SHOULD NOT SKIP
        0723  4511          CLF                     /CLEAR MTTF TO CHECK SETTING AT BOT
        0724  4540          TSKTR           /4!0   SKTR SHOULD NOT SKIP YET
        0725  4545          WAIT2                   /WAIT FOR BOT
        0726  0001          1
        0727  4541          TMS             /5!1   BOT SHOULD BE SET BY NOW
        0730  1000          1000
        0731  4545          WAIT2                   /WAIT FOR LOSS OF REWIND STATUS
        0732  0000          0
        0733  4541          TMS             /6!0   REWIND STATUS SHOULD GO AWAY BY NOW
        0734  2000          2000
        0735  4544          WAIT1                   /WAIT FOR TUR
        0736  0001          1
        0737  4540          TSKTR           /7!1   SKTR SHOULD SKIP BY NOW
        0740  7000          NOP
        0741  4536          TSKTD           /8!0   MTTF SHOULD NOT SET AT BOT WHEN TUR;
                                            /THEREFORE, SKTD SHOULD NOT SKIP,
        0742  4541          TMS             /9!1   BOT SHOULD STILL BE SET
        0743  1000          1000
        0744  4535          TSKEF           /10!0  THERE SHOULD BE NO ERROR
        0745  1162          TAD     ERSTAT
        0746  4525          COMPAR
        0747  6531          ER16J
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
        0750  5311          JMP     T16J            /SUBTEST LOOP

        0751  4524          LOOP9
        0752  5303          JMP     T16I-2          /*****LOOP 9*****

        0753  4527          LOADPT
        0754  5600          JMP I   TEST16
```

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0755 1000      TMOFWP, TMOFWD
0756 1046      TSPREP, TSPREV
0757 1102      TSPFWP, TSPFWD

     1000          PAGE
              / " T M O F W D "  ROUTINE
              /USED FOR READ-COMPARE AND READ FUNCTIONS,
1000 0000     TMOFWD, 0                    /TEST MOTION FORWARD FOR READ AND READ-COMPARE
1001 1600         TAD I   TMOFWD          /GET AND SAVE FUNCTION
1002 3212         DCA     .+10
1003 2200         ISZ     TMOFWD          /SETUP RETURN
1004 4530         SET1
1005 0574         0574    /GO
1006 7776         -2      /WC
1007 7342         T25BUF  /CA
1010 0000         0       /MEM
1011 0400         ODD     /CM
1012 0000         0       /FR          /RDCOMP+GO OR READ+GO
1013 4535         TSKEF          /010    THERE SHOULD BE NO ERROR
1014 4537         TSKCB          /110    CONTROL SHOULD BE BUSY
1015 4540         TSKTR          /210    TAPE UNIT SHOULD NOT BE READY
1016 4543         TWC            /311    WC SHOULD STILL BE 7776
1017 7776         -2
1020 4545         WAIT2                   /WAIT FOR BOT TO GO AWAY
1021 0000         0
1022 4541         TMS            /410    BOT SHOULD BE GONE BY NOW
1023 1000         1000
1024 4545         WAIT2                   /WAIT FOR WC TO INCREMENT TO 0000
1025 0001         1
1026 4543         TWC            /511    WC SHOULD = 0000 BY NOW
1027 0000         0000
1030 4545         WAIT2                   /WAIT FOR MTTF
1031 0001         1
1032 4536         TSKTD          /611    MTTF SHOULD PE SET BY NOW
1033 7000         NOP
1034 4537         TSKCB          /711    CONTROL SHOULD NOT BE BUSY
1035 4544         WAIT1                   /WAIT FOR TUR
1036 0001         1
1037 4540         TSKTR          /811    TAPE UNIT SHOULD BE READY BY NOW
1040 7000         NOP
1041 4543         TWC            /911    WC SHOULD STILL BE 0000
1042 0000         0000
1043 4535         TSKEF          /1010   THERE SHOULD BE NO ERROR
1044 1162         TAD     ERSTAT         /ERSTAT IN AC
1045 5600         JMP I   TMOFWD         /EXIT FOR COMPAR,

              / " T S P R E V "  ROUTINE
              /USED TO SPACE REVERSE 2 RECORDS TO BOT OVER ONE RECORD WRITTEN FROM
              /BOT,
1046 0000     TSPREV, 0                    /SPACE REVERSE 2 RECORDS TO BOT
1047 4532         SET3
1050 0714         0714    /GO
1051 7776         -2      /WC
1052 0400         ODD     /CM
1053 7100         SPCREV+GO/FS
```

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1054 4535         TSKEF          /010    THERE SHOULD BE NO ERROR
1055 4537         TSKCB          /110    CONTROL SHOULD BE BUSY
1056 4540         TSKTR          /210    TAPE UNIT SHOULD NOT BE READY
1057 4545         WAIT2                   /WAIT FOR WC TI INCREMENT TO 7777
1060 0001         1
1061 4543         TWC            /311    WC SHOULD = 7777 BY NOW
1062 7777         -1
1063 4545         WAIT2                   /WAIT FOR BOT TO SET
1064 0001         1
1065 4541         TMS            /411    BOT SHOULD BE SET BY NOW
1066 1000         1000
1067 4535         TSKEF          /511    BOT AND SPCREV SHOULD SET ERROR
1070 4536         TSKTD          /610    MTTF SHOULD NOT PE SET
1071 4537         TSKCB          /710    CONTROL SHOULD STILL BE BUSY
1072 4544         WAIT1                   /WAIT FOR TUR
1073 0001         1
1074 4540         TSKTR          /811    TAPE UNIT SHOULD BE READY BY NOW
1075 7000         NOP
1076 4543         TWC            /911    WC SHOULD STILL BE 7777,
1077 7777         7777
1100 1162         TAD     ERSTAT         /ERSTAT IN AC
1101 5646         JMP I   TSPREV         /EXIT

              / " T S P F W D "  ROUTINE,
              /SPACE FORWARD 1 RECORD FROM BOT,
1102 0000     TSPFWD, 0                    /SPACE FORWARD 1 RECORD FROM BOT
1103 4532         SET3
1104 0370         0370    /GO
1105 7777         -1      /WC
1106 0400         ODD     /CM
1107 6100         SPCFWD+GO/FS
1110 4535         TSKEF          /010    THERE SHOULD BE NO ERROR
1111 4537         TSKCB          /110    CONTROL SHOULD BE BUSY
1112 4540         TSKTR          /210    TRANSPORT SHOULD NOT BE READY
1113 4545         WAIT2                   /WAIT FOR BOT TO GO AWAY
1114 0000         0
1115 4541         TMS            /310    BOT SHOULD BE GONE BY NOW
1116 1000         1000
1117 4545         WAIT2                   /WAIT FOR AC TO INCREMENT TO 0000
1120 0001         1
1121 4543         TWC            /411    WC SHOULD BE 0000 BY NOW
1122 0000         0
1123 4544         WAIT1                   /WAIT FOR MTTF TO SET
1124 0001         1
1125 4536         TSKTD          /511    MTTF SHOULD BE SET BY NOW
1126 7000         NOP
1127 4537         TSKCB          /611    CONTROL SHOULD NOT BE BUSY
1130 4544         WAIT1                   /WAIT FOR TUR
1131 0001         1
1132 4540         TSKTR          /711    TAPE UNIT SHOULD BE READY BY NOW
1133 7000         NOP
1134 4543         TWC            /811    WC SHOULD STILL BE 0000
1135 0000         0
1136 4535         TSKEF          /910    THERE SHOULD BE NO ERROR
1137 1162         TAD     ERSTAT         /ERSTAT IN AC
```

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1140  5702           JMP I    TSPFWD        /EXIT
```

```
                /LOOP SWITCH SENSORS.
     1141  0000  LAS5,    0                 /ENTER BY "LOOP5".
     1142  7604           LAS
     1143  0030           AND      K100
     1144  7650           SNA CLA
     1145  2341           ISZ      LAS5
     1146  5741           JMP I    LAS5
     1147  0000  LAS6,    0                 /"LOOP6"
     1150  7604           LAS
     1151  0026           AND      K40
     1152  7650           SNA CLA
     1153  2347           ISZ      LAS6
     1154  5747           JMP I    LAS6
     1155  0000  LAS7,    0                 /"LOOP7"
     1156  7604           LAS
     1157  0377           AND      K20
     1160  7650           SNA CLA
     1161  2355           ISZ      LAS7
     1162  5755           JMP I    LAS7
     1163  0000  LAS8,    0                 /"LOOP8"
     1164  7604           LAS
     1165  0023           AND      K10
     1166  7650           SNA CLA
     1167  2363           ISZ      LAS8
     1170  5763           JMP I    LAS8
     1171  0000  LAS9,    0                 /"LOOP9"
     1172  7604           LAS
     1173  0021           AND      K4
     1174  7650           SNA CLA
     1175  2371           ISZ      LAS9
     1176  5771           JMP I    LAS9
     1177  0020  K20,     20
```

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                          /TEST 17,       LATERAL PARITY TEST,

                              /IN GENERAL THIS TEST WRITES 2 WORD RECORDS AT ODD OR EVEN
                              /PARITY AND CHECKS THAT THERE IS NO PARITY ERROR, THEN THE RECORDS
                              /ARE READ AT THE OPPOSITE PARITY AND A PARITY ERROR IS
                              /VERIFIED,

                              /LOOPS 6-9:
                              /LOOP 6 CYCLES ON WRITE EVEN, READ ODD (T17A-T17B),
                              /LOOP 7 CYCLES ON WRITE ODD, READ EVEN (T17C-T17D),


             1200               PAGE
    1200     0000       TEST17, 0

                          /WRITE 2 WORD RECORDS (CORE DUMP) USING EVEN PARITY,  NO PARITY
                          /ERROR SHOULD OCCUR,  DATA USED IS 01-77,  AFTER EACH RECORD IS
                          /WRITTEN, T17B IS RUN USING THAT RECORD,  9 TRK IS IN CORE DUMP,
    1201     4527       T17A,    LOADPT                  /TO BOT
    1202     1356                TAD     M77
    1203     3151                DCA     TXXTM1
    1204     7001                IAC
    1205     3212                DCA     T17ATM
    1206     4530       T17AL1,  SET1                    /WRITE 2 WORD RECORD
    1207     4000                4000    /GO
    1210     7776                -2      /WC
    1211     7342                T25BUF  /CA
    1212     0000       T17ATM,  0       /MEM
    1213     0000                EVEN    /CM
    1214     4100                WRITE+GO/FR
    1215     4545                WAIT2                   /WAIT FOR CONTROL NOT BUSY
    1216     0001                1
    1217     4537                TSKCB           /0:1    CONTROL SHOULD BE READY BY NOW
    1220     7000                NOP
    1221     4541                TMS             /1:0    THERE SHOULD BE NO PARITY ERROR
    1222     0200                200
    1223     4535                TSKEF           /2:0    THERE SHOULD BE NO ERRORS
    1224     1212                TAD     T17ATM
    1225     3150                DCA     OLD
    1226     1162                TAD     ERSTAT
    1227     4525                COMPAR
    1230     6533                ER17A
                          /GD=GOOD ERSTAT; BD=REAL ERSTAT; OD=DATA USED IN THIS RECORD,
    1231     5206                JMP     T17AL1          /SUBTEST LOOP
    1232     7410                SKP
    1233     5273                JMP     T17LP6

                          /USING THE RECORD LAST WRITTEN IN T17A, SPCREV TO THE BEGINNING
                          /OF THE RECORD, THEN READ IT USING ODD PARITY,  A PARITY ERROR
                          /SHOULD OCCUR AND EF SHOULD SET,
    1234     4532       T17B,    SET3                    /SPCREV ONE RECORD
    1235     0000                0       /GO
    1236     7777                -1      /WC
    1237     0000                EVEN    /CM
```

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    1240     7100                SPCREV+GO/FR
    1241     4530                SET1                    /READ RECORD
    1242     5000                5000    /GO
    1243     7776                -2      /WC
    1244     7342                T25BUF  /CA
    1245     0000                0       /MEM
    1246     0400                ODD     /CM
    1247     2100                READ+GO /FR
    1250     4545                WAIT2                   /WAIT FOR CONTROL READY
    1251     0001                1
    1252     4537                TSKCB           /0:1    CONTROL SHOULD BE READY BY NOW
    1253     7000                NOP
    1254     4542                TFS             /1:0    LATERAL PARITY ERROR BIT SHOULD NOT BE SET
    1255     0004                4
    1256     4541                TMS             /2:1    EF AND PARITY ERROR SHOULD BE SET
    1257     4200                4200
    1260     1162                TAD     ERSTAT
    1261     4525                COMPAR
    1262     6535                ER17B
                          /GD=GOOD ERSTAT; BD=REAL ERSTAT; OD=DATA USED
    1263     5234                JMP     T17B            /SUBTEST LOOP
    1264     7410                SKP
    1265     5273                JMP     T17LP6
    1266     2151                ISZ     TXXTM1
    1267     7410                SKP
    1270     5273                JMP     T17LP6
    1271     2212                ISZ     T17ATM
    1272     5206                JMP     T17AL1

    1273     4521       T17LP6,  LOOP6
    1274     5201                JMP     T17A    /*****LOOP6*****

                          /WRITE 2 WORD RECORDS USING ODD PARITY,  NO PARITY ERROR SHOULD OCCUR,
                          /DATA IS 00-77,  AFTER EACH RECORD IS WRITTEN, THAT RECORD IS READ
                          /IN EVEN PARITY BY T17D,
    1275     4527       T17C,    LOADPT                  /TO BOT
    1276     1357                TAD     M100
    1277     3151                DCA     TXXTM1
    1300     3305                DCA     T17CTM
    1301     4530       T17CL1,  SET1                    /WRITE 2 WORD RECORD
    1302     4000                4000    /GO
    1303     7776                -2      /WC
    1304     7342                T25BUF  /CA
    1305     0000       T17CTM,  0       /MEM
    1306     0400                ODD     /CM
    1307     4100                WRITE+GO/FR
    1310     4545                WAIT2                   /WAIT FOR CONTROL READY
    1311     0001                1
    1312     4537                TSKCB           /0:1    CONTROL SHOULD BE READY BY NOW
    1313     7000                NOP
    1314     4541                TMS             /1:0    THERE SHOULD NOT BE A PARITY ERROR,
    1315     0200                200
    1316     4535                TSKEF           /2:0    THERE SHOULD BE NO ERRORS
    1317     1305                TAD     T17CTM
    1320     3150                DCA     OLD
```

13

```
              1321  1162           TAD    ERSTAT
              1322  4525           COMPAR
              1323  6537           ER17C
                          /GD=GOOD ERSTAT; BD=REAL ERSTAT; DD=DATA USED
              1324  5301           JMP    T17CL1           /SUBTEST LOOP
              1325  7410           SKP
              1326  5755           JMP I  T17L7P

                          /USING THE LAST RECORD WRITTEN IN T17C, READ THAT RECORD USING
                          /EVEN PARITY.  A PARITY ERROR SHOULD RESULT AND EF SHOULD SET.
              1327  4532  T17D,    SET3                    /SPCREV 1 RECORD
              1330  0000           0      /GD
              1331  7777           -1     /WC
              1332  0400           ODD    /CM
              1333  7100           SPCREV+GO/FR
              1334  4530           SET1                    /READ 2 WORD RECORD
              1335  5000           5000   /GD
              1336  7776           -2     /WC
              1337  7342           T25BUF /CA
              1340  0000           0      /MEM
              1341  0000           EVEN   /CM
              1342  2100           READ+GO /FR
              1343  4545           WAIT2                   /WAIT FOR CONTROL READY
              1344  0001           1
              1345  4537           TSKCB        /011   CONTROL SHOULD BE READY BY NOW
              1346  7000           NOP
              1347  4542           TFS          /110   LATERAL PARITY ERROR SHOULD NOT BE SET
              1350  0004           4
              1351  4541           TMS          /211   EF AND PARITY BITS SHOULD BE SET
              1352  4200           4200
              1353  5754           JMP I  .+1
              1354  1400           T17DCK
              1355  1413  T17L7P,  T17LP7
              1356  7701  M77,     -77
              1357  7700  M100,    -100
                    1400           PAGE
              1400  1162  T17DCK,  TAD    ERSTAT
              1401  4525           COMPAR
              1402  6541           ER17D
                          /GD=GOOD ERSTAT; BD=REAL ERSTAT; DD=DATA USED
              1403  5626           JMP I  T17DP            /SUBTEST LOOP
              1404  7410           SKP
              1405  5213           JMP    T17LP7
              1406  2151           ISZ    TXXTM1
              1407  7410           SKP
              1410  5213           JMP    T17LP7
              1411  2625           ISZ I  T17CTP
              1412  5624           JMP I  T17CLP

              1413  4522  T17LP7,  LOOP7
              1414  5623           JMP I  T17CP            /*****LOOP7*****
              1415  4527           LOADPT
              1416  1622           TAD I  TST17P
              1417  3221           DCA    .+2
              1420  5621           JMP I  .+1
```

```
              1421  0000           0
              1422  1200  TST17P,  TEST17
              1423  1273  T17CP,   T17LP6
              1424  1331  T17CLP,  T17CL1
              1425  1305  T17CTP,  T17CTM
              1426  1327  T17DP,   T17D
```

14

```
                        /TEST 20,        WEOF TEST,

                            /WEOF FROM BOT AND VERIFY USING SPCFWD,

        1427   0000    TEST20, 0

                        /WRITE EOF FROM BOT AND VERIFY,
        1430   4527    T20A,   LOADPT
        1431   4532            SET3                     /WEOF FROM BOT
        1432   0740            0740      /GD
        1433   7777            -1        /WC
        1434   0400            ODD       /CM
        1435   5100            WEOF+GO   /FR
        1436   3171            DCA       EXPEOF
        1437   4535            TSKEF            /0!0    THERE SHOULD BE NO INITIAL ERROR
        1440   4537            TSKCB            /1!0    CONTROL SHOULD BE BUSY
        1441   4540            TSKTR            /2!0    TRANSPORT SHOULD NOT BE READY
        1442   4545            WAIT2                    /WAIT FOR TRANSPORT READY
        1443   0001            1
        1444   4540            TSKTR            /3!1    TRANSPORT SHOULD BE READY BY NOW
        1445   7000            NOP
        1446   4543            TWC              /4!1    WC SHOULD STILL BE 7777 SINCE NO DATA BREAK
        1447   7777            -1
        1450   4535            TSKEF            /5!1    ERROR SHOULD BE SET SINCE EOF
        1451   4541            TMS              /6!1    EOF SHOULD BE SET
        1452   4100            4100
        1453   1162            TAD       ERSTAT
        1454   4525            COMPAR
        1455   6543            ER20A
                        /GD=GOOD ERSTAT; BD=REAL ERSTAT
        1456   5231            JMP       T20A+1         /SUBTEST LOOP

                        /WRITE EOF FROM BOT; REWIND TO BOT OVER EOF; THEN TRY TO SPCFWD
                        /2 RECORDS OVER EOF, MTTF SHOULD SET WITH EOF BIT SET AND WC =7776,
        1457   4527    T20B,   LOADPT
        1460   4532            SET3                     /WEOF FROM BOT
        1461   0000            0         /GD
        1462   7777            -1        /WC
        1463   0400            ODD       /CM
        1464   5100            WEOF+GO   /FR
        1465   3171            DCA       EXPEOF
        1466   4527            LOADPT                   /TO BOT
        1467   4532            SET3                     /TRY TO SPCFWD 2 RECORDS OVER EOF
        1470   7400            7400      /GD
        1471   7776            -2        /WC
        1472   0400            ODD       /CM
        1473   6100            SPCFWD+GO/FR
        1474   3171            DCA       EXPEOF
        1475   4545            WAIT2                    /WAIT FOR MTTF
        1476   0001            1
        1477   4536            TSKTD            /0!1    MTTF SHOULD EVENTUALLY SET
        1500   7000            NOP
        1501   4541            TMS              /1!1    EOF SHOULD BE SET
        1502   4100            4100
```

```
        1503   4535            TSKEF            /2!1    THERE SHOULD BE AN ERROR SINCE EOF
        1504   4543            TWC              /3!1    WORD COUNT SHOULD STILL BE 7776
        1505   7776            -2
        1506   1162            TAD       ERSTAT
        1507   4525            COMPAR
        1510   6545            ER20B
                        /GD=GOOD ERSTAT; BD=REAL ERSTAT
        1511   5257            JMP       T20B           /SUBTEST LOOP

                        /WRITE EOF FROM BOT; THEN WRITE ONE RECORD; THEN SPACE REVERSE
                        /2 RECORDS, EXPECT EOF WITH WC=-1,
        1512   4527    T20C,   LOADPT
        1513   4532            SET3                     /WEOF FROM BOT
        1514   0000            0         /GD
        1515   7777            -1        /WC
        1516   0400            ODD       /CM
        1517   5100            WEOF+GO/FR
        1520   3171            DCA       EXPEOF
        1521   4530            SET1                     /WRITE 1 RECORD
        1522   0000            0         /GD
        1523   7776            -2        /WC
        1524   7342            T25BUF    /CA
        1525   0000            0         /MEM
        1526   0400            ODD       /CM
        1527   4100            WRITE+GO/FR
        1530   4532            SET3                     /TRY TO SPCREV 2 RECORDS OVER EOF
        1531   7400            7400      /GD
        1532   7776            -2        /WC
        1533   0400            ODD       /CM
        1534   7100            SPCREV+GO/FR
        1535   3171            DCA       EXPEOF
        1536   4545            WAIT2                    /WAIT FOR MTTF
        1537   0001            1
        1540   4536            TSKTD            /0!1    MTTF SHOULD BE SET BY NOW
        1541   7000            NOP
        1542   4541            TMS              /1!1    EOF SHOULD BE SET
        1543   4100            4100
        1544   4535            TSKEF            /2!1    THERE SHOULD BE AN ERROR SINCE EOF
        1545   4543            TWC              /3!1    WORD COUNT SHOULD BE -1
        1546   7777            -1
        1547   1162            TAD       ERSTAT
        1550   4525            COMPAR
        1551   6547            ER20C
                        /GD=GOOD ERSTAT; BD=REAL ERSTAT
        1552   5312            JMP       T20C           /SUBTEST LOOP

        1553   4527            LOADPT
        1554   4521            LOOP6
        1555   5230            JMP       T20A   /******LOOP6******
        1556   5627            JMP I     TEST20
```

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```
                         /TEST 21,      COMBINED FUNCTIONS TEST,

                            /WRITE 2-2 WORD RECORDS THEN EOF AND VERIFY,


            1600             PAGE
      1600  0000    TEST21, 0

                    /WRITE A 2 WORD RECORD FROM BOT IN PREPARATION FOR T21B,
                    /DATA IS 7777, 7777,
      1601  4527    T21A,   LOADPT                  /TO BOT
      1602  4530            SET1                    /WRITE 2 WORD RECORD
      1603  3400            3400    /GD
      1604  7776            -2      /WC
      1605  7342            T2>BUF  /CA
      1606  7777            7777    /MEM
      1607  0400            ODD     /CM
      1610  4100            WRITE+GO/FR
      1511  4535            TSKEF           /0!0    THERE SHOULD BE NO INITIAL ERROR
      1612  4545            WAIT2                   /WAIT FOR WC-0000
      1613  0001            1
      1614  4543            TWC             /1!1    WC SHOULD BE 0000 BY NOW
      1615  0000            0
      1616  4544            WAIT1                   /WAIT FOR CONTROL READY
      1617  0001            1
      1620  4537            TSKCB           /2!1    CONTROL SHOULD BE READY BY NOW
      1621  7000            NOP
      1622  4544            WAIT1                   /WAIT FOR TRANSPORT READY
      1623  0001            1
      1624  4540            TSKTR           /3!1    TRANSPORT SHOULD BE READY BY NOW
      1625  7000            NOP
      1626  4535            TSKEF           /4!0    THERE SHOULD BE NO ERROR
      1627  1162            TAD     ERSTAT
      1630  4525            COMPAR
      1631  6551            ER21A
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
      1632  5202            JMP     T21A+1          /SUBTEST LOOP

                    /WRITE A 2 WORD RECORD FROM BOT (DATA = 7777, 7777);
                    /THEN SPCREV 1 RECORD TO BOT,
      1633  4527    T21B,   LOADPT
      1634  4530            SET1                    /WRITE 2 WORD RECORD
      1635  0000            0       /GD
      1636  7776            -2      /WC
      1637  7342            T2>BUF  /CA
      1640  7777            7777    /MEM
      1641  0400            ODD     /CM
      1642  4100            WRITE+GO/FR
      1643  4532            SET3                    /NOW SPCREV WITH WC=0000, SHOULD END UP
      1644  7400            7400    /GD             /AT BOT WITH WC=1 AND EF SET,
      1645  0000            0       /WC
      1646  0400            ODD     /CM
      1647  7100            SPCREV+GO/FR
      1650  4545            WAIT2                   /WAIT FOR TUR
```

```
      1651  0001            1
      1652  4540            TSKTR           /0!1    SHOULD BE TUR BY NOW
      1653  7000            NOP
      1654  4541            TMS             /1!1    SHOULD BE AT BOT
      1655  1000            1000
      1656  4535            TSKEF           /2!1    THERE SHOULD BE AN ERROR AT BOT
      1657  4543            TWC             /3!1    WC SHOULD = 0001
      1660  0001            1
      1661  1162            TAD     ERSTAT
      1662  4525            COMPAR
      1663  6553            ER21B
                    /GD=GOOD ERSTAT; BD=REAL ERSTAT
      1664  5233            JMP     T21B            /SUBTEST LOOP

      1665  4521            LOOP6
      1666  5201            JMP     T21A            /*****LOOP6*****

                    /WRITE 2 - 2 WORD RECORDS FROM BOT FOLLOWED BY EOF, THEN SPCREV
                    /TO EOF,
      1667  4527    T21C,   LOADPT
      1670  1036            TAD     M2              /WRITE 2-2 WORD RECORDS
      1671  3151            DCA     TXXTM1
      1672  4530            SET1
      1673  0000            0       /GD
      1674  7776            -2      /WC
      1675  7342            T2>BUF  /CA
      1676  7777            7777    /MEM
      1677  0400            ODD     /CM
      1700  4100            WRITE+GO/FR
      1701  2151            ISZ     TXXTM1
      1702  5272            JMP     T21C+3
      1703  4532            SET3                    /WRITE EOF
      1704  0000            0       /GD
      1705  0000            0       /WC
      1706  0400            ODD     /CM
      1707  5100            WEOF+GO /FR
      1710  3171            DCA     EXPEOF
      1711  4532            SET3                    /SPCREV WITH WC = -2,  SHOULD ENCOUNTER
      1712  7200            7200    /GD             /SHOULD ENCOUNTER EOF AND TUR WITH
      1713  7776            -2      /WC             /WC STILL = -2,
      1714  0400            ODD     /CM
      1715  7100            SPCREV+GO/FR
      1716  3171            DCA     EXPEOF
      1717  4545            WAIT2                   /WAIT FOR TUR
      1720  0001            1
      1721  4540            TSKTR           /0!1    TRANSPORT SHOULD BE READY BY NOW
      1722  7000            NOP
      1723  4536            TSKTD           /1!1    SPACE FUNCTION AND EOF + LPCS SHOULD GIVE MTTF
      1724  4543            TWC             /2!1    WC SHOULD = -2
      1725  7776            -2
      1726  4541            TMS             /3!0    BOT SHOULD NOT BE SET
      1727  1000            1000
      1730  4541            TMS             /4!1    ERROR AND EOF SHOULD BE SET
      1731  4100            4100
      1732  1162            TAD     ERSTAT
```

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```
1733  4525          COMPAR
1734  6555          ER21C
                /GD=GOOD ERSTAT: BD=REAL ERSTAT
1735  5267          JMP     T21C              /SUBTEST LOOP

1736  4522          LOOP7
1737  5265          JMP     T21C-2  /*****LOOP 7*****
1740  4527          LOADPT                    /BACK TO BOT,
1741  5600          JMP I   TEST21
```

```
                /RETURN TO BOT

1742  0000   LDPT,  0
1743  4532          SET3                /  REWIND,
1744  0000          0
1745  0000          0
1746  0400          ODD
1747  1100          REWIND+GO
1750  7240          CLA CMA             /SET ALTMODE INTERRUPT
1751  3165          DCA     ALTENA      /ENABLE,
1752  6001          ION
1753  4510          SKTR
1754  5353          JMP     ,-1
1755  4515          CLEAR1
1756  5742          JMP I   LDPT        /EXIT,
```

```
                        /TEST22,      BASIC CONTROL TEST USING TAPE MOTION,
                2000          PAGE
2000    0000    TEST22, 0

2001    4527    T22A,   LOADPT                      /IF SELECTED DRIVE IS 9 TRACK,
2002    1161            TAD     TRK9                /VERIFY THAT 9CH, CM10
2003    7650            SNA CLA                     /CLEAR AND PRESET GIVE IF
2004    5221            JMP     T22B                /AND EF,
2005    4533            SET4
2006    6000            6000    /GD
2007    7776            -2      /WC
2010    0400            ODD     /CM
2011    4100            WRITE+GO /FR                /USE WRITE,
2012    4541            TMS     /0:1    IF SHOULD SET,
2013    0001            1
2014    4535            TSKEF   /1:1    EF SHOULD BE SET,
2015    1162            TAD     ERSTAT
2016    4525            COMPAR
2017    6557            ER22A
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2020    5201            JMP     T22A    /SUBTEST LOOP,

2021    4527    T22B,   LOADPT                      /VERIFY THAT ISSURING LCMR, OR
2022    4734            JMS I   T22EX4              /LFGR OR LDBR WHEN THE
2023    0454            T15LS1+7                    /CONROL IS      BUSY YIELDS IF,
2024    7775            -3
2025    3234            DCA     ,+7
2026    4532            SET3
2027    2000            2000    /GD
2030    7776            -2      /WC
2031    0400            ODD     /CM
2032    4100            WRITE+GO /FR                /USE WRITE,
2033    4535            TSKEF   /0:0    INITIALLY THERE SHOULD BE NO ERROR,
2034    0000            0                           /LCMR, LFGR OR LDBR, (REF "I11"),
2035    4541            TMS     /1:1    AFTER THE IOT, IF SHOULD SET,
2036    0001            1
2037    1162            TAD     ERSTAT
2040    4525            COMPAR
2041    6561            ER22B
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2042    5735            JMP I   T22EX5  /SUBTEST LOOP,
2043    4736            JMS I   T22EX6

2044    4527    T22C,   LOADPT                      /VERIFY THAT ISSUING AN IOT
2045    4532            SET3                        /OTHER THAN LCMR, LFGR, OR
2046    0000            0       /GD                 /LDBR WHEN THE CONTROL IS
2047    7776            -2      /WC                 /BUSY DOES NOT YIELD IF,
2050    0400            ODD     /CM
2051    4100            WRITE+GO /FR
2052    4473            LCAR                        /LCAR USED,
2053    4535            TSKEF   /0:0    THERE SHOULD BE NO ERROR,
2054    4541            TMS     /1:0    THERE SHOULD BE NO IF,
2055    0001            1
2056    1162            TAD     ERSTAT
```

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2057    4525            COMPAR
2060    6563            ER22C
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2061    5244            JMP     T22C    /SUBTEST LOOP,

2062    4521            LOOP6
2063    5201            JMP     T22A    /*****LOOP6*****

2064    4301    T22D,   JMS     T22DE               /VERIFY WRITE+GO FOLLOWED BY
2065    4100            WRITE+GO                    /READ, RDCOMP, OR SPCFWD GIVES
2066    4525            COMPAR                      /IF,    USE T22DE ROUTINE,
2067    6565            ER22D
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2070    5311            JMP     T22DE1  /SUBTEST LOOP,
2071    4331            JMS     T22DE2

2072    4301    T22E,   JMS     T22DE               /VERIFY THAT WEOF+GO FOLLOWED
2073    5100            WEOF+GO                     /BY READ, RDCOMP OR SPCFWD GIVES
2074    4525            COMPAR                      /IF,
2075    6567            ER22E                       /USES T22DE ROUTINE,
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2076    5311            JMP     T22DE1  /SUBTEST LOOP,
2077    4331            JMS     T22DE2
2100    5337            JMP     T22F

2101    0000    T22DE,  0
2102    1701            TAD I   T22DE               /GET WRITE OR WEOF AND GO
2103    3317            DCA     T22DEI              /AND PUT IN CALLING SEQUENCE,
2104    2301            ISZ     T22DE               /UPDATE TO RETURN,
2105    4734            JMS I   T22EX4              /GO TO EXEC TO INSERT READ,
2106    2171            T22LS                       /RDCOMP, OR SPCFWD IN SET
2107    7775            -3                          /CALL,
2110    3322            DCA     T22DEJ

2111    4530    T22DE1, SET1                        /WRITE -GO OR WEOF-GO,
2112    4000            4000    /GD
2113    7776            -2      /WC
2114    7342            T25BUF  /CA
2115    7777            7777    /MEM
2116    0400            ODD     /CM

2117    0000    T22DEI, 0       /FR                 /FUNCTION INSERTED HERE
2120    3171            DCA     EXPEOF
2121    4534            CONTNU
2122    0000    T22DEJ, 0       /FR                 /READ, RDCOMP, OR SPCFWD AND GO,
2123    4544            WAIT1                       /WAIT FOR IF AND ERROR BITS TO SET
2124    0001            1
2125    4541            TMS     /0:1    IF AND ERROR BITS SHOULD BE SET BY NOW,
2126    4001            4001
2127    1162            TAD     ERSTAT
2130    5701            JMP I   T22DE

2131    0000    T22DE2, 0                           /ENTER AT END OF SUBTEST,
2132    4736            JMS I   T22EX6              /GET NEXT FUNCTION,
2133    5731            JMP I   T22DE2              /DONE,
```

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2134  Ø423      T22EX4, T15EX4
2135  Ø434      T22EX5, T15EX5
2136  Ø437      T22EX6, T15EX6

2137  4527      T22F,   LOADPT                      /VERIFY THAT 4 MISSING CHARACTERS DO NOT
2140  3453              DCA I   XBUFF+2             /CAUSE BAD TAPE ERROR AND
                                                    /THAT EF SETS,  DATA IS 7777,7777
2141  3454              DCA I   XBUFF+3             /ØØ22, ØØ23,    WRITE WITH EVEN
2142  4530              SET1                         /PARITY,
2143  4ØØØ              4ØØØ     /GD
2144  7774              -4       /WC
2145  7341              T25BUF-1         /CA
2146  7777              -1       /MEM
2147  ØØØØ              EVEN /CM
2150  4100              WRITE+GO /FR               /WRITE-GO,
2151  4545              WAIT2                       /WAIT FOR TRANSPORT READY,
2152  ØØØ1              1
2153  4540              TSKTR   /Ø:1     TRANSPORT SHOULD BE READY BY NOW,
2154  7ØØØ              NOP
2155  4542              TFS     /1:Ø     BAD TAPE ERROR SHOULD NOT BE SET,
2156  ØØ2Ø              2Ø
2157  4541              TMS     /2:Ø     EF SHOULD NOT BE SET,
2160  4ØØØ              4ØØØ
2161  1162              TAD     ERSTAT
2162  4525              COMPAR
2163  6571              ER22F
                /GD: GOOD ERSTAT; BD: REAL ERSTAT,
2164  5343              JMP     T22F+4  /SUBTEST LOOP,

2165  4522      T22LP7, LOOP7
2166  5262              JMP     T22D-2 /*****LOOP 7*****

2167  577Ø              JMP I   ,+1
2170  22ØØ              T22G
2171  61ØØ      T22LS,  SPCFWD+GO
2172  21ØØ              READ+GO
2173  31ØØ              RDCOMP+GO

      22ØØ              PAGE
22ØØ  4527      T22G,   LOADPT                      /VERIFY RECORD LENGTH
22Ø1  724Ø              CLA CMA                     /INCORRECT WHEN WC SET
22Ø2  3453              DCA I   XBUFF+2             /TO 1 WORD FOR READING A
22Ø3  453Ø              SET1                         /2 WORD RECORD,
22Ø4  ØØØØ              Ø        /GD                /WRITE A 2 WORD RECORD FROM
22Ø5  7776              -2       /WC                /BOT,
22Ø6  7342              T25BUF   /CA
22Ø7  7777              -1       /MEM
221Ø  Ø4ØØ              ODD      /CM
2211  41ØØ              WRITE+GO /FR

2212  4527      T22GL,  LOADPT                      /READ FROM BOT,
2213  453Ø              SET1
2214  7ØØØ              7ØØØ     /GD
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2215  7777              -1       /WC                /SET UP FOR 1 WORD RECORD,
2216  7342              T25BUF   /CA
2217  7777              -1       /MEM
222Ø  Ø4ØØ              ODD      /CM
2221  21ØØ              READ+GO /FR                 /READ-GO,
2222  4545              WAIT2                       /WAIT FOR TRANSPORT READY,
2223  ØØØ1              1
2224  454Ø              TSKTR   /Ø:1     TRANSPORT SHOULD BE READY BY NOW,
2225  7ØØØ              NOP
2226  4543              TWC     /1:1     WC SHOULD BE ØØØØ,
2227  ØØØØ              Ø
223Ø  4541              TMS     /2:1     REC LENGTH AND EF SHOULD BE SET,
2231  4Ø4Ø              4Ø4Ø
2232  1162              TAD     ERSTAT
2233  4525              COMPAR
2234  6573              ER22G
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2235  5212              JMP     T22GL   /SUBTEST LOOP,

2236  4527      T22H,   LOADPT                      /VERIFY RECORD LENGTH INCORRECT
2237  453Ø              SET1                         /WHEN WC SET FOR 3 WORD
224Ø  7ØØØ              7ØØØ     /GD                /RECORD WHEN RECORD IS
2241  7775              -3       /WC                /ACTUALLY 2 WORDS,
2242  7342              T25BUF   /CA
2243  7777              -1       /MEM
2244  Ø4ØØ              ODD      /CM
2245  21ØØ              READ+GO /FR                 /READ-GO,
2246  4545              WAIT2                       /WAIT FOR TRANSPORT READY,
2247  ØØØ1              1
225Ø  454Ø              TSKTR   /Ø:1     TRANSPORT SHOULD BE READY BY NOW,
2251  7ØØØ              NOP
2252  4543              TWC     /1:1     WC SHOULD BE 7777,
2253  7777              7777
2254  4541              TMS     /2:1     REC LENGTH AND EF SHOULD BE SET,
2255  4Ø4Ø              4Ø4Ø
2256  1162              TAD     ERSTAT
2257  4525              COMPAR
226Ø  6575              ER22H
                /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2261  5236              JMP     T22H    /SUBTEST LOOP,

2262  4527      T22I,   LOADPT                      /VERIFY DATA REQUEST LATE,
2263  453Ø              SET1                         /EF SHOULD ALSO BE SET,
2264  6ØØØ              6ØØØ     /GD
2265  ØØØØ              ØØØØ     /WC
2266  7342              T25BUF   /CA
2267  773Ø              -5Ø      /MEM
227Ø  Ø4ØØ              ODD      /CM
2271  41ØØ              WRITE+GO     /FR                 /USE WRITE-GO,
2272  4472              LWCR
2273  2452              ISZ I   XBUFF+1
2274  5272              JMP     ,-2
2275  2453              ISZ I   XBUFF+2
2276  5272              JMP     ,-4
2277  4513              SDLE                        /SET DATA LATE ERROR,
```

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```
2300  4545              WAIT2                     /WAIT FOR TRANSPORT READY,
2301  2001              1
2302  4540              TSKTR    /0:1   TRANSPORT SHOULD BE READY BY NOW,
2303  7000              NOP
2304  4541              TMS      /1:1   DATA LATE AND EF SHOULD BE SET
2305  4020              4020
2306  1162              TAD      ERSTAT
2307  4525              COMPAR
2310  6577              ER221
               /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2311  5262              JMP      T221    /SUBTEST LOOP,

2312  4523              LOOP8
2313  5774              JMP I    T22L7P  /*****LOOP 8*****

2314  4335     T22J,    JMS      T22JK           /VERIFY RDCOMP ERROR OCCURS
2315  0000              0        /DATA FOR TAPE, /WHEN DATA IN MEM IS 7777 AND
2316  4525              COMPAR                   /DATA ON TAPE SHOULD BE 0000,
2317  6601              ER22J                    /REFER TO T22JK ROUTINE BELOW FOR
               /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2320  5314              JMP      T22J    /SUBTEST LOOP,/INFORMATION,

2321  4335     T22K,    JMS      T22JK           /SAME AS T22J EXCEPT
2322  7777              -1       /DATA FOR TAPE, /DATA IN MEM IS 0000 AND DATA
2323  4525              COMPAR                   /ON TAPE SHOULD BE 7777,
2324  6603              ER22K
               /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2325  5321              JMP      T22K    /SUBTEST LOOP,

2326  4524              LOOP9
2327  5312              JMP      T22J-2  /*****LOOP 9*****
2330  4527              LOADPT

2331  1745              TAD I    TST22P
2332  3334              DCA      .+2
2333  5734              JMP I    .+1
2334  0000              0

2335  0000     T22JK,   0                        /SERVICE FOR T22J AND T22K,
2336  1735              TAD I    T22JK           /GET DATA TO PUT ON TAPE,
2337  3350              DCA      T22JKI          /SAVE IN SET CALL,
2340  1350              TAD      T22JKI          /COMPLEMENT TAPE DATA AND
2341  7040              CMA                      /PUT IN SECOND SET CALL,
2342  3360              DCA      T22JKJ
2343  4527              LOADPT                   /TO BOT,
2344  4531              SET2                     /WRITE DATA ON TAPE,
2345  2000     TST22P,  TEST22   /GD (NOT USED AS SUCH, BUT AS A POINTER INSTEAD,)
2346  7776              -2       /WC
2347  7342              T25BUF   /CA
2350  0000     T22JKI,  0        /MEM            /EITHER 0000 OR 7777,
2351  0402              D8007+ODD/CM             /CORE DUMP IF 9 TRACK,
2352  4100              WRITE+GO/FR
2353  4527              LOADPT                   /BACK TO BOT,
2354  4531              SET2                     /RDCOMP WITH COMPLEMENT TAPE DATA IN MEM,
2355  6000              6000     /GD
```

```
2356  7776              -2       /WC
2357  7342              T25BUF   /CA
2360  0000     T22JKJ,  0        /MEM            /EITHER 7777 OR 0000,
2361  0402              D8007+ODD/CM             /CORE DUMP IF 9 TRACK,
2362  3100              RDCOMP+GO/FR
2363  4545              WAIT2                     /WAIT FOR TRANSPORT READY,
2364  0001              1
2365  4540              TSKTR    /0:1   TRANSPORT SHOULD BE READY BY NOW,
2366  7000              NOP
2367  4541              TMS      /1:1   R/C AND EF SHOULD BE SET,
2370  4002              4002
2371  1162              TAD      ERSTAT
2372  2335              ISZ      T22JK
2373  5735              JMP I    T22JK           /GO TO SUBTEST COMPAR,
2374  2165     T22L7P,  T22LP7
```

```
                         /TEST23,       CONTINUE MODE TEST,
              2400              PAGE
2400   0000        TEST23, 0                      /TEST OF CONTINUE MODE',

2401   4255        T23A,   JMS    T23EX1          /VERIFY WEOF TO WEOF STARTING
2402   5100                WEOF+GO /FR1           /AT BOT, REF, T23EX1 ROUTANE
2403   5100                WEOF+GO /FR2           /FOR INFORMATION,
2404   4525                COMPAR
2405   6605                ER23A
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2406   5201                JMP    T23A    /SUBTEST LOOP,

2407   4310        T23B,   JMS    T23EX2          /VERIFY WRITE TO WRITE STARTING
2410   4100                WRITE+GO       /FR1            /AT BOT, REF, T23EX1 ROUTINE
2411   4100                WRITE+GO       /FR2            /FOR INFORMATION,
2412   4525                COMPAR
2413   6607                ER23B
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2414   5207                JMP    T23B    /SUBTEST LOOP,

2415   4255        T23C,   JMS    T23EX1          /VERIFY SPCFWD TO SPCFWD
2416   6100                SPCFWD+GO      /FR1    /STARTING AT BOT, PLF, T23EX1
2417   6100                SPCFWD+GO      /FR2    /ROUTINE FOR INFORMATION,
2420   4525                COMPAR
2421   6611                ER23C
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2422   5215                JMP    T23C    /SUBTEST LOOP,
2423   4521                LOOP6
2424   5201                JMP    T23A    /*****LOOP 6*****

2425   4310        T23D,   JMS    T23EX2          /VERIFY READ TO READ FROM
2426   2100                READ+GO /FR1   /BOT, REF T23EX2 ROUTINE
2427   2100                READ+GO /FR2   /FOR INFORMATION,
2430   4525                COMPAR
2431   6613                ER23D
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2432   5225                JMP    T23D    /SUBTEST LOOP,

2433   4310        T23E,   JMS    T23EX2          /VERIFY READ TO WRITE FROM
2434   2100                READ+GO /FR1           /BOT, REFERENCE T23EX2
2435   4100                WRITE+GO/FR2           /ROUTINE FOR INFORMATION,
2436   4525                COMPAR
2437   6615                ER23E
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
2440   5233                JMP    T23E    /SUBTEST LOOP,
2441   4522                LOOP7
2442   5223                JMP    T23D-2 /*****LOOP 7*****
2443   4255        T23F,   JMS    T23EX1          /VERIFY READ TO WEOF FROM
2444   2100                READ+GO /FR1           /BOT, REFERENCE T23EX1
2445   5100                WEOF+GO /FR2           /ROUTINE FOR INFORMATION,
2446   4525                COMPAR

2447   6617                ER23F
                   /GD! GOOD ERSTAT; BD: REAL ERSTAT,
```

```
2450   5243              JMP    T23F    /SUBTEST LOOP,

2451   4523              LOOP8
2452   5241              JMP    T23F-2 /*****LOOP 8*****
2453   4527              LOADPT
2454   5600              JMP I  TEST23

2455   0000     T23EX1, 0                      /SERVICE FOR T23A,C, AND F,
2456   1655              TAD I  T23EX1          /GET FIRST FUNCTION
2457   3273              DCA    T23FR1          /AND SAVE,
2460   2255              ISZ    T23EX1
2461   1655              TAD I  T23EX1          /GET SECOND FUNCTION
2462   3276              DCA    T23FR2          /AND SAVE,
2463   2255              ISZ    T23EX1          /UPDATE TO RETURN,
2464   4527              LOADPT                 /TO BOT,
2465   4530              SET1                   /DO FIRST FUNCTION WHEN
2466   7000              7000   /GD             /TRANSPORT READY,
2467   7776              -2     /WC
2470   7342              T25BUF /CA
2471   7777              -1     /MEM
2472   0400              ODD    /CM
2473   0000     T23FR1, 0      /FR
2474   3171              DCA    EXPEOF
2475   4534              CONTNU                 /AS SOON AS CONTROL IS READY,
2476   0000     T23FR2, 0      /FR             /ISSUE SECOND FUNCTION AND
2477   4545              WAIT2                  /GO, WAIT A LITTLE FOR
2500   0001              1                      /TRANSPORT    READY,
2501   4540              TSKTR  /0:1    TRANSPORT SHOULD BE READY BY NOW,
2502   7000              NOP
2503   4535              TSKEF  /1:1    THERE SHOULD BE AN ERROR,
2504   4541              TMS    /2:1    EOF BIT SHOULD BE SET,
2505   4100              4100
2506   1162              TAD    ERSTAT
2507   5655              JMP I  T23EX1          /EXIT,

2510   0000     T23EX2, 0                      /SERVICE FOR T23B, D AND E,
2511   1710              TAD I  T23EX2          /GET FIRST       FUNCTION
2512   3326              DCA    T23FR3          /AND SAVE,
2513   2310              ISZ    T23EX2
2514   1710              TAD I  T23EX2          /GET SECOND FUNCTION AND
2515   3331              DCA    T23FR4          /SAVE,
2516   2310              ISZ    T23EX2          /UPDATE TO RETURN,
2517   4527              LOADPT                 /TO BOT,
2520   4530              SET1                   /DO FIRST FUNCTION WHEN
2521   3400              3400   /GD             /TRANSPORT READY,
2522   7776              -2     /WC
2523   7342              T25BUF /CA
2524   7777              -1     /MEM
2525   0400              ODD    /CM
2526   0000     T23FR3, 0      /FR
2527   7000              NOP
2530   4534              CONTNU                 /AS SOON AS CONTROL IS READY,
2531   0000     T23FR4, 0      /FR             /ISSUE SECOND FUNCTION AND GO,
2532   4543              TWC    /0:0    WC SHOULD NOT INCREMENT RIGHT AWAY,
2533   7777              -1
```

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```
2534  4545            WAIT2                       /WAIT FOR WC TO INC,
2535  2001            1
2536  4543            TWC       /1:1    WC SHOULD INC TO 0 BY NOW,
2537  0000            0
2540  4544            WAIT1                       /WAIT FOR MTF,
2541  2001            1
2542  4536            TSKTD     /2:1    MTTF SHOULD BE SET BY NOW,
2543  7000            NOP
2544  4544            WAIT1                       /WAIT FOR TRNSPORT READY,
2545  2001            1
2546  4540            TSKTR     /3:1    TRANSPORT SHOULD BE READY BY NOW,
2547  7000            NOP
2550  4535            TSKEF     /4:0    THERE SHOULD BE NO ERROR',
2551  1162            TAD       ERSTAT
2552  5710            JMP I     T23EX2         /EXIT,
```

```
                     /TYPE SUBROUTINE,
                         /ENTER WITH ANSCII IN AC,  EXIT WITH AC CLEAR
2553  0000    TYPE,     0
2554  3370             DCA       TYPTEM        /SAVE ANSCII',
2555  6041             TSF
2556  7410             SKP
2557  5363             JMP       .+4
2560  1173             TAD       TTOFLG
2561  7700             SMA CLA
2562  5355             JMP       .-5
2563  3173             DCA       TTOFLG
2564  1370             TAD       TYPTEM
2565  6046             TLS                     /TYPE CHARACTER IF REAL TTO FLAG
2566  7200             CLA                     /IS SET OR SOFTWARE FLAG SET,
2567  5753             JMP I     TYPE
2570  0000    TYPTEM,  0

                     /RING TTY BELL,

2571  0000    BELL,    0
2572  7200             CLA
2573  1376             TAD       K207
2574  4467             JMS I     TYPEP
2575  5771             JMP I     BELL
2576  0207    K207,    207
```

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```
                         /TEST24.         CHANGE DIRECTION MODE TESTS.


           2600              PAGE
      2600  0000    TEST24,  0                          /CHANGE DIRECTION TESTS.

      2601  4320    T24A.    JMS     T24EX1             /SPCFWD TO SPCREV. TWO 2 WORD
      2602  4527             LOADPT                     /RECORDS WRITTEN FROM BOT, THEN
      2603  4530             SET1                       /BACK TO BOT, SPCFWD OVER
      2604  5000             5000    /GD                /RECORDS, CHANGE DIRECTION-
      2605  7776             -2      /WC                /SPCREV OVER RECORDS.
      2606  7342             T25BUF  /CA
      2607  7777             -1      /MEM
      2610  0400             ODD     /CM
      2611  6100             SPCFWD+GO /FR              /SPCFWD
      2612  7000             NOP
      2613  4534             CONTNU
      2614  7100             SPCREV+GO /FR              /SPCREV
      2615  4545             WAIT2                      /WAIT FOR CONTROL READY.
      2616  2001             1
      2617  4537             TSKCB   /0:1   CONTROL SHOULD BE READY BY NOW.
      2620  7000             NOP
      2621  4541             TMS     /1:0   BOT SHOULD NOT BE SET YET.
      2622  1000             1000
      2623  4544             WAIT1                      /WAIT FOR TRANSPORT READY.
      2624  0001             1
      2625  4540             TSKTR   /2:1   TRANSPORT SHOULD BE READY BY NOW.
      2626  7000             NOP
      2627  4535             TSKEF   /3:0   THERE SHOULD BE NO ERROR.
      2630  1162             TAD     ERSTAT
      2631  4525             COMPAR
      2632  6621             ER24A
                     /GD! GOOD ERSTAT; BD: REAL ERSTAT.
      2633  5202             JMP     T24A+1 /SUBTEST LOOP.
      2634  4521             LOOP6
      2635  5201             JMP     T24A   /*****LOOP6*****.
      2636  4320    T24B.    JMS     T24EX1             /SPCREV TO WEOF. WRITE TWO
                                                        /2 WORD RECORDS FROM BOT.
      2637  4530             SET1                       /THEN SPCREV OVER RECORDS.
      2640  7000             7000    /GD                /CHANGE DIRECTION - WEOF.
      2641  7776             -2      /WC
      2642  7342             T25BUF  /CA
      2643  7777             -1      /MEM
      2644  0400             ODD     /CM
      2645  7100             SPCREV+GO /FR              /SPCREV.
      2646  7000             NOP
      2647  4534             CONTNU
      2650  5100             WEOF+GO /FR                /WEOF.
      2651  4545             WAIT2                      /WAIT FOR TRANSPORT READY.
      2652  0001             1
      2653  4536             TSKTD   /0:1   MTTF SHOULD BE SET BY NOW
      2654  7000             NOP
      2655  4535             TSKEF   /1:1   THERE SHOULD BE AN ERROR.
      2656  4541             TMS     /2:1   EOF BIT SHOULD BE SET.
```

```
      2657  4100             4100
      2660  1162             TAD     ERSTAT
      2661  4525             COMPAR
      2662  6623             ER24B
                     /GD! GOOD ERSTAT; BD: REAL ERSTAT.
      2663  5236             JMP     T24B   /SUBTEST LOOP
      2664  4522             LOOP7
      2665  5234             JMP     T24B-2 /*****LOOP 7*****
      2666  4320    T24C.    JMS     T24EX1             /SPCREV TO READ. WRITE TWO
                                                        /2 WORD RECORDS FROM BOT.
      2667  4530             SET1                       /THEN SPCREV, CHANGE DIRECTION-
      2670  6000             6000    /GD                /READ THE RECORDS.
      2671  7776             -2      /WC
      2672  7342             T25BUF  /CA
      2673  7777             -1      /MEM
      2674  0400             ODD     /CM
      2675  7100             SPCREV+GO /FR              /SPCREV.
      2676  7000             NOP
      2677  4534             CONTNU
      2700  2100             READ+GO /FR                /READ.
      2701  4544             WAIT1                      /WAIT FOR CONTROL READY.
      2702  0001             1
      2703  4537             TSKCB   /0:1   CONTROL SHOULD BE READY BY NOW.
      2704  7000             NOP
      2705  4543             TWC     /1:1   WC SHOULD INDICATE 0      (READ 2 WORDS.)
      2706  0000             0
      2707  4535             TSKEF   /2:0   THERE SHOULD BE NO ERROR.
      2710  1162             TAD     ERSTAT
      2711  4525             COMPAR
      2712  6625             ER24C
                     /GD! GOOD ERSTAT; BD: REAL ERSTAT.
      2713  5266             JMP     T24C   /SUBTEST LOOP.
      2714  4523             LOOP8
      2715  5264             JMP     T24C-2 /*****LOOP 8*****
      2716  4527             LOADPT
      2717  5600             JMP I   TEST24

                     /ROUTINE TO WRITE 2 2 WORD RECORDS

      2720  0000    T24EX1,  0
      2721  4527             LOADPT
      2722  7244             CLA STA RAL
      2723  3336             DCA     T24T1
      2724  4530             SET1
      2725  0000             0       /GD
      2726  7776             -2      /WC
      2727  7342             T25BUF  /CA
      2730  7777             -1      /MEM
      2731  0400             ODD     /CM
      2732  4100             WRITE+GO /FR
      2733  2336             ISZ     T24T1
      2734  5324             JMP     T24EX1+4
      2735  5720             JMP I   T24EX1
      2736  0000    T24T1,   0
```

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```
                        /PDP8-E PACKED ANSCII MESSAGE GENERATOR.
                        /ENTERED WITH:
                        /JMS    AMG8E
                        /MSGNP  (MESSAGE POINTER)
                        /
                        /ØØ IS TERMINATOR, 43 (#) IS CARRIAGE RETURN, LINEFEED.
                        /THE FOLLOWING CHARACTERS ARE NOT ALLOWED: # WHICH GIVES
                        /TERMINATOR CODE, # WHICH RESULTS IN CRLF, AND 2Ø4-2Ø7,
                        /212, 215, 375, 377, 233.
                        /
                        /EXITS WITH AC CLEAR.

      2737  ØØØØ   AMG8E,   Ø
      2740  7300          CLA CLL
      2741  1737          TAD I   AMG8E
      2742  3376          DCA     AMG8E1
      2743  2337          ISZ     AMG8E
      2744  1776          TAD I   AMG8E1
      2745  4404          BSW
      2746  4353          JMS     AMG8E2
      2747  1776          TAD I   AMG8E1
      2750  4353          JMS     AMG8E2
      2751  2376          ISZ     AMG8E1
      2752  5344          JMP     .-6
      2753  ØØØØ   AMG8E2,  Ø
      2754  ØØ27          AND     K77
      2755  7450          SNA
      2756  5737          JMP I   AMG8E
      2757  3377          DCA     AMG8E3
      2760  1377          TAD     AMG8E3
      2761  1043          TAD     M43
      2762  7640          SZA CLA
      2763  5366          JMP     .+3
      2764  4465          JMS I   CRLFP
      2765  5753          JMP I   AMG8E2
      2766  1377          TAD     AMG8E3
      2767  1042          TAD     M40
      2770  7710          SPA CLA
      2771  1030          TAD     K100
      2772  1031          TAD     K200
      2773  1377          TAD     AMG8E3
      2774  4467          JMS I   TYPEP
      2775  5753          JMP I   AMG8E2
      2776  ØØØØ   AMG8E1,  Ø
      2777  ØØØØ   AMG8E3,  Ø
```

```
                   /TEST 25.     BASIC DATA TEST. (ALL DATA WRITTEN AT 8ØØ BPI, ODD PARITY,
                                           CORE DUMP MODE FORCED IF 9 TRK.)

             3ØØØ              PAGE
      3ØØØ   ØØØØ   TEST25,  Ø

      3ØØ1   4227          JMS     T25A        /WRITE A 4Ø WORD RECORD OF ALL 1'S
      3ØØ2   7777          7777                /FROM BOT, THEN READ AND
      3ØØ3   ØØØØ          ØØØØ                /CHECK DATA.
      3ØØ4   4521          LOOP6
      3ØØ5   52Ø1          JMP     .-4    /*****LOOP 6*****

      3ØØ6   4227          JMS     T25A        /WRITE A 4Ø WORD RECORD OF ALL Ø'S
      3ØØ7   ØØØØ          ØØØØ                /FROM BOT, THEN READ AND
      3Ø1Ø   ØØØØ          ØØØØ                /CHECK DATA.
      3Ø11   4522          LOOP7
      3Ø12   52Ø4          JMP     .-6    /*****LOOP 7*****

      3Ø13   4227          JMS     T25A        /WRITE A 4Ø WORD RECORD OF 1'S
      3Ø14   7777          7777                /AND Ø'S (7777,ØØØØ,7777,ETC)
      3Ø15   4ØØØ          4ØØØ                /FROM BOT, THEN READ AND
      3Ø16   4523          LOOP8               /CHECK DATA.
      3Ø17   5211          JMP     .-6    /*****LOOP 8*****

      3Ø2Ø   4227          JMS     T25A        /WRITE A 4Ø WORD RECORD.
      3Ø21   5252          5252                /PATTERN=5252,2525,5252,ETC.
      3Ø22   4ØØØ          4ØØØ     /          /THEN READ AND CHECK DATA.
      3Ø23   4524          LOOP9
      3Ø24   5216          JMP     .-6    /*****LOOP 9*****

      3Ø25   4527          LOADPT
      3Ø26   56ØØ          JMP I   TEST25

      3Ø27   ØØØØ   T25A,    Ø
      3Ø3Ø   7340          CLA CLL CMA
      3Ø31   1227          TAD     T25A
      3Ø32   3150          DCA     OLD
      3Ø33   1627          TAD I   T25A        /GET DATA STARTER.
      3Ø34   3375          DCA     T25TM2      /SAVE IT IN BUFFER STARTER.
      3Ø35   2227          ISZ     T25A
      3Ø36   1627          TAD I   T25A        /GET DATA SPECIFIER.
      3Ø37   7104          CLL RAL             /MOVE IT INTO LINK.
      3Ø40   1375          TAD     T25TM2      /GET DATA STARTER.
      3Ø41   7430          SZL                 /IF LINK SET, MAKE COMPLEMENTING PATTERN.
      3Ø42   7040          CMA                 /IF NOT, DO NOT COMPLEMENT.
      3Ø43   3153          DCA     TXXTM3      /SAVE SAME OR COMPLEMENT DATA.
      3Ø44   2227          ISZ     T25A        /UPDATE TO RETURN.
      3Ø45   1377   T25ASL, TAD     M50         /SET UP DATA BUFFER WITH DATA.
      3Ø46   3151          DCA     TXXTM1
      3Ø47   1376          TAD     T25BUP
      3Ø50   3152          DCA     TXXTM2
      3Ø51   2152          ISZ     TXXTM2
      3Ø52   1375          TAD     T25TM2
```

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```
3053  3552            DCA I   TXXTM2
3054  2152            ISZ     TXXTM2
3055  1153            TAD     TXXTM3
3056  3552            DCA I   TXXTM2
3057  2151            ISZ     TXXTM1
3060  2151            ISZ     TXXTM1          /BUFFER FULL?
3061  5251            JMP     .-10            /NO, KEEP INSERTING DATA,
3062  4527            LOADPT                  /YES, TAPE TO BOT,
3063  4531            SET2                    /WRITE THE RECORD,
3064  4000            4000    /GD
3065  7726            -52     /WC
3066  7337            T25BUF-3/CA
3067  0000            0       /MEM
3070  0402            ODD+D8007/CM
3071  4100            WRITE+GO/FR
3072  4545            WAIT2                   /WAIT FOR JOB DONE
3073  2001            1
3074  4536            TSKTD   /0:1    SKTD SHOULD SKIP BY NOW,
3075  7000            NOP
3076  4535            TSKEF   /1:0    THERE SHOULD BE NO ERROR,
3077  1162            TAD     ERSTAT
3100  4525            COMPAR
3101  6627            ER25A
             /GD! GOOD ERSTAT; BD: REAL ERSTAT; OD! DATA ROUTINE ADDRESS,
3102  5245            JMP     T25ASL  /SUBTEST LOOP,

3103  7200    T25B,   CLA
3104  1377            TAD     M50             /SET BUFFER UP TO COMPLEMENT DATA,
3105  3151            DCA     TXXTM1
3106  1376            TAD     T25BUP
3107  3152            DCA     TXXTM2
3110  2152            ISZ     TXXTM2
3111  1375            TAD     T25TM2
3112  7040            CMA
3113  3552            DCA I   TXXTM2
3114  2152            ISZ     TXXTM2
3115  1153            TAD     TXXTM3
3116  7040            CMA
3117  3552            DCA I   TXXTM2
3120  2151            ISZ     TXXTM1
3121  2151            ISZ     TXXTM1
3122  5310            JMP     .-12            /DONE? NO, CONTINUE,
3123  4527            LOADPT                  /YES, TAPE TO BOT,
3124  4531            SET2                    /NOW READ THE RECORD,
3125  4000            4000    /GD
3126  7726            -52     /WC
3127  7337            T25BUF-3/CA
3130  2525            2525    /MEM
3131  0402            ODD+D8007/CM
3132  2100            READ+GO/FR
3133  4545            WAIT2                   /WAIT FOR JOB DONE
3134  0001            1
3135  4536            TSKTD   /0:1    SKTD SHOULD SKIP BY NOW,
3136  7000            NOP
3137  4535            TSKEF   /1:0    THERE SHOULD BE NO ERRORS,
```

```
3140  1162            TAD     ERSTAT
3141  4525            COMPAR
3142  6631            ER25B
             /GD! GOOD ERSTAT; BD: REAL ERSTAT; OD! DATA ROUTINE ADDRESS,
3143  5303            JMP     T25B    /SUBTEST LOOP

3144  7200    T25C,   CLA                     /NOW CHECK THE DATA READ
3145  1377            TAD     M50             /AGAINST THE DATA SPECIFIERS,
3146  3151            DCA     TXXTM1          /USE ACLOC TO INDICATE THE ADDRESS OF
3147  1376            TAD     T25BUP          /ANY FAILING DATA,
3150  3170            DCA     ACLOC
3151  2170            ISZ     ACLOC
3152  1375            TAD     T25TM2
3153  3146            DCA     GOOD
3154  1570            TAD I   ACLOC
3155  4367            JMS     T25CCK
3156  2170            ISZ     ACLOC
3157  1153            TAD     TXXTM3
3160  3146            DCA     GOOD
3161  1570            TAD I   ACLOC
3162  4367            JMS     T25CCK
3163  2151            ISZ     TXXTM1
3164  2151            ISZ     TXXTM1
3165  5351            JMP     .-14
3166  5627            JMP I   T25A
3167  0000    T25CCK, 0
3170  4525            COMPAR
3171  6633            ER25C
             /GD! GOOD DATA; BD: DATA READ; OD! DATA ROUTINE ADDRESS; AC! ADDRESS OF FAILING DATA,
3172  7000            NOP     /THERE IS NO SUBTEST LOOP FOR DATA CHECKING,
3173  5767            JMP I   T25CCK          /CONTINUE CHECKING DATA,
3174  5627            JMP I   T25A            /"EX" EXIT,
3175  0000    T25TM2, 0
3176  7341    T25BUP, T25BUF-1
3177  7730    M50,    -50
```

```
                   /TEST26.        CRCC TEST (9 TRACK ONLY).

           3200            PAGE
3200 0000  TEST26, 0                          /CRCC TEST (9 TRACK ONLY).
3201 1161            TAD    TRK9               /4 WORD RECORDS, EACH WORD
3202 7650            SNA CLA                   /IS IDENTICAL.
3203 5600            JMP I  TEST26             /IMMEDIATE EXIT FOR 7 TRACK.
3204 4527            LOADPT                    /TO BOT

3205 1350  T26A,    TAD    N400               /SET UP FOR 400(8) DATA SETS.
3206 3151            DCA    TXXTM1
3207 3253            DCA    T26SC1             /DATA: 0 THRU   377 (ODD PARITY).
3210 1253            TAD    T26SC1
3211 3150            DCA    OLD
3212 3235            DCA    PARCAR
3213 1253            TAD    T26SC1             /GET PRESENT DATA AND GENERATE
3214 7110            CLL RAR                   /PARITY BIT.
3215 7430            SZL
3216 2235            ISZ    PARCAR
3217 7440            SZA
3220 5214            JMP    .-4
3221 1235            TAD    PARCAR
3222 7010            RAR
3223 7620            SNL CLA
3224 1033            TAD    K400
3225 1253            TAD    T26SC1             /SAVE DATA PLUS PARITY BIT.
3226 3235            DCA    PARCAR             /EFFECTIVELY XOR FIRST WORD
3227 1235            TAD    PARCAR             /INTO CRCR.
3230 3264            DCA    CRC                /ROTATE CRCR
3231 4310            JMS    CRCROT             /SET UP FOR 3 WORDS.
3232 1351            TAD    M3                 /
3233 3153            DCA    TXXTM3             /XOR NEXT DATA WORD INTO CRCR.
3234 4324            JMS    CRCXOR
3235 0000  PARCAR,  0                          /ROTATE CRCR.
3236 4310            JMS    CRCROT             /3 WORDS DONE?
3237 2153            ISZ    TXXTM3             /NO.
3240 5234            JMP    .-4                /YES. COMPLEMENT ALL BITS
3241 4324            JMS    CRCXOR             /EXCEPT 4 AND 6.
3242 0727            727                       /PUT DATA IN BUFFER
3243 1253  T26ASL,  TAD    T26SC1
3244 3741            DCA I  YBUFF+3
3245 1253            TAD    T26SC1
3246 3742            DCA I  YBUFF+4            /WRITE 2 WORD RECORD.
3247 4531            SET2
3250 0000            0      /GO
3251 7774            -4     /WC
3252 7342            T25BUF /CA
3253 0000  T26SC1,  0      /MEM
3254 0403            ODD+D80Ø9/CM
3255 4100            WRITE+GO/FR
3256 4533            SET4                      /SPACE REVERSE 1 RECORD
3257 0000            0      /GO
3260 7777            -1     /WC
3261 0403            ODD+D80Ø9/CM
```

```
3262 7100            SPCREV+GO/FR
3263 4531            SET2                      /READ THE LAST RECORD.

3264 0000  CRC,     0      /GO                 /ENABLE CRC TO BE READ IN
3265 7774            -4     /WC                 /TO T25BUF+5.
3266 7342            T25BUF /CA
3267 0000            0      /MEM
3270 0403            ODD+D80Ø9/CM
3271 2300            READ+ERLPCC+GO/FR
3272 4507            SKTD                      /WAIT FOR MTTF
3273 5272            JMP    .-1
3274 1743            TAD I  YBUFF+5            /GET CRC + CHECK
3275 4525            COMPAR
3276 6635            ER26A
           /GD: GOOD CRC: BD: REAL CRC: OD: DATA USED
3277 5243            JMP    T26ASL  /SUBTEST LOOP.
3300 5303            JMP    .+3
3301 4527            LOADPT
3302 5600            JMP I  TEST26
3303 7201            CLA IAC                   /UPDATE DATA.
3304 1253            TAD    T26SC1
3305 2151            ISZ    TXXTM1             /ALL DONE?
3306 5207            JMP    T26A+2             /NO,   DO NEXT DATA SET.
3307 5301            JMP    .-6                /YES,  EXIT
3310 0000  CRCROT,  0                          /CRC ROTATE.
3311 1264            TAD    CRC                /SET CRC AND MOVE ONE
3312 7110            CLL RAR                   /RIGHT.
3313 7420            SNL                       /IF BIT 1 SHOULD BE A 1.
3314 5322            JMP    .+6                /MAKE IT SO,   IF NOT, EXIT.
3315 1033            TAD    K400
3316 3264            DCA    CRC
3317 4324            JMS    CRCXOR             /IF A 1, COMPLEMENT BITS
3320 0074            74                        /4,5,6,7.
3321 7410            SKP
3322 3264            DCA    CRC                /SAVE CRC.
3323 5710            JMP I  CRCROT             /EXIT.

3324 0000  CRCXOR,  0                          /EXCLUSIVE OR CRC WITH CALL+1.
3325 1264            TAD    CRC                /GET CRC.
3326 0724            AND I  CRCXOR             /COMPUTE CARRY.
3327 7104            CLL RAL                   /SCALE AND NEGATE.
3330 7041            CIA
3331 1264            TAD    CRC                /COMPUTE PARTIAL SUM.
3332 1724            TAD I  CRCXOR
3333 3264            DCA    CRC                /SAVE CRC.
3334 2324            ISZ    CRCXOR
3335 5724            JMP I  CRCXOR             /EXIT.
3336 7342  YBUFF,   T25BUF                     /CRC TEST BUFFER.
3337 7343            T25BUF+1                           /1ST DATA
3340 7344            T25BUF+2                           /2ND DATA
3341 7345            T25BUF+3                           /3RD DATA
3342 7346            T25BUF+4                           /4TH DATA
3343 7347            T25BUF+5                           /CRCC
3344 7350            T25BUF+6                           /LPCC
3345 7351            T25BUF+7
```

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```
3346  7352           T25BUF+10
3347  7353           T25BUF+11
3350  7400    N400,  -400
3351  7775    M3,    -3
```

```
                   /TEST27,        CORE DUMP/COMPATIBLE 9 TRACK TESTS,

           3400           PAGE
      3400  0000    TEST27, 0                       /CORE DUMP MODE TESTS,
      3401  1161           TAD     TRK9
      3402  7650           SNA CLA
      3403  5620           JMP I   TEST27           /IMMEDIATE EXIT FOR 7 TRACK

      3404  4273    T27A,  JMS     T27EX1           /VERIFY WEOF WORKS IN
      3405  0403           ODD+D8009                /COMPATIBLE MODE,       REF T27EX1
      3406  4525           COMPAR                   /FOR INFORMATION,
      3407  6637           ER27A
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
      3410  5204           JMP     T27A    /SUBTEST LOOP,

      3411  4273    T27B,  JMS     T27EX1           /VERIFY EOF WRITTEN IN CORE DUMP
      3412  0402           ODD+D8007                /MODE IS NOT RECOGNIZED IN
      3413  4317           JMS     T27EX2           /COMPATIBLE MODE,
      3414  0403           ODD+D8009
      3415  4525           COMPAR
      3416  6641           ER27B
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
      3417  5211           JMP     T27B    /SUBTEST LOOP,

      3420  4273    T27C,  JMS     T27EX1           /VERIFY EOF WRITTEN IN COMPATIBLE
      3421  0403           ODD+D8009                /MODE IS NOT RECOGNIZED IN
      3422  4317           JMS     T27EX2           /CORE DUMP MODE,
      3423  0402           ODD+D8007
      3424  4525           COMPAR
      3425  6643           ER27C
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
      3426  5220           JMP     T27C    /SUBTEST LOOP,
      3427  4521           LOOP6
      3430  5204           JMP     T27A    /*****LOOP6*****
      3431  4527    T27D,  LOADPT                   /VERIFY A 4 WORD RECORD
      3432  7240           CLA CMA
      3433  3455           DCA I   XBUFF+4
      3434  7240           CLA CMA                  /WRITTEN IN COMPATIBLE
      3435  3637           DCA I   .+2              /MODE, READS 2 WORDS IN
      3436  4531           SET2                     /CORE DUMP MODE,
      3437  7345           T25BUF+3/GD
      3440  7774           -4      /WC
      3441  7342           T25BUF  /CA
      3442  7777           -1      /MEM
      3443  0403           ODD+D8009/CM
      3444  4100           WRITE+GO/FR
      3445  4527           LOADPT
      3446  4531           SET2
      3447  6000           6000    /GD
      3450  0000           0       /WC
      3451  7342           T25BUF  /CA
      3452  0000           0       /MEM
      3453  0402           ODD+D8007/CM
      3454  2100           READ+GO /FR
```

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```
3455  4545         WAIT2                    /WAIT FOR TRANSPORT READY,
3456  0001         1
3457  4540         TSKTR    /0:1   TRANSPORT SHOULD BE READY BY NOW,
3460  7000         NOP
3461  4543         TWC      /1:1   WC SHOULD INDICATE 2 WORDS READ,
3462  0002         2
3463  1162         TAD      ERSTAT
3464  4525         COMPAR
3465  6645         ER27D
            /GD: GOOD ERSTAT; BD: REAL ERSTAT,
3466  5231         JMP      T27D    /SUBTEST LOOP,
3467  4522         LOOP7
3470  5227         JMP      T27D-2  /*****LOOP 7*****
3471  4527         LOADPT
3472  5600         JMP  I   TEST27

3473  0000  T27EX1, 0                        /WEOF USING DENSITY SELECTION
3474  1673         TAD  I   T27EX1           /IN CALL,
3475  3302         DCA      ,+5
3476  4527         LOADPT
3477  4533         SET4
3500  7000         7000     /GD
3501  0000         0        /WC
3502  0000         0        /CM (DENSITY SELECTION INSERTED,)
3503  5100         WEOF+GO  /FR
3504  3171         DCA      EXPEOF
3505  4545         WAIT2                    /WAIT FOR TRANSPORT READY,
3506  0001         1
3507  4540         TSKTR    /0:1   TRANSPORT SHOULD BR READY BY NOW,
3510  7000         NOP
3511  4535         TSKEF    /1:1   THERE SHOULD BE AN ERROR,
3512  4541         TMS      /2:1   EOF BIT          SHOULD BE SET
3513  4100         4100
3514  1162         TAD      ERSTAT
3515  2273         ISz      T27EX1
3516  5673         JMP  I   T27EX1

3517  0000  T27EX2, 0                        /SPACE REVERSE HOPEFULLY
3520  7200         CLA                       /THROUGH EOF TO BOT
3521  1717         TAD  I   T27EX2           /WHEN EOF WRITTEN IN ONE
3522  3326         DCA      ,+4              /MODE AND SPACE REVERSE IN THE
3523  4533         SET4                      /OTHER,
3524  6000         6000     /GD
3525  0000         0        /WC
3526  0000         0        /CM (DENSITY SELECTION INSERTED,)
3527  7100         SPCREV+GO        /FR
3530  4545         WAIT2                    /WAIT FOR TRANSPORT READY
3531  0001         1
3532  4540         TSKTR    /0:1   TRANSPORT SHOULD BE READY BY NOW,
3533  7000         NOP
3534  4541         TMS      /1:1   BOT SHOULD BE SET (SHOULD PASS EOF,)
3535  1000         1000
3536  1162         TAD      ERSTAT
3537  2317         ISz      T27EX2
3540  5717         JMP  I   T27EX2
```

```
3541  0000  SRBSW,  0                        /BYTE SWAP ROUTINE,
3542  7106         CLL RTL
3543  7006         RTL
3544  7006         RTL
3545  3353         DCA      SRBSWT
3546  7004         RAL
3547  1353         TAD      SRBSWT
3550  0027         AND      K77
3551  1353         TAD      SRBSWT
3552  5741         JMP  I   SRBSW
3553  0000  SRBSWT, 0

3554  0000  SRMQL,  0                        /MQ LOADER,
3555  3366         DCA      SRMQLT
3556  5754         JMP  I   SRMQL

3557  0000  SRMQA,  0                        /INCLUSIVE OR (MQA),
3560  3354         DCA      SRMQL
3561  1354         TAD      SRMQL
3562  7040         CMA
3563  0366         AND      SRMQLT
3564  1354         TAD      SRMQL
3565  5757         JMP  I   SRMQA
3566  0000  SRMQLT, 0
```

/TEST3Ø,   MANUAL INTERVENTION TESTS,

```
          3600           PAGE
     3600  2030     TEST30,  0                        /MANUAL INTERVENTION TEST,

     3601  4460     T30A,    JMS I    AMG8EP          /VERIFY OFFLIN ACTUALLY
     3602  7137              MTM2                      /PUTS DRIVE OFF LINE,
     3603  4357              JMS      NSTRUC
     3604  7043              MSG61
     3605  4527              LOADPT                    /TO BOT,
     3606  4530              SET1                      /WRITE A RECORD, (GET
     3607  0000              0        /GD              /AWAY FROM BOT,
     3610  7760              -20      /WC
     3611  7342              T25BUF   /CA
     3612  7777              -1       /MEM
     3613  0400              ODD      /CM
     3614  4100              WRITE+GO/FR
     3615  4532              SET3                      /COMMAND OFF LINE,
     3616  1300              1300     /GD
     3617  0000              0        /WC
     3620  0400              ODD      /CM
     3621  0100              OFFLIN+GO/FR
     3622  4535              TSKEF    /0:0   THERE SHOULD BE NO ERROR,
     3623  4541              TMS      /1:0   RWSTAT SHOULD NOT BE SET,
     3624  2000              2000
     3625  4541              TMS      /2:1   SELECT REMOTE SHOULD BE SET,
     3626  0400              0400
     3627  4535              TSKEF    /3:0   THERE SHOULD BE NO ERROR,
     3630  4536              TSKTO    /4:1   MTTF SHOULD BE SET,
     3631  4545              WAIT2                     /STALL,
     3632  0000              0
     3633  4541              TMS      /5:1   SELECT REMOTE SHOULD STILL BE SET,
     3634  0400              0400
     3635  1162              TAD      ERSTAT
     3636  4525              COMPAR
     3637  6647              ER30A
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
     3640  7000              NOP
     3641  4357              JMS      NSTRUC           /ASK FOR VISUAL OFF LINE CHECK,
     3642  7143              MTM3
     3643  4520              LOOP5
     3644  5201              JMP      T30A   /SUBTEST LOOP,

     3645  4357     T30B,    JMS      NSTRUC           /VERIFY TRANSPORT
     3646  7166              MTM4                      /NOT READY WITH NO VACUUM,
     3647  3146              DCA      GOOD
     3650  4510              SKTR
     3651  7610              SKP CLA
     3652  7040              CMA                       /SKTR SHOULD NOT SKIP,
     3653  4525              COMPAR
```

```
     3654  6651              ER30B
                   /GD: GOOD AC; BD: REAL AC,
     3655  5250              JMP      T30B+3 /SUBTEST LOOP,

     3656  4357     T30C,    JMS      NSTRUC           /VERIFY WRITE AND FILE PROT
     3657  7206              MTM5                      /YIELD IF AND EF,
     3660  4532              SET3
     3661  4000              4000     /GD
     3662  0000              0        /WC
     3663  0400              ODD      /CM
     3664  4000              WRITE    /FR
     3665  4541              TMS      /0:1   IF, FILE PROT AND EF SHOULD BE SET,
     3666  4005              4005
     3667  1162              TAD      ERSTAT
     3670  4525              COMPAR
     3671  6653              ER30C
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
     3672  5260              JMP      T30C+2 /SUBTEST LOOP,

     3673  4532     T30D,    SET3                      /VERIFY WEOF AND FILE PROT
     3674  4000              4000     /GD              /YIELD IF AND EF,
     3675  0000              0        /WC
     3676  0400              ODD      /CM
     3677  5000              WEOF     /FR
     3700  4541              TMS      /0:1   IF, FILE PROT AND EF SHOULD BE SET,
     3701  4005              4005
     3702  1162              TAD      ERSTAT
     3703  4525              COMPAR

     3704  6655              ER30D
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
     3705  5273              JMP      T30D   /SUBTEST LOOP,

     3706  4532     T30E,    SET3                      /VERIFY A FUNCTION OTHER THAN
     3707  0000              0        /GD              /WRITE OR WEOF DOES NOT
     3710  7777              -1       /WC              /CAUSE IF AND EF WITH
     3711  0400              ODD      /CM              /FILE PROT,
     3712  3000              RDCOMP   /FR              /READ/COMPARE USED,
     3713  4541              TMS      /0:0   IF AND EF SHOULD NOT BE SET,
     3714  4001              4001
     3715  1162              TAD      ERSTAT
     3716  4525              COMPAR
     3717  6657              ER30E
                   /GD: GOOD ERSTAT; BD: REAL ERSTAT,
     3720  5306              JMP      T30E   /SUBTEST LOOP,

     3721  4527     T30F,    LOADPT                    /VERIFY ERROR FLAG SETS WHEN DRIVE PUT OFF LINE,
     3722  4357              JMS      NSTRUC           /
     3723  7043              MSG61
     3724  4357              JMS      NSTRUC
     3725  7242              MTM6
     3726  4530              SET1
     3727  4000     T30FOK,  4000     /GD
     3730  0000              0        /WC
```

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            3731  7342          T25BUF  /CA
            3732  7244          -534    /MEM
            3733  0400          ODD     /CM
            3734  4100          WRITE+GO/FR      /WRITE FUNCTION USED.
            3735  4472          LWCR            /WAIT AT MOST 35-40 SECONDS DURING WRITE.
            3736  4501          RMSR
            3737  7510          SPA
            3740  5345          JMP     .+5
            3741  2452          ISZ I   XBUFF+1
            3742  5335          JMP     .-5
            3743  2453          ISZ I   XBUFF+2
            3744  5335          JMP     .-7
            3745  0327          AND     T30FOK
            3746  4525          COMPAR
            3747  6661          ER30F
                      /GO! GOOD MAIN STATUS; BD! REAL MAIN STATUS.
            3750  5322          JMP     T30F+1 /SUBTEST LOOP.
            3751  5752          JMP I   .+1
            3752  4000          T30G

            3753  4357  T30FIN, JMS     NSTRUC          /CLOSE OUT AND EXIT.
            3754  7043          MSG61
            3755  4527          LOADPT
            3756  5600          JMP I   TEST30

            3757  0000  NSTRUC, 0                       /ROUTINE TO INSTRUCT USER
            3760  7300          CLA CLL                 /THEN GO TO MONITOR TO
            3761  1757          TAD I   NSTRUC          /AWAIT COMPLETION OF ACTION.

            3762  3365          DCA     .+3
            3763  2357          ISZ     NSTRUC
            3764  4460          JMS I   AMG8EP
            3765  0000          0
            3766  6002          IOF
            3767  1375          TAD     NSTRP
            3770  3000          DCA     0
            3771  5772          JMP I   .+1
            3772  4603          MONIT+3
            3773  4515  NSTR,   CLEAR1
            3774  5757          JMP I   NSTRUC
            3775  3773  NSTRP,  NSTR

                  4000          PAGE
            4000  4460  T30G,   JMS I   AMG8EP          /VERIFY THAT THE "START" OR "CLEAR"
            4001  7303          MTM7                    /KEY CAUSES "INITIALIZE"
            4002  7240          CLA CMA                 /TO FUNCTION IN THE TMBE
            4003  4472          LWCR                    /CONTROL BY CHECKING WC CLEARED.
            4004  3146          DCA     GOOD
            4005  7402          HLT                     /PDP8/E USERS MAY INSERT IOT 6007 HERE
            4006  7240          CLA CMA
            4007  3173          DCA     TTOFLG
            4010  4477          RWCR                    /INSTEAD OF HLT FOR A SUBTEST LOOP.
            4011  4525          COMPAR
            4012  6663          ER30G
                      /GO! GOOD WC.
```

```
            4013  5202          JMP     .-11    /SUBTEST LOOP.
            4014  5615          JMP I   .+1
            4015  3753          T30FIN
```

```
                    /TMBE IOT SUBROUTINES.

                         /ALL TMBE IOT'S ARE PLACED IN SUBROUTINES
                         /TO ENABLE EASE IN CHANGING THE IOT DEVICE CODE
                         /SHOULD THE DEVICE CODES NOT BE 70-72.
                         /IF AN IOT SKIPS WHICH SHOULD NEVER SKIP, IT RESULTS
                         /IN ER31B (EXCEPT RWCR).

         4016  0000   SLWCR,  0
         4017  6701           6701                    /LWCR
         4020  5616           JMP I   SLWCR
         4021  4336           JMS     SKIPER
         4022  0000   SLCAR,  0
         4023  6703           6703                    /LCAR
         4024  5622           JMP I   SLCAR
         4025  4336           JMS     SKIPER
         4026  0000   SLCMR,  0
         4027  6705           6705                    /LCMR
         4030  5626           JMP I   SLCMR
         4031  4336           JMS     SKIPER
         4032  0000   SLFGR,  0
         4033  6706           6706                    /LFGR
         4034  5632           JMP I   SLFGR
         4035  4336           JMS     SKIPER
         4036  0000   SLDBR,  0
         4037  6707           6707                    /LDBR
         4040  5636           JMP I   SLDBR
         4041  4336           JMS     SKIPER
         4042  0000   SRWCR,  0
         4043  6711           6711
         4044  5642           JMP I   SRWCR
         4045  4336           JMS     SKIPER
         4046  0000   SRCAR,  0
         4047  6713           6713                    /RCAR
         4050  5646           JMP I   SRCAR
         4051  4336           JMS     SKIPER
         4052  0000   SRMSR,  0
         4053  6714           6714                    /RMSR
         4054  5652           JMP I   SRMSR
         4055  4336           JMS     SKIPER
         4056  0000   SRCMR,  0
         4057  6715           6715                    /RCMR
         4060  5656           JMP I   SRCMR
         4061  4336           JMS     SKIPER
         4062  0000   SRFSR,  0
         4063  6716           6716                    /RFSR
         4064  5662           JMP I   SRFSR
         4065  4336           JMS     SKIPER
         4066  0000   SRDBR,  0
         4067  6717           6717                    /RDBR
         4070  5666           JMP I   SRDBR
         4071  4336           JMS     SKIPER
         4072  0000   SSKEF,  0
         4073  6721           6721                    /SKEF
```

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         4074  5672           JMP I   SSKEF
         4075  2272           ISZ     SSKEF
         4076  5672           JMP I   SSKEF
         4077  0000   SSKCB,  0
         4100  6722           6722                    /SKCB
         4101  5677           JMP I   SSKCB
         4102  2277           ISZ     SSKCB
         4103  5677           JMP I   SSKCB
         4104  0000   SSKTD,  0
         4105  6723           6723                    /SKTD
         4106  5704           JMP I   SSKTD
         4107  2304           ISZ     SSKTD
         4110  5704           JMP I   SSKTD
         4111  0000   SSKTR,  0
         4112  6724           6724                    /SKTR
         4113  5711           JMP I   SSKTR
         4114  2311           ISZ     SSKTR
         4115  5711           JMP I   SSKTR
         4116  0000   SCLF,   0
         4117  6725           6725                    /CLF
         4120  5716           JMP I   SCLF
         4121  4336           JMS     SKIPER
         4122  0000   SCLT,   0
         4123  6712           6712                    /CLT
         4124  5722           JMP I   SCLT
         4125  4336           JMS     SKIPER
         4126  0000   SSDLE,  0
         4127  6726           6726                    /SDLE
         4130  5726           JMP I   SSDLE
         4131  4336           JMS     SKIPER
         4132  0000   SSBRM,  0
         4133  6727           6727                    /SBRM
         4134  5732           JMP I   SSBRM
         4135  4336           JMS     SKIPER

         4136  0000   SKIPER, 0                       /AN IOT SKIPPED WHICH SHOULD NEVER SKIP,
         4137  3170           DCA     ACLOC           /SAVE AC AT TIME OF FAILURE,
         4140  1037           TAD     M4              /GET POINTER TO IOT SUBROUTINE,
         4141  1336           TAD     SKIPER          /ENTRY AND SAVE,
         4142  3336           DCA     SKIPER
         4143  7001           IAC                     /GET POINTER TO IOT CODE,
         4144  1336           TAD     SKIPER
         4145  3147           DCA     BAD
         4146  1547           TAD I   BAD             /GET IOT CODE AND SAVE,
         4147  3147           DCA     BAD
         4150  1736           TAD I   SKIPER          /GET RETURN TO MAIN PROGRAM,
         4151  3336           DCA     SKIPER          /SAVE FOR EXIT,
         4152  1147           TAD     BAD             /PUT IOT IN EXTERNAL SCOPE LOOP,
         4153  3364           DCA     .+11
         4154  4526           ERROR                   /GO TO ERRORS,
         4155  6453           ER31B
                       /BD; FAILING IOT CODE; AC; CONTENTS OF AC AT TIME OF FAILURE,
         4156  5363           JMP     .+5             /EXECUTE IF SR5=1,
         4157  4520           LOOP5                   /IF NOT CHECK SR5,
         4160  5363           JMP     .+3             /EXECUTE IF SR5=1,
```

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```
4161  1170        TAD    ACLOC       /NO SCOPE LOOP, EXIT TO CORRECT
4162  5736        JMP I  SKIPER      /POINT IN MAIN PROGRAM,
4163  1170        TAD    ACLOC       /SCOPE LOOP, SET UP AC, THIS
4164  0000        0                  /MAY OR MAY NOT BE CORRECT CONDITION,
4165  5357        JMP    ,-6         /IOT CODE, NO FAILURE, CHECK SR5,
4166  5354        JMP    ,-12        /FAILURE, CALL ERRORS,
```

```
                  /LITTLE TEST ROUTINES,

                       /EACH TEST ROUTINE CHECKS FOR A SPECIFIC CONDITION,  IN
                  /GENERAL IF A SKIP IS BEING TESTED, A BIT WILL BE SET IN ERSTAT
                  /IF THE INSTRUCTION SKIPS,  IF DATA IS BEING TESTED, THE BIT IS
                  /SET IF THE DATA MATCHES THE COMPARATOR OR IN SOME CASES
                  /IF AT LEAST THOSE BITS ARE SET AS INDICATED BY THE COMPARATOR,
      4200             PAGE
4200  0000   TSKEFR,  0                  /IF SKEF SKIPS, SET A BIT
4201  4505            SKEF                /IN ERSTAT,
4202  7610            SKP CLA
4203  7201            CLA IAC
4204  4270            JMS      ERFX
4205  5600            JMP I    TSKEFR
4206  0000   TSKTDR,  0                  /IF SKTD SKIPS, SET A BIT
4207  4507            SKTD                /IN ERSTAT,
4210  7610            SKP CLA
4211  7201            CLA IAC
4212  4270            JMS      ERFX
4213  5606            JMP I    TSKTDR
4214  0000   TSKCBR,  0                  /IF SKCB SKIPS, SET A BIT
4215  4506            SKCB                /IN ERSTAT,
4216  7610            SKP CLA
4217  7201            CLA IAC
4220  4270            JMS      ERFX
4221  5614            JMP I    TSKCBR
4222  0000   TSKTRR,  0                  /IF SKTR SKIPS, SET A BIT
4223  4510            SKTR                /IN ERSTAT,
4224  7610            SKP CLA
4225  7201            CLA IAC
4226  4270            JMS      ERFX
4227  5622            JMP I    TSKTRR
4230  0000   TMSR,    0                  /IF MS HAS AT LEAST THOSE
4231  4501            RMSR                /BITS SET AS IN THE CONSTANT,
4232  0630            AND I    TMSR       /SET A BIT IN ERSTAT,
4233  7041            CIA
4234  1630            TAD I    TMSR
4235  2230            ISZ      TMSR
4236  7640            SZA CLA
4237  7410            SKP
4240  7001            IAC
4241  4270            JMS      ERFX
4242  5630            JMP I    TMSR
4243  0000   TFSR,    0                  /IF FS HAS AT LEAST THOSE
4244  4503            RFSR                /BITS SET AS IN THE CONSTANT,
4245  0643            AND I    TFSR       /SET A BIT IN ERSTAT,
4246  7041            CIA
4247  1643            TAD I    TFSR
4250  2243            ISZ      TFSR
4251  7640            SZA CLA
4252  7410            SKP
4253  7001            IAC
```

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```
4254  4270            JMS      ERFX
4255  5643            JMP I    TFSR

4256  0000   TWCR,    0                        /IF WC=CONSTANT, SET A
4257  4477            RWCR                      /BIT IN ERSTAT,
4260  7041            CIA
4261  1656            TAD I    TWCR
4262  7640            SZA CLA
4263  7410            SKP
4264  7001            IAC
4265  4270            JMS      ERFX
4266  2256            ISZ      TWCR
4267  5656            JMP I    TWCR
4270  0000   ERFX,    0                        /UPON ENTRY, A 1 IN AC 11
4271  3327            DCA      ERFX1            /SETS THE CORRECT BIT IN ERSTAT,
4272  1327            TAD      ERFX1            /A 0 IN AC 11 CLEARS THE CORRECT
4273  4314            JMS      ERSHFT           /BIT, BIT POSITION IS DETERMINED
4274  3326            DCA      ERFX0            /BY THE CURRENT VALUE OF ERTAL,
4275  7001            IAC
4276  7040            CMA
4277  4314            JMS      ERSHFT
4300  0162            AND      ERSTAT
4301  1326            TAD      ERFX0
4302  3162            DCA      ERSTAT
4303  1164            TAD      ERTAL            /CHECK FOR MINI SCOPE LOOP,
4304  1157            TAD      SLKNST
4305  7640            SZA CLA
4306  5311            JMP      .+3
4307  4515            CLEAR1                    /SCOPE LOOP, CLEAR ALL AND JUMP TO LAST SET STATEMENT,
4310  5560            JMP I    SLADDR
4311  2164            ISZ      ERTAL
4312  7000            NOP
4313  5670            JMP I    ERFX
4314  0000   ERSHFT,  0
4315  3330            DCA      ERFX2
4316  1164            TAD      ERTAL
4317  3331            DCA      ERFX3
4320  1330            TAD      ERFX2
4321  2331            ISZ      ERFX3
4322  7410            SKP
4323  5714            JMP I    ERSHFT
4324  7104            CLL RAL
4325  5321            JMP      .-4
4326  0000   ERFX0,   0
4327  0002   ERFX1,   0
4330  0000   ERFX2,   0
4331  0000   ERFX3,   0
```

```
                     /ROUTINES TO CLEAR ALL FLAGS SAFELY,
4332  0000   CLR1,    0                        /CLEAR1
4333  7302            CLA CLL                   /ENSURE TTO SOFTWARE FLAG
4334  1173            TAD      TTOFLG           /IS SET PRIOR TO CAF,
4335  7640            SZA CLA                   /GENERATE "INITIALIZE",
4336  5341            JMP      .+3
4337  6041            TSF
4340  5334            JMP      .-4
4341  7343            CLA CMA CLL
4342  3173            DCA      TTOFLG
4343  6002            IOF
4344  4512            CLT
4345  4476            LDBR                      /SINCE "INITIALIZE" WILL NOT CLEAR DB,
4346  4366            JMS      CLRX
4347  7240            CLA CMA
4350  3165            DCA      ALTENA
4351  6001            ION
4352  5732            JMP I    CLR1
4353  0000   CLR4,    0
4354  4357            JMS      CLR5
4355  3165            DCA      ALTENA
4356  5753            JMP I    CLR4
4357  0000   CLR5,    0
4360  7300            CLA CLL
4361  4511            CLF
4362  4366            JMS      CLRX
4363  7240            CLA CMA
4364  3165            DCA      ALTENA
4365  5757            JMP I    CLR5

4366  0000   CLRX,    0
4367  1163            TAD      KCMD
4370  4474            LCMR
4371  3162            DCA      ERSTAT
4372  1041            TAD      M14
4373  3164            DCA      ERTAL
4374  5766            JMP I    CLRX
4375  0000   SCDF,    0                        /HOMING CDF TO PF,
4376  0000   SCDF1,   0/CDF PF
4377  5775            JMP I    SCDF
```

```
                        /EXECUTIVE

                              /USING A TEST STATUS WORD, "TSTAT", EXEC DETERMINES WHICH
                              /TESTS ARE TO BE RUN.  EACH BIT IN "TSTAT" REPRESENTS ONE
                              /TEST.  (BIT N REPRESENTS TEST N+15 IN OCTAL.)
                              /"TSTAT" IS AUTOMATICALLY SET TO 7777 WHEN THE PROGRAM IS
                              /STARTED AT 200, WITH SR0=0.  IF SR0=1 AT TEST START TIME,
                              /USER MUST SELECT TESTS WITH MONITOR.  MONITOR THEN SETS THE
                              /SELECTED TEST BITS AND ENTERS EXEC AT REX.  ALL TESTS
                              /WILL BE RUN THE NUMBER OF TIMES SPECIFIED BY THEIR
                              /RESPECTIVE TALLY CONSTANTS UNLESS QUICK VERIFY IS SET.
                              /WHEN ALL TESTS ARE COMPLETE, EXEC GOES TO MONITOR.

                4400              PAGE

        4400   6224     EXEC,    RIF                    /GET INSTRUCTION FIELD;
        4401   3156              DCA     PRGFLD         /MODIFY HOMING CDF ROUTINE,
        4402   1156              TAD     PRGFLD
        4403   1050              TAD     KCDF
        4404   3741              DCA I   SCDFIP
        4405   6201              CDF     00             /SET UP INTERRUPT LINKAGE;
        4406   1340              TAD     KRMF           /PUT RMF IN 1,
        4407   3742              DCA I   P1
        4410   1335              TAD     KJMPI3         /JMP I 3 IN 2,
        4411   3743              DCA I   P2
        4412   1336              TAD     INTSEP         /INTSEV IN 3;
        4413   3744              DCA I   P3
        4414   4457              JMS I   SCDFP          /SET BACK TO CURRENT FIELD,
        4415   3157              DCA     SLKNST
        4416   3174              DCA     EXITFL         /CLEAR ERROR EXIT FLAG;
        4417   7240              CLA CMA                /SET ITO SOFT FLAG;
        4420   3173              DCA     TTOFLG
        4421   7430              SZL
        4422   5331              JMP     NOEXLP+2
        4423   4460              JMS I   AMG8EP         /PRINT TITLE MESSAGE
        4424   6776              MSG1
        4425   4760     INIT,    JMS I   EXECFP         /INTERROGATE USER,
        4426   3177              DCA     TSTNUM
        4427   5331              JMP     NOEXLP+2       /YES,
        4430   3176     REX,     DCA     TSTAT          /PUT AC IN TEST STATUS;
        4431   3174              DCA     EXITFL         /CLEAR ERROR EXIT FLAG
        4432   7240              CLA CMA                /SET TEST IN PROGRESS
        4433   3175              DCA     ACTFLG
        4434   3337              DCA     PASCNT         /CLEAR PASS COUNTER
        4435   1041     EXECL2,  TAD     M14            /SET TO CHECK FOR 12 TESTS
        4436   3345              DCA     EXTAL
        4437   1356              TAD     TSTP           /GET TEST STARTING ADDS, TABLE POINTER
        4440   3346              DCA     TSTPP
        4441   1357              TAD     TALP           /GET TEST TALLY TABLE POINTER
        4442   3347              DCA     TALPP
        4443   1024              TAD     K14
        4444   3177              DCA     TSTNUM         /SET TEST NUMBER TO 14
        4445   1176              TAD     TSTAT          /GET TEST STATUS AND PUT IN
        4446   3350              DCA     TSTAEX         /TEMPS.
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        4447   1350     EXECL1,  TAD     TSTAEX         /CHECK FOR A TEST BIT SET
        4450   7004              RAL
        4451   3350              DCA     TSTAEX         /SAVE TEST STATUS ROTATED,
        4452   2346              ISZ     TSTPP          /UPDATE POINTERS
        4453   2347              ISZ     TALPP
        4454   2177              ISZ     TSTNUM         /UPDATE TEST NUMBER
        4455   7420              SNL                    /RUN THIS TEST?
        4456   5306              JMP     NOTSRN         /NO
        4457   7604              LAS                    /YES TEST PROGRESS REPORT?
        4460   0362              AND     K2000
        4461   7640              SZA CLA
        4462   5270              JMP     NOTSPR         /NO
        4463   1177              TAD     TSTNUM         /YES, GET TEST NUMBER
        4464   4462              JMS I   EDITP          /INSERT IN MSG AND PRINT
        4465   3751              DCA I   M7P1P
        4466   4460              JMS I   AMG8EP
        4467   7056              MSG7

        4470   1747     NOTSPR,  TAD I   TALPP          /GET THIS TESTS TALLY AND SAVE
        4471   3352              DCA     TSTTAL
        4472   1746              TAD I   TSTPP          /GET TEST STARTING ADDRESS
        4473   3353              DCA     EXTEMP
        4474   4753     EXOMT,   JMS I   EXTEMP         /RUN TEST
        4475   7604              LAS                    /LOOP ON CURRENT TEST
        4476   0020              AND     K2
        4477   7640              SZA CLA
        4500   5274              JMP     EXOMT          /YES RUN TEST AGAIN
        4501   7604              LAS                    /SR0 SET? (QUICK VERIFY)
        4502   7710              SPA CLA                /NO, GO CHECK TEST TALLY
        4503   5306              JMP     NOTSRN         /YES SEE IF ALL TESTS RUN
        4504   2352              ISZ     TSTTAL         /NO DECREASE TALLY; TEST DONE?
        4505   5274              JMP     EXOMT          /NO RUN AGAIN
        4506   2345     NOTSRN,  ISZ     EXTAL          /YES 12 TESTS CHECKED?
        4507   5247              JMP     EXECL1         /NO CHECK FOR NEXT TEST
        4510   3177              DCA     TSTNUM
        4511   7604              LAS                    /YES.  LOOP ON ALL SELECTED TESTS
        4512   0361              AND     K1
        4513   7650              SNA CLA
        4514   5327              JMP     NOEXLP         /NO
        4515   2337              ISZ     PASCNT         /YES UPDATE PASS COUNTER
        4516   1337              TAD     PASCNT         /INSERT IN MSG AND
        4517   4462              JMS I   EDITP          /PRINT
        4520   3754              DCA I   M9P2P
        4521   1463              TAD I   EDTEMP
        4522   3755              DCA I   M9P1P
        4523   4460              JMS I   AMG8EP
        4524   7076              MSG9
        4525   4464              JMS I   BELLP          /BELL
        4526   5235              JMP     EXECL2         /RUN ALL OVER AGAIN
        4527   4460     NOEXLP,  JMS I   AMG8EP         /PRINT DONE MESSAGE,
        4530   7063              MSG8
        4531   7240              CLA CMA
        4532   3173              DCA     TTOFLG
        4533   3175              DCA     ACTFLG         /CLEAR TEST IN PROGRESS,
        4534   5461              JMP I   MONITP         /GO TO MONITOR
```

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        4535  5403    KJMPI3, 5403
        4536  5620    INTSEP, INTSEV
        4537  2000    PASCNT, 0
        4540  6244    KRMF,   RMF
        4541  4376    SCDFIP, SCDFI
        4542  0001    P1,     1
        4543  0002    P2,     2
        4544  0003    P3,     3
        4545  0000    EXTAL,  0
        4546  0000    TSTPP,  0
        4547  0000    TALPP,  0
        4550  0000    TSTAEX, 0
        4551  7061    M7P1P,  M7P1
        4552  0000    TSTTAL, 0
        4553  0000    EXTEMP, 0
        4554  7102    M9P2P,  M9P2
        4555  7101    M9P1P,  M9P1
        4556  6420    TSTP,   TST-1

        4557  6434    TALP,   TAL-1
        4560  6000    EXECFP, EXECFX
        4561  0001    K1,     1
        4562  2000    K2000,  2000
```

```
                     /MONITOR

                             /1,ENTERED UNDER ONE OF THE FOLLOWING CONDITIONS:
                             /1,1PROGRAM STARTED AT 200 WITH SR3=1,
                             /1,2ERROR OCCURS WITH SR2=0,
                             /1,3ANY FATAL ERROR OCCURS,
                             /1,4"ALTMODE" IS STRUCK ON THE KEYBOARD AFTER TEST START,
                             /1,5SELECTED TESTS ARE RUN TO COMPLETION,

        4600  4600            PAGE
        4600  6002    MONIT,  IOF              /INTERRUPT SYSTEM OFF,
        4601  4767            JMS I   SAVEPP   /SAVE SUBROUTINE ONFO,
        4602  3172            DCA     TRACE
        4603  3157            DCA     SLKNST
        4604  4460            JMS I   AMG8EP
        4605  7116            MSG13            /PRINT "M",
        4606  3366            DCA     TSTATM   /CLEAR TEST STATUS TEMP,
        4607  4772            JMS I   LISNP    /GET KEYBOARD,
        4610  7475            -303
        4611  4625            CS               /C STRING,
        4612  7454            -324
        4613  4642            TS               /T STRING,
        4614  7473            -305
        4615  4744            ES               /E STRING,
        4616  7474            -304
        4617  5000            DS               /"D" LOOK AT MEMORY,
        4620  7467            -311
        4621  4774            IS               /REPEAT DIALOGUE,
        4622  7455            -323
        4623  5071            SL               /SCOPE LOOP STRING,
        4624  0000            0
        4625  3364    CS,     DCA     TSTEM1   /"C" OR "EX", PUT AC IN TEMP,
        4626  1175            TAD     ACTFLG   /IF NO TEST IN PROGRESS: SYNTAX
        4627  7700            SMA CLA          /ERROR,
        4630  5771            JMP I   QUESP
        4631  4772            JMS I   LISNP    /GET KEYBOARD,
        4632  7563            -215             /"-",
        4633  4635            .+2
        4634  0000            0
        4635  4465            JMS I   CRLFP    /"C-" OR "EX-",
        4636  4770            JMS I   RESTPP   /RESTORE SUBROUTINES,
        4637  1364            TAD     TSTEM1   /GET TEMP AND PUT IN EXIT
        4640  3174            DCA     EXITFL   /GLAG,
        4641  5773            JMP I   INTOKP   /EXIT TO INTERRUPT SERVICE,
        4642  4772    TS,     JMS I   LISNP    /T STRING, GET KEYBOARD,
        4643  7456            -322
        4644  4700            TR               /"TR"
        4645  7477            -301
        4646  4727            TA               /"TA"
        4647  0001            1
        4650  4652            .+2              /"TN"
        4651  0000            0
        4652  4352            JMS     GET2N
        4653  1041            TAD     M14
```

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4654  7041           CIA                /SUM TO IS2 SENSITIVE COUNTER,
4655  3364           DCA     TSTEM1
4656  7120           CLL CML            /DETERMINE TEST BIT,
4657  7010           RAR
4660  2364           IS2     TSTEM1
4661  5257           JMP     .-2
4662  3364           DCA     TSTEM1     /SAVE TEST BIT,
4663  1364           TAD     TSTEM1     /EXCLUSIVE OR NEW TEST BIT
4664  0366           AND     TSTATM     /WITH OLD TEST STATUS,
4665  7104           CLL RAL
4666  7041           CIA
4667  1364           TAD     TSTEM1
4670  1366           TAD     TSTATM
4671  3366           DCA     TSTATM     /SAVE NEW TEST STATUS,
4672  4772           JMS I   LISNP      /GET INPUT,
4673  7563           -215               /"TNN-"
4674  4712           TCR
4675  7454           -324               /"TNNT-"
4676  4642           TS                 /GO BACK TO T STRING,
4677  0000           0
4700  7240    TR,    CLA CMA            /"TR" TRACE REQUESTED,
4701  3172           DCA     TRACE      /SET TRACE FLAG,
4702  4772           JMS I   LISNP      /GET KEYBOARD,
4703  7475           -303
4704  4625           CS                 /"TRC"
4705  7454           -324
4706  4642           TS                 /"TRT"
4707  7473           -305
4710  4744           ES                 /"TRE"
4711  0000           0
4712  1163    TCR,   TAD     KCMD
4713  4474           LCMR
4714  4501           RMSR
4715  0034           AND     K1000      /MUST BE AT ROT TO EXIT,
4716  7640           SZA CLA
4717  5323           JMP     .+4
4720  4460           JMS I   AMG8EP
4721  7130           MSG17
4722  5203           JMP     MONIT+3
4723  4515           CLEAR1             /NULL MAGTAPE INTERRUPTS, ION,
4724  4465           JMS I   CRLFP
4725  1366           TAD     TSTATM     /PUT TEST STATUS IN AC,
4726  5765           JMP I   REXP       /GO TO "EXEC,"
4727  7240    TA,    CLA CMA            /SET ALL TESTS,
4730  3366           DCA     TSTATM
4731  4772           JMS I   LISNP      /GET KEYBOARD,
4732  7454           -324
4733  4642           TS                 /"TAT"
4734  7563           -215
4735  4712           TCR                /"TA-"
4736  7450           -330
4737  4741           .+2
4740  0000           0
4741  1036           TAD     M2
4742  3366           DCA     TSTATM     /TAX
```

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4743  5331           JMP     TA+2
4744  4772    ES,    JMS I   LISNP      /E STRING,
4745  7450           -330               /"EX"
4746  4750           .+2
4747  0000           0
4750  7240           CLA CMA            /SET ERROR EXIT FLAG,
4751  5225           JMP     CS         /EXIT VIA C STRING,
4752  0000    GET2N, 0                  /ENTERED WITH THE FIRST NUMBER
4753  7104           CLL RAL            /IN AC RIGHT JUSTIFIED,
4754  7006           RTL                /SCALE 3 LEFT,
4755  3364           DCA     TSTEM1
4756  4772           JMS I   LISNP      /LOOK FOR ANOTHER OCATL NUMBER,
4757  0001           1
4760  4762           .+2
4761  0000           0
4762  1364           TAD     TSTEM1
4763  5752           JMP I   GET2N      /ADD 2 NUMBERS AND EXIT,
4764  0000    TSTEM1, 0
4765  4430    REXP,  REX
4766  0000    TSTATM, 0
4767  5662    SAVEPP, SAVEP
4770  5703    RESTPP, RESTP
4771  5106    QUESP,  QUES
4772  5112    LISNP,  LISN
4773  5653    INTOKP, INTOK

4774  4772    IS,    JMS I   LISNP
4775  7563           -215
4776  4425           INIT               /REINITIALIZE,
4777  0000           0

5000  1037    DS,    TAD     M4         /SET FOR 4 NUMBERS,
5001  3270           DCA     DS2
5002  4312           JMS     LISN       /LOOK FOR FIELD NUMBER,
5003  0001           1
5004  5006           .+2
5005  0000           0
5006  7104           CLL RAL            /SCALE AND SAVE,
5007  7006           RTL
5010  3267           DCA     DS1
5011  4312           JMS     LISN       /LOOK FOR |
5012  7506           -272
5013  5015           .+2
5014  0000           0
5015  1267           TAD     DS1        /COMPUTE CDF INSTRUCTION,
5016  1050           TAD     KCDF
5017  3236           DCA     DLF
5020  3267           DCA     DS1        /CLEAR TEMP FOR NEXT 4 INPUTS,
5021  4312    DLF2,  JMS     LISN       /GET KEYBOARD,
5022  0001           1
5023  5025           .+2                /OCTAL NUMBER,
5024  0000           0
5025  1267           TAD     DS1        /ADD TEMP,
5026  2270           IS2     DS2        /4TH NUMBER?
5027  7410           SKP
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5230   5235            JMP     .+5                   /NO, MOVE 3 PLACES LEFT,
5231   7104            CLL RAL
5232   7006            RTL                            /STORE,
5233   3267            DCA     DS1
5234   5221            JMP     DLF2                  /GO TO NEXT NUMBER,
5235   3267            DCA     DS1                   /YES, 4TH NUMBER, SAVE ADDRESS,
5236   6201   DLF,     CDF     /N                    /CHANGE TO REQUESTED DATA FIELD,
5237   1667            TAD I   DS1                   /GET CONTENTS,
5240   4457   DLF1,    JMS I   SCDFP                 /CHANGE BACK TO THIS PROGRAM FIELD,
5241   4462            JMS I   EDITP                 /EDIT AND INSERT IN
5242   3705            DCA I   M14P2P                /MESSAGE,
5243   1463            TAD I   EDTEMP
5244   3704            DCA I   M14P1P
5245   4460            JMS I   AMG8EP                /PRINT MESSAGE,
5246   7120            MSG14
5247   4312            JMS     LISN
5250   7563            -215                          /"D-"
5251   5065            DCR
5252   7566            -212
5253   5055            .+2                           /"DLF"
5254   0000            0
5255   1032            TAD     K215                  /"DLF", DUMP NEXT LOCATION,
5256   4467            JMS I   TYPEP
5257   2267            ISZ     DS1
5260   5236            JMP     DLF
5261   1236            TAD     DLF
5262   1023            TAD     K10
5263   3236            DCA     DLF
5264   5236            JMP     DLF
5265   4465   DCR,     JMS I   CRLFP                 /"D-", LOOK FOR NEW COMMAND,
5266   5711            JMP I   MONP
5267   0000   DS1,     0
5270   0000   DS2,     0
5271   4312   SL,      JMS     LISN                  /SCOPE LOOP STRING,
5272   2001            1                             /GET FIRST OCTAL DIGIT,
5273   5075            .+2
5274   0000            0
5275   4703            JMS I   GET2NP                /GET 2ND OCTAL DIGIT AND
5276   7041            CIA                           /NEGATE WHOLF NUMBER,
5277   1024            TAD     K14                   /BIAS BY 12 FOR BIT NUMER
5300   3157            DCA     SLKNST                /COMPARISON AND SAVE,
5301   5702            JMP I   .+1                   /THEN EXIT TO C STRING FOR
5302   4625            CS                            /CONTINUE CHECKS,
5303   4752   GET2NP,  GET2N
5304   7121   M14P1P,  M14P1
5305   7122   M14P2P,  M14P2
5306   4460   QUES,    JMS I   AMG8EP                /TYPE "?-", RING BELL,
5307   7104            MSG11
5310   5711            JMP I   MONP                  /RESTART MONITOR,
5311   4603   MONP,    MONIT+3
5312   0000   LISN,    0                             /GET KEYBOARD AND CHECK SYNTAX,
5313   6031            KSF
5314   5313            JMP     .-1
5315   6036            KRB
5316   3373            DCA     LISNT1                /SAVE INPUT
```

```
5317   1373            TAD     LISNT1
5320   1044            TAD     M203
5321   7640            SZA CLA
5322   7410            SKP
5323   5470            JMP I   CONTCP                /"C
5324   1373            TAD     LISNT1
5325   1045            TAD     M222
5326   7640            SZA CLA
5327   7410            SKP
5330   5471            JMP I   CONTRP                /"R
5331   1373            TAD     LISNT1
5332   4467            JMS I   TYPEP                 /ECHO,
5333   1373            TAD     LISNT1                /DO NOT CHECK "SPACE" IN SYNTAX,
5334   1374            TAD     M240
5335   7650            SNA CLA
5336   5313            JMP     LISN+1
5337   1712   LISN1,   TAD I   LISN                  /GET COMPARATOR,
5340   7450            SNA
5341   5306            JMP     QUES                  /IF 0, SYNTAX ERROR,
5342   7500            SMA
5343   5354            JMP     LISNUM                /IF >0, LOOK FOR OCTAL NUMBER,
5344   1373            TAD     LISNT1                /MATCH?
5345   7640            SZA CLA
5346   5351            JMP     LISN2                 /NO,
5347   3373            DCA     LISNT1                /YES,  FAKE TEMP CLEAR AND
5350   5365            JMP     LISN3                 /EXIT,
5351   2312   LISN2,   ISZ     LISN                  /UPDATE CALL POINTERS,
5352   2312            ISZ     LISN
5353   5337            JMP     LISN1                 /GET NEXT COMPARATOR,
5354   7200   LISNUM,  CLA                           /OCTAL NUMBER REQUIRED,
5355   1373            TAD     LISNT1
5356   1046            TAD     M260
5357   7710            SPA CLA
5360   5351            JMP     LISN2
5361   1373            TAD     LISNT1
5362   1047            TAD     M270
5363   7700            SMA CLA
5364   5351            JMP     LISN2                 /NOT AN OCTAL NUMBER
5365   2312   LISN3,   ISZ     LISN                  /YES, UPDATE CALL,
5366   1712            TAD I   LISN                  /GET RETURN ADDRESS,
5367   3312            DCA     LISN
5370   1373            TAD     LISNT1                /GET 0 OR OCTAL NUMBER CODE
5371   0022            AND     K7                    /MASK TO LOW ORDER 3 BITS,
5372   5712            JMP I   LISN                  /EXIT,
5373   0000   LISNT1,  0
5374   7540   M240,    -240
```

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```
                    /ERROR SERVICE ROUTINE.
                            /DECODES ERROR STATUS WORDS AND CARRIES OUT THE INDICATED
                    /ACTION.
                            /SAMPLE ERROR TABLE ENTRY:
                    /ER05C, STAT1   ERROR STATUS WORD,
                    /       STAT2   PRINT STATUS WORD,

                            /STATUS WORD BIT ASSIGNMENTS:
                    /STAT1  BIT     STATE   INDICATION
                            /0:     0       NON-FATAL ERROR
                            /       1       FATAL ERROR
                            /1:     0       NO EXIT ON "EX-",
                            /       1       EXIT ON "EX-",
                            /2-5:   N       TEST NUMBER -14 OCTAL(HEXADECIMAL)
                            /6-11:  NN      ANSCII FOR SUBTEST LETTER (6 BIT),

                    /STAT2  BIT             PRINT OUT THE FOLLOWING WHEN SET,
                            /0              IOT1 (11)
                            /1              IOT2 (12)
                            /2              GOOD (GD)
                            /3              BAD (BD)
                            /4              OLD (OD)
                            /5              WORD COUNT (WC)
                            /6              CURRENT ADDRESS (CA)
                            /7              COMMAND REGISTER (CM)
                            /8              FUNCTION AND STATUS 1 (FS)
                            /9              MAIN STATUS (MS)
                            /10             DATA BUFFER (DB)
                            /11             CONTENTS OF AC FOR SKIP ERROR (AC)

                    /"ERRORS MAY BE ENTERED IN ONE OF TWO WAYS:
                    /1.     COMPAR          GOES TO "ERRORS" IF "GOOD" NOT EQUAL TO "BAD",
                    /       ADDR            ADDRESS OF ERROR STATUS WORDS,
                    /
                    /2.     ERROR           MAY BE USED BY FATAL ERRORS ONLY,
                    /       ADDR

            5200            PAGE
    5200    0000    ERRORS, 0               /ENTER HERE WITH "ERROR"
    5201    7200            CLA             /ENTER HERE FROM "COMP" (PC PRESTORED)
    5202    1371            TAD     K4352
    5203    3466            DCA I   ERMSGP
    5204    1600            TAD I   ERRORS          /GET ERROR TABLE ADDRESS AND
    5205    3347            DCA     ERRPTR          /SAVE,
    5206    1747            TAD I   ERRPTR          /GET STAT 1,
    5207    7710            SPA CLA                 /NON-FATAL ERROR?
    5210    5232            JMP     FATERR          /NO, FATAL ERROR,
    5211    4241            JMS     QPRNT           /NON-FATAL ERROR, CHECK PRINTOUT,
    5212    4515            CLEAR1
    5213    4766            JMS I   QHALTP          /CHECK RETURN TO MONITOR,
    5214    2200            ISZ     ERRORS          /MOVE POINTER TO SUBTEST LOOP,
    5215    4520            LOOP5                   /CHECK SUBTEST LOOP,
    5216    5600            JMP I   ERRORS          /EXIT TO LOOP JUMP,
    5217    1174            TAD     EXITFL          /"EX-" PENDING?
```

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    5220    7700            SMA CLA
    5221    5232            JMP     .+7             /NO,
    5222    1747            TAD I   ERRPTR          /YES, DOES THIS ERROR REQUIRE
    5223    7004            RAL                     /"EX-" SERVICE?
    5224    7700            SMA CLA
    5225    5230            JMP     .+3             /NO, LEAVE EXITFL SET,
    5226    2200            ISZ     ERRORS          /YES, MOVE POINTER TO RECYCLE JUMP,
    5227    3174            DCA     EXITFL          /CLEAR "EX-" FLAG,
    5230    2200            ISZ     ERRORS          /MOVE POINTER ONE MORE POSITION,
    5231    5600            JMP I   ERRORS          /EXIT,

    5232    4460    FATERR, JMS I   AMGBEP          /FATAL ERROR, PRINT MSG,
    5233    7106            MSG12
    5234    4464            JMS I   BELLP
    5235    1373            TAD     K605            /PUT "FE" IN AC,
    5236    4254            JMS     PRNT            /PRINT ERROR MESSAGE,
    5237    3175            DCA     ACTFLG          /CLEAAR TEST IN PROGRESS FLAG,
    5240    5461            JMP I   MONITP          /GO TO MONITOR,
    5241    0000    QPRNT,  0                       /PRINTOUT?
    5242    7604            LAS
    5243    0033            AND     K400
    5244    7640            SZA CLA
    5245    5641            JMP I   QPRNT           /NO, EXIT,
    5246    1372            TAD     K522            /YES, PUT "ER" IN AC AND
    5247    4254            JMS     PRNT            /GENERATE ERROR PRINTOUT,
    5250    7240            CLA CMA                 /BACK BIAS ERROR TABLE POINTER,
    5251    1347            TAD     ERRPTR          /TO POINT TO STAT1,
    5252    3347            DCA     ERRPTR
    5253    5641            JMP I   QPRNT           /EXIT,

    5254    0000    PRNT,   0                       /GENERATE ERROR MESSAGE,
    5255    3750            DCA I   ERMP1P          /SAVE "FE" OR "ER",
    5256    1747            TAD I   ERRPTR          /GET TEST NUMBER FROM
    5257    4404            BSW                     /STAT1 AND PUT IN ERROR
    5260    0025            AND     K17             /MESSAGE,
    5261    1024            TAD     K14
    5262    4462            JMS I   EDITP
    5263    3751            DCA I   ERMP2P
    5264    1747            TAD I   ERRPTR          /GET SUBTEST LETTER FROM STAT1
    5265    4404            BSW                     /AND PUT IN ERROR MESSAGE
    5266    0374            AND     K7700           /AFTER APPENDING "SPACE" CODE,
    5267    1026            TAD     K40
    5270    3752            DCA I   ERMP3P
    5271    1200            TAD     ERRORS          /EDIT RETURN JUMP FOR "PC" PRINTOUT,
    5272    4462            JMS I   EDITP           /
    5273    3755            DCA I   ERMP5P
    5274    1463            TAD I   EDTEMP
    5275    3754            DCA I   ERMP4P
    5276    2347            ISZ     ERRPTR          /MOVE ERROR TABLE POINTER TO STAT2,
    5277    1040            TAD     M5              /SET COUNTER FOR 5 SYMBOLS
    5300    3356            DCA     PRCNT1          /BEFORE CR-LF,
    5301    1041            TAD     M14             /SET COUNTER FOR 12 SYMBOLS
    5302    3357            DCA     PRCNT2          /MAXIMUM,
    5303    1364            TAD     SYMPTP          /GET SYMBOL ROUTINE TABLE
    5304    3361            DCA     SYMBOL          /POINTER AND PUT IN TEMP,
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5305  1360              TAD     ERMPTP      /GET ERROR MESSAGE INSERT
5306  3362              DCA     PRMPT       /POINTER,
5307  7130              STL RAR
5310  3363              DCA     PRNTK
5311  7604              LAS                 /COMPLETE DUMP?
5312  0031              AND     K200
5313  7650              SNA CLA
5314  5317              JMP     ,+3
5315  7240              CLA CMA             /YES,FAKE STAT2 FULL,
5316  7410              SKP
5317  1747              TAD I   ERRPTR      /GET STAT2 AND PUT IN TEMP,
5320  3365              DCA     WHAT
5321  1365      PRNTLP, TAD     WHAT        /BIT BY BIT INSPECT STAT2 FOR
5322  7004              RAL                 /SYMBOL PRINTOUTS,  AS A
5323  3365              DCA     WHAT        /BIT IS SENSED SET, GO TO
5324  7420              SNL                 /SYMBOL ROUTINE AND INSERT
5325  5337              JMP     PRNTCK      /SYMBOL AND DATA IN
5326  1761              TAD I   SYMBOL
5327  3353              DCA     SYMADR
5330  4753              JMS I   SYMADR
5331  2356              ISZ     PRCNT1      /5 SYMBOLS PRINTED?
5332  5335              JMP     ,+3
5333  1367              TAD     K4300       /YES, INSERT 1 CR-LF IN SPACING,
5334  7410              SKP
5335  7130              STL RAR             /NO, INSERT 1 SPACE
5336  3363              DCA     PRNTK
5337  2361      PRNICK, ISZ     SYMBOL      /UPDATE SYMBOL TABLE POINTER,
5340  2357              ISZ     PRCNT2      /11 SYMBOLS CHECKED?
5341  5321              JMP     PRNTLP      /NO, CHECK AGAIN,
5342  1367              TAD     K4300       /YES, PUT CR-LF AND END
5343  3762              DCA I   PRMPT       /MSG CODE IN ERROR MSG,
5344  4460              JMS I   AMGBEP      /PRINT ERROR MESSAGE,
5345  6665      CONTC7, ERMSG
5346  5654              JMP I   PRNT        /EXIT
5347  0000      ERRPTR, 0                   /TEMP FOR STATUS WORD POINTER,
5350  6666      ERMP1P, ERMP1               /ERROR MESSAGE POINTERS: ERROR TYPE,
5351  6667      ERMP2P, ERMP2               /! TEST NUMBER
5352  6670      ERMP3P, ERMP3               /! SUBTEST LETTER-SPACE,
5353  0000      SYMADR, 0
5354  6673      ERMP4P, ERMP4               /!HIGH ORDER PC,
5355  6674      ERMP5P, ERMP5               /! LOW ORDER PC,
                                            /SYMBOL POINTER,
5356  0000      PRCNT1, 0                   /5 SYMBOL COUNTER,
5357  0000      PRCNT2, 0                   /12 SYMBOL COUNTER,
                                            /SYMBOL TABLE POINTER,
5360  6675      ERMPTP, ERMP5+1             /ERROR MESSAGE INSERT START POINTER,
5361  0000      SYMBOL, 0                   /SYMBOL TABLE POINTER TEMP,
5362  0000      PRMPT,  0                   /         /ERROR MESSAGE INSERT POINTER,
5363  0000      PRNTK,  0                   /SPACING CONSTANT,
5364  6405      SYMPTP, SYMPT

5365  0000      WHAT,   0                   /TEMP FOR STAT2 ROTATES,
5366  5400      QHALTP, QHALT               /POINTER TO RETURN TO MONITOR CHECK,
5367  4300      K4300,  4300
5370  4343      K4343,  4343
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5371  4352      K4352,  4352
5372  0522      K522,   522
5373  0605      K605,   605
5374  7700      K7700,  7700

      5400              PAGE
5400  0000      QHALT,  0                   /RETURN TO MONITOR?
5401  7604              LAS
5402  0034              AND     K1000
5403  7640              SZA CLA
5404  5600              JMP I   QHALT       /NO,
5405  6002              IOF                 /YES, TURN INTERRUPT OFF,
5406  1213              TAD     HALTCP      /PUT CONTINUE EXIT IN 0
5407  3000              DCA     0           /SO "C+" OR "EX+" EXITS TO
5410  5461              JMP I   MONITP      /HALTC, GO TO MONITOR,
5411  7200      HALTC,  CLA                 /CONTINUE,
5412  5600              JMP I   QHALT       /EXIT,
5413  5411      HALTCP, HALTC               /HALTC POINTER,

              /SYMBOL ROUTINES,
5414  0000      GD,     0                   /GOOD,
5415  1146              TAD     GOOD        /GET GOOD,
5416  4326              JMS     SYMSEV
5417  0407              0407                /"GD",
5420  5614              JMP I   GD
5421  0000      BD,     0
5422  1147              TAD     BAD         /GET BAD,
5423  4326              JMS     SYMSEV
5424  0402              0402                /"BD",
5425  5621              JMP I   BD
5426  0000      OD,     0
5427  1150              TAD     OLD         /GET OLD
5430  4326              JMS     SYMSEV
5431  0417              0417                /"OD",
5432  5626              JMP I   OD
5433  0000      WC,     0
5434  4477              RWCR                /GET WC,
5435  4326              JMS     SYMSEV
5436  0327              0327                /"WC",
5437  5633              JMP I   WC
5440  0000      CA,     0
5441  4500              RCAR                /GET CA
5442  4326              JMS     SYMSEV
5443  0103              0103                /"CA",
5444  5640              JMP I   CA
5445  0000      CM,     0
5446  4502              RCMR                /GET CM
5447  4326              JMS     SYMSEV
5450  1503              1503                /"CM",
5451  5645              JMP I   CM
5452  0000      FS,     0
5453  4503              RFSR                /GET FS
5454  4326              JMS     SYMSEV
5455  2306              2306                /"FS"
5456  5652              JMP I   FS
```

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          5457  0000   MS,       0
          5460  4501             RMSR                    /GET MS
          5461  4326             JMS       SYMSEV
          5462  2315             2315                    /"MS"
          5463  5657             JMP I     MS
          5464  0000   DB,       0
          5465  4504             RDBR                    /GET DB
          5466  4326             JMS       SYMSEV
          5467  0204             0204                    /"DB"
          5470  5664             JMP I     DB

          5471  0000   AC,       0
          5472  1170             TAD       ACLOC
          5473  4326             JMS       SYMSEV
          5474  0301             0301
          5475  5671             JMP I     AC
          5476  0000   I1,       0
          5477  1166             TAD       IOT1
          5500  4310             JMS       I1I2
          5501  6111             6111
          5502  5676             JMP I     I1
          5503  0000   I2,       0
          5504  1167             TAD       IOT2
          5505  4310             JMS       I1I2
          5506  6211             6211
          5507  5703             JMP I     I2
          5510  0000   I1I2,     0                       /ENTER FROM I1 OR I2,
          5511  0365             AND       K377          /CONVERT INST TO TAD POINTER
          5512  1034             TAD       K1000
          5513  3314             DCA       ,+1
          5514  0000             0                       /STORE TAD POINTER HERE,
          5515  7001             IAC                     /POINTER +1 WHICH IS ADDRESS
          5516  3314             DCA       ,-2           /OF IOT CODE,
          5517  1710             TAD I     I1I2          /GET SYMBOL CODE,
          5520  3323             DCA       ,+3           /PUT IN CALL TO SYMSEV,
          5521  1714             TAD I     ,-5           /GET IOT CODE,
          5522  4326             JMS       SYMSEV        /GO TO SYMBOL SERVICE,
          5523  0000             0                       /SYMBOL CODE GOES HERE,
          5524  2310             ISZ       I1I2          /UPDATE RETURN TO I1 OR I2,
          5525  5710             JMP I     I1I2          /RETURN,
          5526  0000   SYMSEV,   0                       /COMMON SYMBOL ROUTINE SERVICE,
          5527  3363             DCA       SYMTEM        /SAVE DATA,
          5530  1761             TAD I     ERMPP         /GET ERROR MESSAGE CURRENT POINTER,
          5531  3362             DCA       ERMSYM        /PUT ON THIS PAGE OF MEMORY,
          5532  1726             TAD I     SYMSEV
          5533  0377             AND       (77
          5534  1776             TAD I     (PRNTK
          5535  3762             DCA I     ERMSYM
          5536  2362             ISZ       ERMSYM
          5537  1726             TAD I     SYMSEV
          5540  0375             AND       (7700
          5541  1364             TAD       K72
          5542  3762             DCA I     ERMSYM
          5543  2362             ISZ       ERMSYM        /DATA,
          5544  1363             TAD       SYMTEM        /GET DATA,
```

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          5545  4462             JMS I     EDITP         /EDIT,
          5546  3363             DCA       SYMTEM        /SAVE LOW ORDER,
          5547  1463             TAD I     EDTEMP        /GET HIGH ORDER AND INSERT,
          5550  3762             DCA I     ERMSYM
          5551  2362             ISZ       ERMSYM        /UPDATE POINTER TO LOW ORDER
          5552  1363             TAD       SYMTEM        /DATA, GET LOW ORDER AND INSERT,
          5553  3762             DCA I     ERMSYM
          5554  2362             ISZ       ERMSYM        /UPDA1 POINTER TO SPACING,
          5555  1362             TAD       ERMSYM        /PUT CURRENT POINTER ON
          5556  3761             DCA I     ERMPP         /"ERRORS" MEMORY PAGE,
          5557  2326             ISZ       SYMSEV        /UPDATE RETURN,
          5560  5726             JMP I     SYMSEV        /EXIT,
          5561  5362   ERMPP,    PRMPT
          5562  0000   ERMSYM,   0
          5563  0000   SYMTEM,   0
          5564  0072   K72,      72
          5565  0377   K377,     377
```

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/GENERAL INTERRUPT HANDLER,

/CHECKS FOR TTO AND TTI INTERRUPTS AND SERVICES SAME,

```
5575  7700
5576  5363
5577  0077
      5600              PAGE

5600  3154  INTSEV,  DCA     SAVEAC      /SAVE AC AND LINK,
5601  7010           RAR
5602  3155           DCA     SAVEL
5603  6201           CDF     00          /GET FIELD 0 LOC 0
5604  1661           TAD  I  P0          /AND PUT IN THIS FIELD'S
5605  3000           DCA     0           /LOC 0 FOR INT RETURN,
5606  4457           JMS  I  SCDFP       /CHANGE TO THIS DF,
5607  6041  INTAGN,  TSF                 /TTO INTERRUPT?
5610  5215           JMP     .+5
5611  6042           TCF                 /YES, CLEAR HARDWARE FLAG
5612  7240           CLA CMA             /AND SET SOFTWARE FLAG,
5613  3173           DCA     TTOFLG
5614  5253           JMP     INTOK       /TRY TO EXIT,
5615  6031           KSF                 /NO, KEYBOARD INTERRUPT?
5616  5247           JMP     INTCON
5617  6036           KRB
5620  1044           TAD     M203
5621  7450           SNA
5622  5470           JMP  I  CONTCP      /↑C
5623  1243           TAD     M17
5624  7450           SNA
5625  5471           JMP  I  CONTRP      /↑R
5626  1244           TAD     M11
5627  7450           SNA
5630  5237           JMP     ALTIN       /ALT=233
5631  1245           TAD     M142
5632  7450           SNA
5633  5237           JMP     ALTIN       /ALT=375
5634  1246           TAD     M1
5635  7640           SZA CLA             /ALT=376
5636  5253           JMP     INTOK
5637  1165  ALTIN,   TAD     ALTENA      /ALT ENABLED?
5640  7650           SNA CLA
5641  5253           JMP     INTOK       /NO,
5642  5461           JMP  I  MONITP      /YES,
5643  7761  M17,     -17
5644  7767  M11,     -11
5645  7636  M142,    -142
5646  7777  M1,      -1
5647  1000  INTCON,  TAD     0
5650  3147           DCA     BAD
5651  4526           ERROR               /ILLEGAL INTERRUPT
5652  6451           FE31A               /FATAL ERROR,
             /BD! CONTENTS OF LOCATION 0; ALL OTHERS ARE CURRENT VALUES AND
             /MAY NOT APPLY,
```

```
5653  7300  INTOK,   CLA CLL             /NO, RESTORE AC AND LINK
5654  1155           TAD     SAVEL       /AND EXIT,
5655  7004           RAL
5656  1154           TAD     SAVEAC
5657  6001           ION
5660  5430           JMP  I  0
5661  0000  P0,      0
```

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                      /SAVE AND RESTORE COMMON SUBROUTINE INFORMATION ROUTINES,
                          /LOCATIONS TYPE, TYPTEM, CRLF, AMGBE, AMGBE1, AMGBE2,
                          /AMGBE3, EDIT, EDTEM, EDTEM1, EDTEM2, EDTEM3, SRMSR MUST BE SAVED AND RESTORED
                          /SINCE MONITOR MAY INTERRUPT THESE ROUTINES
                          /AND USE THEM ITSELF,
        5662  0000    SAVEP,   0
        5663  7200             CLA
        5664  1324             TAD     M20
        5665  3325             DCA     SAVEP1
        5666  1352             TAD     SRPTS
        5667  3326             DCA     SAVEP2
        5670  1331             TAD     SRHOLD
        5671  3327             DCA     SAVEP3
        5672  2326             ISZ     SAVEP2
        5673  2327             ISZ     SAVEP3
        5674  1726             TAD I   SAVEP2
        5675  3330             DCA     SAVEP4
        5676  1730             TAD I   SAVEP4
        5677  3727             DCA I   SAVEP3
        5700  2325             ISZ     SAVEP1
        5701  5272             JMP     .-7
        5702  5662             JMP I   SAVEP
        5703  0000    RESTP,   0
        5704  7200             CLA
        5705  1324             TAD     M20
        5706  3325             DCA     SAVEP1
        5707  1331             TAD     SRHOLD
        5710  3326             DCA     SAVEP2
        5711  1352             TAD     SRPTS
        5712  3327             DCA     SAVEP3
        5713  2326             ISZ     SAVEP2
        5714  2327             ISZ     SAVEP3
        5715  1727             TAD I   SAVEP3
        5716  3330             DCA     SAVEP4
        5717  1726             TAD I   SAVEP2
        5720  3730             DCA I   SAVEP4
        5721  2325             ISZ     SAVEP1
        5722  5313             JMP     .-7
        5723  5703             JMP I   RESTP
        5724  7760    M20,     -20
        5725  0000    SAVEP1,  0
        5726  0000    SAVEP2,  0
        5727  0000    SAVEP3,  0
        5730  0000    SAVEP4,  0
        5731  5731    SRHOLD,  .
        5732  0000             0
        5733  0000             0
        5734  0000             0
        5735  0000             0
        5736  0000             0
        5737  0000             0
        5740  0000             0
        5741  0000             0
        5742  0000             0
```

```
        5743  0000             0
        5744  0000             0
        5745  0000             0
        5746  0000             0
        5747  0000             0
        5750  0000             0
        5751  0000             0
        5752  5752    SRPTS,   .
        5753  6167             CRLF
        5754  2553             TYPE
        5755  2570             TYPTEM
        5756  2737             AMGBE
        5757  2776             AMGBE1
        5760  2753             AMGBE2
        5761  2777             AMGBE3
        5762  6105             EDIT
        5763  6132             EDTEM
        5764  6133             EDTEM1
        5765  6134             EDTEM2
        5766  6135             EDTEM3
        5767  4052             SRMSR
        5770  3541             SRBSW
        5771  3553             SRBSWT
        5772  4026             SLCMR
```

```
                              /EXECUTIVE ADDENDUM:

             6000             PAGE
      6000   0000    EXECFX,  0
      6001   4460             JMS I   AMG8EP        /WHAT DRIVE TO USE?
      6002   7026             MSG3                  /PUT DRIVE # IN DRIVE,
      6003   4257             JMS     KBOCT
      6004   5201             JMP     .-3
      6005   3304             DCA     DRIVE
      6006   4460    EFX1,    JMS I   AMG8EP        /7 OR 9 TRACK?
      6007   7033             MSG4                  /SET 1RK9 IF 9 TRACK,
      6010   4246             JMS     KB            /CLEAR IT IF 7,
      6011   1277             TAD     M267
      6012   7640             SZA CLA
      6013   5216             JMP     .+3
      6014   3161             DCA     TRK9
      6015   5224             JMP     EFX2
      6016   1151             TAD     TXXTM1
      6017   1300             TAD     M271
      6020   7640             SZA CLA
      6021   5206             JMP     EFX1
      6022   7040             CMA
      6023   3161             DCA     TRK9
      6024   1026    EFX2,    TAD     K40           /BITS 0-2, SET BIT 10=1, 11=0
      6025   1304             TAD     DRIVE         /AND PROGRAM
      6026   7112             CLL RTR               /FIELD IN 8ITS 6-8,
      6027   7012             RTR
      6030   1156             TAD     PRGFLD
      6031   3163             DCA     KCMD
      6032   1304             TAD     DRIVE         /PUT DRIVE AND TRACK INFO
      6033   4462             JMS I   EDITP         /IN INSTRUCTION MESSAGE,
      6034   1303             TAD     M2000
      6035   3674             DCA I   M6P1F
      6036   1161             TAD     TRK9
      6037   7640             SZA CLA
      6040   1031             TAD     K200
      6041   1276             TAD     K6740
      6042   3675             DCA I   M6P2P
      6043   4460             JMS I   AMG8EP        /PRINT INSTRUCTION MESSAGE,
      6044   7043             MSG6
      6045   5600             JMP I   EXECFX
      6046   0000    KB,      0                     /KEYBOARD IN,
      6047   6031             KSF
      6050   5247             JMP     .-1
      6051   6036             KRB
      6052   3151             DCA     TXXTM1
      6053   1151             TAD     TXXTM1
      6054   4467             JMS I   TYPEP
      6055   1151             TAD     TXXTM1
      6056   5646             JMP I   KB
      6057   0000    KBOCT,   0                     /LOOK FOR OCTAL NUMBER
      6060   4246             JMS     KB            /INPUT,
      6061   1046             TAD     M260
      6062   7710             SPA CLA
```

```
      6263   5657             JMP I   KBOCT
      6264   1151             TAD     TXXTM1
      6265   1047             TAD     M270
      6266   7700             SMA CLA
      6267   5657             JMP I   KBOCT
      6270   1151             TAD     TXXTM1
      6271   0022             AND     K7
      6272   2257             ISZ     KBOCT
      6273   5657             JMP I   KBOCT
      6274   7050    M6P1P,   M6P1
      6275   7052    M6P2P,   M6P2
      6276   6740    K6740,   6740
      6277   7511    M267,    -267
      6100   7507    M271,    -271
      6101   7462    M316,    -316
      6102   7447    M331,    -331
      6103   6000    M2000,   -2000
      6104   0000    DRIVE,   0                     /SELECTED DRIVE NUMBER,
```

```
                     /EDIT ROUTINE.
                     /CONVERTS A 4 DIGIT OCTAL NUMBER IN AC TO 2 PACKED ANSCII
                           /WORDS.  EXITS WITH LEAST SIGNIFICANT PORTION IN AC
                           /AND MOST SIGNIFICANT IN "EDTEM".
        6105  0000    EDIT,   0
        6106  3333            DCA     EDTEM1
        6107  1333            TAD     EDTEM1
        6110  4404            BSW
        6111  4316            JMS     EDIT1
        6112  3332            DCA     EDTEM
        6113  1333            TAD     EDTEM1
        6114  4316            JMS     EDIT1
        6115  5705            JMP I   EDIT
        6116  0000    EDIT1,  0
        6117  3334            DCA     EDTEM2
        6120  1334            TAD     EDTEM2
        6121  0022            AND     K7
        6122  3335            DCA     EDTEM3
        6123  1334            TAD     EDTEM2
        6124  7006            RTL
        6125  7004            RAL
        6126  0337            AND     K700
        6127  1335            TAD     EDTEM3
        6130  1336            TAD     K6060
        6131  5716            JMP I   EDIT1
        6132  0000    EDTEM,  0
        6133  0000    EDTEM1, 0
        6134  0000    EDTEM2, 0
        6135  0000    EDTEM3, 0
        6136  6060    K6060,  6060
        6137  0700    K700,   700


        6140  7200    CONTC,  CLA              /?C
        6141  3175            DCA     ACTFLG   /CLEAR ACTIVE FLAG
        6142  1000            TAD     0        /GET INTERRUPT LOC AND
        6143  3146            DCA     GOOD     /SAVE IN GOOD,
        6144  1160            TAD     SLADDR   /SAVE LAST SETN ADDRESS,
        6145  3147            DCA     BAD
        6146  1363            TAD     CONTC1   /PUT *C IN ERROR PRINTER,
        6147  3764            DCA I   CONTC2
        6150  1365            TAD     CONTC3   /PUT RETURN ADDRESS IN COMPARE,
        6151  3525            DCA I   COMPP
        6152  5766            JMP I   CONTC4   /GO TO COMPARE TO SAVE UP INFORMATION
        6153  6457    CONTC5, TR31D            /GOOD AND BAD SAVED AS ABOVE,
        6154  7000            NOP
        6155  1361            TAD     .+4
        6156  3764            DCA I   CONTC2   /PUT ERMSG BACK IN ERRORS,
        6157  4515            CLEAR1           /CLEAR ALL
        6160  4460            JMS I   AMGBEP   /PRINT ALL ERROR MESSAGE,
        6161  6665            ERMSG
        6162  5461            JMP I   MONITP   /GO TO MONITOR,
        6163  7124    CONTC1, MSG15
        6164  5345    CONTC2, CONTC7
```

```
        6165  6153    CONTC3, CONTC5
        6166  0514    CONTC4, CONTC8

                     /CARRIAGE RETURN - LINE FEED,

        6167  0000    CRLF,   0
        6170  7200            CLA
        6171  1032            TAD     K215
        6172  4467            JMS I   TYPEP
        6173  1377            TAD     K212
        6174  4467            JMS I   TYPEP
        6175  4467            JMS I   TYPEP
        6176  5767            JMP I   CRLF
        6177  0212    K212,   212
```

```
                    /SET UP ROUTINES; CALLING SEQUENCES FOLLOW,

                         /SET1
                         /CONSTANT TO BE STORED IN GOOD,
                         /CONSTANT TO BE LOADED INTO WC,
                         /CONSTANT TO BE LOADED INTO CA,
                         /DATA TO BE STORED IN CA+1 AND CA+2
                         /CONSTANT TO BE INCLUSIVE OR'ED WITH DRIVE, PROGRAM FIELD, MASTER BIT AND N TRACK
                    /DENSITY CONSTANT AND LOADED INTO CM,
                         /CONSTANT TO BE LOADED IN FR,

                         /SET 2  SAME AS SET 1 EXCEPT THAT THE CM CONSTANT IS NOT
                    /INCLUSIVLY OR'ED WITH THE DENSITY CONSTANT,

                         /SET 3  SAME AS SET 1 EXCEPT CA CONSTANT AND MEM
                    /DATA ARE NOT INCLUDED IN CALL,

                         /SET 4  SAME AS SET 3 EXCEPT CM CONSTANT IS NOT
                    /INCLUSIVE OR'ED WITH THE DENSITY CONSTANT,

         6200           PAGE
6200  0000   SET1R,  0                      /SET 1,
6201  7240           CLA CMA                /BIAS RETURN FOR AUTO INDEX,
6202  1200           TAD     SET1R
6203  4232           JMS     SETA
6204  4254           JMS     SETB
6205  4270           JMS     SETC
6206  4277           JMS     SETD
6207  0000   SET2R,  0                      /SET 2,
6210  7240           CLA CMA                /BIAS RETURN FOR AUTO INDEX,
6211  1207           TAD     SET2R
6212  4232           JMS     SETA
6213  4254           JMS     SETB
6214  4303           JMS     SETE
6215  4277           JMS     SETD
6216  0000   SET3R,  0                      /SET 3,
6217  7240           CLA CMA                /BIAS RETURN FOR AUTO INDEX,
6220  1216           TAD     SET3R
6221  4232           JMS     SETA
6222  4270           JMS     SETC
6223  4277           JMS     SETD
6224  0000   SET4R,  0                      /SET 4,
6225  7240           CLA CMA                /BIAS RETURN FOR AUTO INDEX,
6226  1224           TAD     SET4R
6227  4232           JMS     SETA
6230  4303           JMS     SETE
6231  4277           JMS     SETD

6232  0000   SETA,   0                      /SETA GENERAL SERVICE,
6233  3160           DCA     SLADDR         /STORE SCOPE LOOP STARTER,
6234  1160           TAD     SLADDR
6235  3017           DCA     AUTO17         /SAVE POINTER IN AUTO INDEX,
6236  1417           TAD I   AUTO17         /GET AND STORE GOOD CONSTANT,
6237  3330           DCA     SETT
```

```
6240  4352           JMS     INTERR         /CHECK FOR INTERMEDIATE ERRORS,
6241  4536           SKCB                   /WAIT FOR CONTROL NOT BUSY,
6242  5241           JMP     .-1
6243  1163           TAD     KCMD
6244  4474           LCMR
6245  4313           JMS     SETTST
6246  4510           SKTR
6247  5246           JMP     .-1            /WAIT FOR TRANSPORT READY,
6250  4515           CLEAR1                 /GENERATE CLT, ETC,
6251  1417           TAD I   AUTO17         /GET WC CONSTANT AND LOAD IT,
6252  4472           LWCR
6253  5632           JMP I   SETA           /EXIT
6254  0000   SETB,   0                      /SET B GENERAL SERVICE,
6255  1417           TAD I   AUTO17         /GET CA CONSTANT AND LOAD IT,
6256  4473           LCAR
6257  4500           RCAR                   /COMPUTE MEM DATA ADDRESS
6260  7001           IAC                    /(1 MORE THAN CA),
6261  3232           DCA     SETA
6262  1417           TAD I   AUTO17         /GET MEM DATA AND STORE IT
6263  3632           DCA I   SETA           /IN CA+1,
6264  1632           TAD I   SETA           /AND CA+2
6265  2232           ISZ     SETA
6266  3632           DCA I   SETA
6267  5654           JMP I   SETB           /EXIT,
6270  0000   SETC,   0                      /SET C GENERAL SERVICE,
6271  1417           TAD I   AUTO17         /GET CM CONSTANT AND INCLUSIVE
6272  4405           MQL                    /OR WITH DRIVE, PROGRAM FIELD, MASTER BIT
6273  1163           TAD     KCMD           /AND 222 BPI FOR 7 TRK, 800 BPI
6274  4426           MQA                    /(NOT CORE DUMP) FOR 9 TRK,
6275  4474           LCMR                   /THEN LOAD IT,
6276  5670           JMP I   SETC           /EXIT,
6277  0000   SETD,   0                      /SETD GENERAL SERVICE,
6300  1417           TAD I   AUTO17         /GET FR CONSTANT,
6301  4475           LFGR                   /THEN LOAD IT,
6302  5417           JMP I   AUTO017        /EXIT TO MAIN PROGRAM,
6303  0000   SETE,   0                      /SETE GENERAL SERVICE,
6304  1417           TAD I   AUTO17         /GET CM CONSTANT AND
6305  4405           MQL                    /INCLUSIVE OR WITH DRIVE AND
6306  1163           TAD     KCMD           /PROGRAM FIELD,  (DENSITY BITS
6307  0037           AND     M4             /ARE ZEROED IN KCMD,)
6310  4406           MQA
6311  4474           LCMR                   /THEN LOAD IT,
6312  5703           JMP I   SETE           /EXIT,

6313  0000   SETTST, 0                      /VERIFY SELECT REMOTE BIT IS CLEAR,
6314  7200           CLA
6315  3146           DCA     GOOD
6316  4501           RMSR
6317  0033           AND     K400
6320  7450           SNA
6321  5324           JMP     .+3            /INHIBIT TRACE PRINT IF OK
6322  4525           COMPAR
6323  6455           ER31C
6324  7000           NOP     /THERE IS NO SUBTEST LOOP,
6325  1330           TAD     SETT
```

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```
        6326  3146            DCA     GOOD
        6327  5713            JMP I   SETTST
        6330  0000    SET1,   0                       /TEMPORARY FOR GOOD,


                /CONTINUE ROUTINE, USED FOR CONTINUE AND CHANGE DIRECTION MODES,

                /CALLING SEQUENCE:
                /       SET1 (OR SET2)  THIS CALLS SET1(2) FOR FIRST FUNCTION,
                /       N       /GD
                /       N       /WC
                /       N       /CA
                /       N       /MEM
                /       COMMAND/CM
                /       FUNCTION/FR     THIS IS FIRST FUNCTION,
                /       INST            ANY LEGAL INSTRUCTION IS REQUIRED HERE
                /       CONTNU          THIS DOES NEXT FUNCTION IN CONTINUE OR CHANGE
                /       FUNCTION/FR     DIRECTION MODE USING PREVIOUS SET DATA,
                /

        6331  0000    CONTNR, 0                       /ENTER WITH "CONTNU",
        6332  1351            TAD     N10             /BACK BIAS POINTER TO GD CALL,
        6333  1331            TAD     CONTNR
        6334  3017            DCA     AUTO17          /PUT IN AUTO INDEX,
        6335  4352            JMS     INTERR          /CHECK FOR INTERMEDIATE ERRORS,
        6336  4506            SKCB                    /WAIT FOR CONTROL READY,
        6337  5336            JMP     .-1
        6340  4511            CLF                     /CLEAR FLAGS,
        6341  1417            TAD I   AUTO17          /GET WC AND LOAD IT,
        6342  4472            LWCR
        6343  4254            JMS     SETB            /LOAD CA AND MEM,
        6344  4270            JMS     SETC            /LOAD CM,
        6345  2017            ISZ     AUTO17          /UPDATE POINTER TO NEW FUNCTION,
        6346  2017            ISZ     AUTO17
        6347  2017            ISZ     AUTO17
        6350  4277            JMS     SETD            /GET IT, LOAD IT, AND EXIT,
        6351  7770    N10,    -10


        6352  0000    INTERR, 0                       /CHECK FOR INTERMEDIATE ERRORS,
        6353  4505            SKEF                    /WAIT FOR ERROR
        6354  7410            SKP
        6355  5360            JMP     .+3
        6356  4506            SKCB                    /OR CONTROL READY,
        6357  5353            JMP     .-4
        6360  1171            TAD     EXPEOF          /EXPECTED EOF IN LINK
        6361  7004            RAL
        6362  7240            CLA CMA
        6363  3171            DCA     EXPEOF          /CLEAR EXPECTED EOF
        6364  4505            SKEF                    /ERROR?
        6365  5752            JMP I   INTERR          /NO, OK
        6366  7620            SNL CLA                 /YES, EOF EXPECTED?
        6367  5752            JMP I   INTERR          /YES OK,
        6370  1160            TAD     SLADDR          /NO, PC TO BAD
        6371  3147            DCA     BAD
```

```
        6372  4526            ERROR                   /REPORT ERROR ER31E
        6373  6461            ER31E
                /BD: INDICATES THE ADDRESS OF THE 2ND SET COMMAND OR THE CONTNU COMMAND
                /WHICH FOLLOWED THE ERROR,
                /AN ERROR HERE INDICATES THAT A SUBTEST WHICH ISSUED 2 FUNCTIONS TO
                /THE CONTROL INDICATED AN ERROR AFTER THE FIRST FUNCTION WAS INITIATED
                /BUT PRIOR TO THE 2ND FUNCTION,
        6374  7000            NOP
        6375  4515            CLEAR1
        6376  5752            JMP I   INTERR  /RECOMMENDED RECOVERY IS TO PROCEED WITH SR 5
                /SET TO A 1 SO THAT THE SUBTEST WILL BE REINITIATED,
```

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```
6377  4460    CONTR,   JMS I   AMGBEP           /.R
6400  7126             MSG16
6401  3175             DCA     ACTFLG
6402  4515             CLEAR1
6403  4527             LOADPT
6404  5461             JMP I   MONITP
6405  5476    SYMPT,   I1                       /SYMBOL ROUTINE TABLE FOR ERRORS,
6406  5503             I2
6407  5414             GD
6410  5421             BD
6411  5426             OD
6412  5433             WC
6413  5440             CA
6414  5445             CM
6415  5452             FS
6416  5457             MS
6417  5464             DB
6420  5471             AC
6421  0203    TST,     TEST15                   /EXEC TEST POINTERS,
6422  0600             TEST16
6423  1200             TEST17
6424  1427             TEST20
6425  1600             TEST21
6426  2000             TEST22
6427  2400             TEST23
6430  2600             TEST24
6431  3000             TEST25
6432  3200             TEST26
6433  3400             TEST27
6434  3600             TEST30
6435  0000    TAL,     0                        /TEST TALLIES FOR T15
6436  7766             -12                      /T16
6437  7766             -12                      /T17
6440  7766             -12                      /T20
6441  7766             -12                      /T21
6442  7766             -12                      /T22
6443  7766             -12                      /T23
6444  7766             -12                      /T24
6445  7766             -12                      /T25
6446  7766             -12                      /T26
6447  7766             -12                      /T27
6450  7777             -1                       /T30
```

/ERROR TABLE FOR ERRORS OCCURRING OUTSIDE OF FORMAL TESTS, (CODE 31X)

```
6451  7501    FE31A,   7501
6452  7776             7776
6453  1502    ER31B,   1502
6454  7601             7601
6455  1503    ER31C,   1503
6456  7776             7776
6457  1504    TR31D,   1504
6460  1576             1576
6461  1505    ER31E,   1505
6462  7777             7777
```

/ERROR TABLE FOR ERRORS OCCURRING IN FORMAL TESTS, (CODE 15X-30X)

```
6463  0101    ER15A,   0101
6464  0034             0034
6465  0102    ER15B,   0102
6466  1434             1434
6467  0103    ER15C,   0103
6470  1434             1434
6471  0104    ER15D,   0104
6472  4034             4034
6473  0105    ER15E,   0105
6474  1434             1434
6475  0106    ER15F,   0106
6476  1434             1434
6477  0107    ER15G,   0107
6500  4034             4034
6501  0110    ER15H,   0110
6502  1074             1074
6503  0111    ER15I,   0111
6504  1434             1434
6505  0112    ER15J,   0112
6506  1434             1434
6507  0201    ER16A,   0201
6510  1576             1576
6511  0202    ER16B,   0202
6512  1576             1576
6513  0203    ER16C,   0203
6514  1576             1576
6515  0204    ER16D,   0204
6516  1576             1576
6517  0205    ER16E,   0205
6520  1576             1576
6521  0206    ER16F,   0206
6522  1576             1576
6523  0207    ER16G,   0207
6524  1576             1576
6525  0210    ER16H,   0210
6526  1576             1576
6527  0211    ER16I,   0211
6530  1576             1576
6531  0212    ER16J,   0212
```

```
6532  1576              1576
6533  2301   ER17A,    2301
6534  1776              1776
6535  2302   ER17B,    2302
6536  1776              1776
6537  2303   ER17C,    2303
6540  1776              1776
6541  2304   ER17D,    2304
6542  1776              1776
6543  0401   ER20A,    0401
6544  1576              1576
6545  0402   ER20B,    0402
6546  1576              1576
6547  0403   ER20C,    0403
6550  1576              1576
6551  0501   ER21A,    0501
6552  1576              1576
6553  0502   ER21B,    0502
6554  1576              1576
6555  0503   ER21C,    0503
6556  1576              1576
6557  0601   ER22A,    0601
6560  1434              1434
6561  0602   ER22B,    0602
6562  5434              5434
6563  0603   ER22C,    0603
6564  1434              1434
6565  0604   ER22D,    0604
6566  1434              1434
6567  0605   ER22E,    0605
6570  1434              1434
6571  0606   ER22F,    0606
6572  1434              1434
6573  0607   ER22G,    0607
6574  1534              1534
6575  0610   ER22H,    0610
6576  1534              1534
6577  0611   ER22I,    0611
6600  1434              1434
6601  0612   ER22J,    0612
6602  1434              1434
6603  0613   ER22K,    0613
6604  1434              1434
6605  0701   ER23A,    0701
6606  1434              1434
6607  0702   ER23B,    0702
6610  1434              1434
6611  0703   ER23C,    0703
6612  1434              1434
6613  0704   ER23D,    0704
6614  1534              1534
6615  0705   ER23E,    0705
6616  1534              1534
6617  0706   ER23F,    0706
6620  1434              1434
```

```
6621  1001   ER24A,    1001
6622  1434              1434
6623  1002   ER24B,    1002
6624  1434              1434
6625  1003   ER24C,    1003
6626  1434              1434
6627  1101   ER25A,    1101
6630  1776              1776
6631  1102   ER25B,    1102
6632  1776              1776
6633  3103   ER25C,    3103
6634  1601              1601
6635  3201   ER26A,    3201
6636  1600              1600
6637  1301   ER27A,    1301
6640  1576              1576
6641  1302   ER27B,    1302
6642  1576              1576
6643  1303   ER27C,    1303
6644  1576              1576
6645  1304   ER27D,    1304
6646  1576              1576
6647  1401   ER30A,    1401
6650  1576              1576
6651  1402   ER30B,    1402
6652  1576              1576
6653  1403   ER30C,    1403
6654  1576              1576
6655  1404   ER30D,    1404
6656  1576              1576
6657  1405   ER30E,    1405
6660  1576              1576
6661  1406   ER30F,    1406
6662  1576              1576
6663  1407   ER30G,    1407
6664  1576              1576
```

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```
                    /ERROR MESSAGE!

                    /THE FULL ERROR MESSAGE CALLED BY STA12=7777 WOULD BE!
                    /ERMSG, TEXT      "#*ERNNX  PC:NNNN  I1: NNNN   I2: NNNN   GD: NNNN   BD: NNNN   OD: NNNN
                    /                 WC: NNNN   CA: NNNN   CM: NNNN   FS: NNNN   MS: NNNN   DB: NNNN   AC: NNNN#"
      6665  0002    ERMSG,   0                     /SPACING AND SYMBOL FILL IN,
      6666  0000    ERMP1,   0                     /ERROR TYPE
      6667  0000    ERMP2,   0                     /TEST TYPE
      6670  0000    ERMP3,   0                     /SUBTEST LETTER, SPACE
      6671  4020             4020                  /SP,P
      6672  0372             0372                  /C,!
      6673  0000    ERMP4,   0                     /CONTENTS OF PC,
      6674  0000    ERMP5,   0                     /DITTO
                             DECIMAL               /ALL OTHER INFORMATION INSERTED HERE,
      6675  0000             ZBLOCK  65
      6676  0000             ZBLOCK  65
      6677  0000             ZBLOCK  65
      6700  0000             ZBLOCK  65
      6701  0000             ZBLOCK  65
      6702  0000             ZBLOCK  65
      6703  0000             ZBLOCK  65
      6704  0000             ZBLOCK  65
      6705  0000             ZBLOCK  65
      6706  0000             ZBLOCK  65
      6707  0000             ZBLOCK  65
      6710  0000             ZBLOCK  65
      6711  0000             ZBLOCK  65
      6712  0000             ZBLOCK  65
      6713  0000             ZBLOCK  65
      6714  0000             ZBLOCK  65
      6715  0000             ZBLOCK  65
      6716  0000             ZBLOCK  65
      6717  0000             ZBLOCK  65
      6720  0000             ZBLOCK  65
      6721  0000             ZBLOCK  65
      6722  0000             ZBLOCK  65
      6723  0000             ZBLOCK  65
      6724  0000             ZBLOCK  65
      6725  0000             ZBLOCK  65
      6726  0000             ZBLOCK  65
      6727  0000             ZBLOCK  65
      6730  0000             ZBLOCK  65
      6731  0000             ZBLOCK  65
      6732  0000             ZBLOCK  65
      6733  0000             ZBLOCK  65
      6734  0000             ZBLOCK  65
      6735  0000             ZBLOCK  65
      6736  0000             ZBLOCK  65
      6737  0000             ZBLOCK  65
      6740  0000             ZBLOCK  65
      6741  0000             ZBLOCK  65
      6742  0000             ZBLOCK  65
      6743  0000             ZBLOCK  65
      6744  0000             ZBLOCK  65
```

```
      6745  0000             ZBLOCK  65
      6746  0000             ZBLOCK  65
      6747  0000             ZBLOCK  65
      6750  0000             ZBLOCK  65
      6751  0000             ZBLOCK  65
      6752  0000             ZBLOCK  65
      6753  3000             ZBLOCK  65
      6754  0000             ZBLOCK  65
      6755  0000             ZBLOCK  65
      6756  0000             ZBLOCK  65
      6757  0000             ZBLOCK  65
      6760  0000             ZBLOCK  65
      6761  0000             ZBLOCK  65
      6762  0000             ZBLOCK  65
      6763  0000             ZBLOCK  65
      6764  0000             ZBLOCK  65
      6765  0000             ZBLOCK  65
      6766  0000             ZBLOCK  65
      6767  0000             ZBLOCK  65
      6770  0000             ZBLOCK  65
      6771  0000             ZBLOCK  65
      6772  0000             ZBLOCK  65
      6773  0000             ZBLOCK  65
      6774  0000             ZBLOCK  65
      6775  0000             ZBLOCK  65
                             ZBLOCK  65
                                                /(DONE BY ASSEMBLER,)

                    OCTAL
```

```
                    /MESSAGE TEXTS!

       6776  4324   MSG1,    TEXT    "#TMBE CONTROL TEST PART 2##MAINDEC-08-DHTMB-A#"
       6777  1570
       7000  0540
       7001  0317
       7002  1624
       7003  2217
       7004  1440
       7005  2405
       7006  2324
       7007  4020
       7010  0122
       7011  2440
       7012  6243
       7013  4315
       7014  0111
       7015  1604
       7016  0503
       7017  5560
       7020  7055
       7021  0410
       7022  2415
       7023  0255
       7024  0143
       7025  0000


       7026  4304   MSG3,    TEXT    "#DRIVE? "
       7027  2211
       7030  2605
       7031  7740
       7032  0000

       7033  4367   MSG4,    TEXT    "#7 OR 9 TRACK? "
       7034  4017
       7035  2240
       7036  7140
       7037  2422
       7040  0103
       7041  1377
       7042  4000


       7043  4323   MSG6,    TEXT    "#SETUP DRV N (N TRK)#"
       7044  0524
       7045  2520
       7046  4004
       7047  2226
       7050  4016
       7051  4050
       7052  1640
       7053  2422
```

```
       7054  1351
       7055  4300
             7043   MSG61=MSG6
             7050   M6P1=MSG6+5
             7052   M6P2=MSG6+7
                    /MSG7, TEXT       "#TEST NN#"
       7056  4324   MSG7,    4324
       7057  0523           0523
       7060  2440           2440
       7061  0000   M7P1,  0
       7062  4300           4300
       7063  4323   MSG8,    TEXT    "#SELECTED TESTS DONE#"
       7064  0514
       7065  0503
       7066  2405
       7067  0440
       7070  2405
       7071  2324
       7072  2340
       7073  0417
       7074  1605
       7075  4300

                    /MSG9, TEXT       "#PASS NNNN"
       7076  4320   MSG9,    4320
       7077  0123           0123
       7100  2340           2340
       7101  0000   M9P1,  0
       7102  0000   M9P2,  0
       7103  0000           0000
       7104  7743   MSG11,   TEXT    "?#"
       7105  0000

       7106  4343   MSG12,   TEXT    "##FATAL ERROR#"
       7107  0601
       7110  2401
       7111  1440
       7112  0522
       7113  2217
       7114  2252
       7115  0000

       7116  4333   MSG13,   TEXT    "#["
       7117  0000

                    /MSG14, TEXT      "  NNNN"
       7120  4040   MSG14,   4040
       7121  0000   M14P1,  0
       7122  0000   M14P2,  0
       7123  0000           0000

       7124  3603   MSG15,   TEXT    "+C"
       7125  0000

       7126  3622   MSG16,   TEXT    "+R"
```

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```
7127  0000
7130  4316    MSG17,  TEXT    "#NOT AT BOT!#"
7131  1724
7132  4001
7133  2440
7134  0217
7135  2441
7136  4300

7137  4324    MTM2,   TEXT    "#T30A!"
7140  6360
7141  0172
7142  0000

7143  2611    MTM3,   TEXT    "VISUALLY CHECK DRIVE OFF LINE AT BOT,"
7144  2325
7145  0114
7146  1431
7147  4003
7150  1005
7151  0313
7152  4004
7153  2211
7154  2605
7155  4017
7156  0606
7157  4014
7160  1116
7161  0540
7162  0124
7163  4002
7164  1724
7165  5600

7166  4324    MTM4,   TEXT    "#T30B: PUT ON LINE, NO VACUUM,"
7167  6360
7170  0272
7171  4020
7172  2524
7173  4017
7174  1640
7175  1411
7176  1605
7177  5440
7200  1617
7201  4026
7202  0103
7203  2525
7204  1556
7205  0000

7206  4324    MTM5,   TEXT    "#T30C-E: REMOVE WRITE PERMISS, PUT ON LINE WITH VACUUM,"
7207  6360
7210  0355
7211  0572
```

```
7212  4022
7213  0515
7214  1726
7215  0540
7216  2722
7217  1124
7220  0540
7221  2005
7222  2215
7223  1123
7224  2354
7225  4020
7226  2524
7227  4017
7230  1640
7231  1411
7232  1605
7233  4027
7234  1124
7235  1040
7236  2601
7237  0325
7240  2515
7241  5600

7242  4324    MTM6,   TEXT    "#T30F: AS SOON AS DRIVE STARTS TO MOVE, MANUALLY PUT IT OFF LINE,"
7243  6360
7244  0672
7245  4001
7246  2340
7247  2317
7250  1716
7251  4001
7252  2340
7253  0422
7254  1126
7255  0540
7256  2324
7257  0122
7260  2423
7261  4024
7262  1740
7263  1517
7264  2605
7265  5440
7266  1501
7267  1625
7270  0114
7271  1431
7272  4020
7273  2524
7274  4011
7275  2440
7276  1706
7277  0640
```

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```
7300  1411
7301  1605
7302  5600

7303  4324    MTM7,   TEXT    "#T3PG: WHEN PDP HALTS, DEPRESS START OR CLEAR/CONTINUE,"
7304  6360
7305  3772
7306  4027
7307  1005
7310  1640
7311  2004
7312  2040
7313  1001
7314  1424
7315  2354
7316  4004
7317  0520
7320  2205
7321  2323
7322  4023
7323  2401
7324  2224
7325  4017
7326  2240
7327  0314
7330  0501
7331  2257
7332  0317
7333  1624
7334  1116
7335  2505
7336  5600

7337  0000            0                    /TEST 25 BUFFER AREA,
7340  0000            0
7341  0000            0
              DECIMAL
7342  0000    T25BUF, ZBLOCK  41
7343  0000    T25BUF, ZBLOCK  41
7344  0000    T25BUF, ZBLOCK  41
7345  0000    T25BUF, ZBLOCK  41
7346  0000    T25BUF, ZBLOCK  41
7347  0000    T25BUF, ZBLOCK  41
7350  0000    T25BUF, ZBLOCK  41
7351  0000    T25BUF, ZBLOCK  41
7352  0000    T25BUF, ZBLOCK  41
7353  0000    T25BUF, ZBLOCK  41
7354  0000    T25BUF, ZBLOCK  41
7355  0000    T25BUF, ZBLOCK  41
7356  0000    T25BUF, ZBLOCK  41
7357  0000    T25BUF, ZBLOCK  41
7360  0000    T25BUF, ZBLOCK  41
7361  0000    T25BUF, ZBLOCK  41
7362  0000    T25BUF, ZBLOCK  41
7363  0000    T25BUF, ZBLOCK  41
```

```
7364  0000    T25BUF, ZBLOCK  41
7365  0000    T25BUF, ZBLOCK  41
7366  0000    T25BUF, ZBLOCK  41
7367  0000    T25BUF, ZBLOCK  41
7370  0000    T25BUF, ZBLOCK  41
7371  0000    T25BUF, ZBLOCK  41
7372  0000    T25BUF, ZBLOCK  41
7373  0000    T25BUF, ZBLOCK  41
7374  0000    T25BUF, ZBLOCK  41
7375  0000    T25BUF, ZBLOCK  41
7376  0000    T25BUF, ZBLOCK  41
7377  0000    T25BUF, ZBLOCK  41
7400  0000    T25BUF, ZBLOCK  41
7401  0000    T25BUF, ZBLOCK  41
7402  0000    T25BUF, ZBLOCK  41
7403  0000    T25BUF, ZBLOCK  41
7404  0000    T25BUF, ZBLOCK  41
7405  0000    T25BUF, ZBLOCK  41
7406  0000    T25BUF, ZBLOCK  41
7407  0000    T25BUF, ZBLOCK  41
7410  0000    T25BUF, ZBLOCK  41
7411  0000    T25BUF, ZBLOCK  41
7412  0000    T25BUF, ZBLOCK  41
              T25BUF, ZBLOCK  41

              OCTAL

      /WAIT ROUTINES!
              /THE CALLING SEQUENCE IS!
              /WAIT 1 (OR WAIT 2)
              /CONDITION BIT (1 OR 0) DESIRED FOR CONDITION CHECKED,
              /TEST CALL (MUST BE 2 LOCATIONS - USE A NOP IF NECESSARY)
              /THE TEST CALL MUST BE ONE OF THE LITTLE TEST ROUTINES USED
      /FOR SETTING ERSTAT,

              /WAIT ROUTINES EXIT WHEN THE CONDITION IS MET OR WHEN
      /TIME RUNS OUT, WHICHEVER OCCURS FIRST,  EXIT RETURNS TO LAST
      /ITEM IN CALL+1,

              /APPROXIMATE WAITING TIMES (DEPENDENT ON TEST CALL),

              /           MINIMUM        MAXIMUM
              /WAIT1   350 MILLISEC,   650 MILLISEC,
              /WAIT2   4,5 SEC,             9 SEC,

7413  0000    WAIT1R, 0                    /CHECK FOR CONDITION TO BE
7414  1213            TAD     WAIT1R       /SATISFIED 4096 TIMES,
7415  3225            DCA     WAITX
7416  7240            CLA CMA
7417  5226            JMP     WAITX+1

7420  0000    WAIT2R, 0                    /CHECK FOR CONDITION TO BE
7421  1220            TAD     WAIT2R       /SATISFIED 49K TIMES,
7422  3225            DCA     WAITX
7423  1300            TAD     N14
```

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```
7424  5226              JMP     WAITX+1

7425  2000     WAITX,   0                    /WAIT SERVICE,
7426  3220              DCA     WAIT2R       /STORE AC IN MULTIPLIER,
7427  3213              DCA     WAIT1R       /SET MULTIPLICAND TO 4096,
7430  1157              TAD     SLKNST       /GET SCOPE LOOP CONSTANT
7431  3276              DCA     WAITTM       /AND SAVE,
7432  3157              DCA     SLKNST       /ZERO SCOPE LOOP CONSTANT,
7433  1625              TAD I   WAITX        /GET CONDITION BIT AND SAVE,
7434  3275              DCA     WAITBT
7435  2225              ISZ     WAITX
7436  1625              TAD I   WAITX        /GET FIRST PART OF TEST CALL
7437  3244              DCA     .+5          /AND INSERT IN LOOP,
7440  2225              ISZ     WAITX
7441  1625              TAD I   WAITX        /GET SECOND PART OF TEST CALL
7442  3245              DCA     .+3          /AND INSERT IN LOOP,
7443  2225              ISZ     WAITX        /UPDATE TO EXIT POINTER,
7444  0000              0                    /FIRST TEST CALL WORD,
7445  0000              0                    /SECOND TEST CALL WORD,
7446  7240              CLA CMA               /BACK BIAS ERTAL,
7447  1164              TAD     ERTAL
7450  3164              DCA     ERTAL
7451  1677              TAD I   ERFX1P       /COMPARE CONDITION BIT
7452  7041              CIA                   /WITH REAL TEST BIT,
7453  1275              TAD     WAITBT
7454  7650              SNA CLA
7455  5262              JMP     .+5          /IF EQUAL EXIT,
7456  2213              ISZ     WAIT1R       /COUNT 1 OFF OF MULTIPLICAND,
7457  5244              JMP     .-13         /IF NOT 0, TEST AGAIN,
7460  2220              ISZ     WAIT2R       /IF 0, DECREASE MULTIPLIER,
7461  5244              JMP     .-15         /IF NOT 0, TEST AGAIN,
7462  1276              TAD     WAITTM       /IF 0, TIME IS UP,  RESTORE
7463  3157              DCA     SLKNST       /SCOPE LOOP CONSTANT,
7464  1157              TAD     SLKNST       /SCOPE LOOP WANTED FOR
7465  1164              TAD     ERTAL        /THIS BIT TEST,
7466  7640              SZA CLA
7467  5272              JMP     .+3
7470  4515              CLEAR1               /YES,  CLEAR ALL AND
7471  5560              JMP I   SLADDR       /EXIT TO LOOP START,
7472  2164              ISZ     ERTAL        /UPDATE ERTAL,
7473  7000              NOP
7474  5625              JMP I   WAITX        /EXIT,

7475  0000     WAITBT,  0
7476  0000     WAITTM,  0
7477  4327     ERFX1P,  ERFX1
7500  7764     N14,     -14
```

```
                      /INSTRUCTION DEFINITIONS:

                      /SPECIAL EXT MEM BASIC INSTRUCTIONS:

         6201          CDF=6201                  /CHANGE DATA FIELD
         6224          RIF=6224                  /READ INSTRUCTION FIELD,
         6244          RMF=6244                  /RESTORE MEMORY FIELD,

                      /TMBE IOT DEFINITIONS:

                          /LOAD IOT'S:

         4472          LWCR=JMS I SLWCRP         /AC TO WC, 0 TO AC,
         4473          LCAR=JMS I SLCARP         /AC TO CA, 0 TO AC,
         4474          LCMR=JMS I SLCMRP         /AC TO CM, 0 TO AC,
         4475          LFGR=JMS I SLFGRP         /AC0-3, 5 TO FR, 0 TO AC,
         4476          LDBR=JMS I SLDBRP         /AC TO DB, 0 TO AC

                          /READ IOT'S:

         4477          RWCR=JMS I SRWCRP         /0 TO AC, WC TO AC,
         4500          RCAR=JMS I SRCARP         /0 TO AC, CA TO AC,
         4501          RMSR=JMS I SRMSRP         /0 TO AC, MS TO AC,
         4502          RCMR=JMS I SRCMRP         /0 TO AC, CM TO AC,
         4503          RFSR=JMS I SRFSRP         /0 TO AC, FR TO AC0-4, GO BIT TO AC5, S1 TO AC6-11,
         4504          RDBR=JMS I SRDBRP         /0 TO AC, DB TO AC,

                          /CONTROL IOT'S:

         4505          SKEF=JMS I SSKEFP         /SKIP IF ERROR FLAG SET,
         4506          SKCB=JMS I SSKCBP         /SKIP IF CONTROL NOT BUSY,
         4507          SKTD=JMS I SSKTDP         /SKIP IF TRANSPORT DONE,
         4510          SKTR=JMS I SSKTRP         /SKIP IF TUR,
         4511          CLF=JMS I SCLFP           /0 TO REGISTERS AND FLAGS IF TUR; IF NOT 0 TO MTF, EF, SR
         4512          CLT=JMS I SCLTP      /POWER CLEAR TO TRANSPORT,
         4513          SDLE=JMS I SSDLEP         /SET DATA LATE ERROR,
         4514          SBRM=JMS I SSBRMP         /SET ONE BREAK REQUEST,

                      /INSTRUCTION PSEUDO MNEMONICS DEFINITIONS:

         4515          CLEAR1=JMS I CLR1P
         4516          CLEAR4=JMS I CLR4P
         4517          CLEAR5=JMS I CLR5P
         4527          LOADPT=JMS I LDPTP
         4530          SET1=JMS I SET1RP
         4531          SET2=JMS I SET2RP
         4532          SET3=JMS I SET3RP
         4533          SET4=JMS I SET4RP
         4534          CONTNU=JMS I CONTNP
         4535          TSKEF=JMS I TSKEFP
         4536          TSKTD=JMS I TSKTDP
         4537          TSKCB=JMS I TSKCBP
         4540          TSKTR=JMS I TSKTRP
```

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                4541      TMS=JMS I TMSP
                4542      TFS=JMS I TFSP
                4543      TWC=JMS I TWCP
                4544      WAIT1=JMS I WAIT1P
                4545      WAIT2=JMS I WAIT2P
                4520      LOOP5=JMS I LAS5P
                4521      LOOP6=JMS I LAS6P
                4522      LOOP7=JMS I LAS7P
                4523      LOOP8=JMS I LAS8P
                4524      LOOP9=JMS I LAS9P
                4525      COMPAR=JMS I COMPP
                4526      ERROR=JMS I ERRORP
                4404      BSW=JMS I SRBSWP
                4405      MQL=JMS I SRMQLP
                4406      MQA=JMS I SRMQAP

                          /PSEUDO CONSTANT DEFINITIONS:

                0000      OFFLIN=0000                  /FUNCTION REGISTER CONSTANTS:
                1000      REWIND=1000
                2000      READ=2000
                3000      RDCOMP=3000
                4000      WRITE=4000
                5000      WEOF=5000
                6000      SPCFWD=6000
                7000      SPCREV=7000
                0100      GO=100
                0200      ERLPCC=200
                0400      XGAP=400
                0000      EVEN=0000                    /COMMAND REGISTER CONSTANTS:
                0400      ODD=400
                0200      EFI=200
                0100      MTFI=100
                0000      D200=0000
                0001      D556=1
                0002      D800?=2
                0003      D800?=3
                          $$$$
```

```
0000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111110  00000000  00000000  00000000  00000000

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  00000000  00000000

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  00000000  00000000

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111110  00000000  00000000

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111110  00000000  00000000

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  11000000  00000000  00000000

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000000

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111100
```

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```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000000

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000

4600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

5200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

5400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5500  11111111  11111111  11111111  11111111  11111111  11111111  11111100  00000111

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000


6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


7000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

7200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

7400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7500  10000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

7600  11111111  11111111  11111111  11000000  00000000  00000000  00000000  00000000
7700  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

AC	5471	CONTNR	6331	ER16I	6527	ERFX1	4327
ACLOC	0170	CONTNU	4534	ER16J	6531	ERFX1P	7477
ACTFLG	0175	CONTR	6377	ER17A	6533	ERFX2	4330
ALTENA	0165	CONTRP	0071	ER17B	6535	ERFX3	4331
ALTIN	5637	CKC	3264	ER17C	6537	ERLPCC	0200
AMG8E	2737	CRCRDT	3310	ER17D	6541	ERMP1	6666
AMG8E1	2776	CRCXOR	3324	ER20A	6543	ERMP1P	5350
AMG8E2	2753	CRLF	6167	ER20B	6545	ERMP2	6667
AMG8E3	2777	CRLFP	0065	ER20C	6547	ERMP2P	5351
AMG8EP	0060	CS	4625	ER21A	6551	ERMP3	6670
AUTO10	0010	D200	0000	ER21B	6553	ERMP3P	5352
AUTO11	0011	D556	0001	ER21C	6555	ERMP4	6673
AUTO12	0012	D8007	0002	ER22A	6557	ERMP4P	5354
AUTO13	0013	D8009	0003	ER22B	6561	ERMP5	6674
AUTO14	0014	DB	5464	ER22C	6563	ERMP5P	5355
AUTO15	0015	DCH	5065	ER22D	6565	ERMPP	5561
AUTO16	0016	DLF	5036	ER22E	6567	ERMPTP	5360
AUTO17	0017	DLF1	5040	ER22F	6571	ERMSG	6665
BAD	0147	DLF2	5021	ER22G	6573	ERMSGP	0266
BD	5421	DRIVE	6104	ER22H	6575	ERMSYM	5562
BELL	2571	DS	5000	ER22I	6577	ERR1P	0532
BELLP	0064	DS1	5067	ER22J	6601	ERROR	4526
BSW	4404	DS2	5070	ER22K	6603	ERRORP	0126
CA	5440	EDIT	6105	ER23A	6605	ERRORS	5200
CDF	6201	EDIT1	6116	ER23B	6607	ERRPTR	5347
CLEAR1	4515	EDITP	0062	ER23C	6611	ERSHFT	4314
CLEAR4	4516	EDTEM	6132	ER23D	6613	ERSTAT	0162
CLEAR5	4517	EDTEM1	6133	ER23E	6615	ERTAL	0164
CLF	4511	EDTEM2	6134	ER23F	6617	ES	4744
CLR1	4332	EDTEM3	6135	ER24A	6621	EVEN	0000
CLR1P	0115	EDTEMP	0063	ER24B	6623	EXEC	4400
CLR4	4353	EFI	0200	ER24C	6625	EXECFP	4560
CLR4P	0116	EFX1	6006	ER25A	6627	EXECFX	6000
CLR5	4357	EFX2	6024	ER25B	6631	EXECL1	4447
CLR5P	0117	ER15A	6463	ER25C	6633	EXECL2	4435
CLRX	4366	ER15B	6465	ER26A	6635	EXECP	0007
CLT	4512	ER15C	6467	ER27A	6637	EXITFL	0174
CM	5445	ER15D	6471	ER27B	6641	EXOMT	4474
COMP	0473	ER15E	6473	ER27C	6643	EXPEOF	0171
COMPAR	4525	ER15F	6475	ER27D	6645	EXTAL	4545
COMPF	0524	ER15G	6477	ER30A	6647	EXTEMP	4553
COMPP	0125	ER15H	6501	ER30B	6651	FATERR	5232
CONTC	6140	ER15I	6503	ER30C	6653	FE31A	6451
CONTC1	6163	ER15J	6505	ER30D	6655	FS	5452
CONTC2	6164	ER16A	6507	ER30E	6657	GD	5414
CONTC3	6165	ER16B	6511	ER30F	6661	GET2N	4752
CONTC4	6166	ER16C	6513	ER30G	6663	GET2NP	5103
CONTC5	6153	ER16D	6515	ER31B	6453	GO	0100
CONTC7	5345	ER16E	6517	ER31C	6455	GOOD	0146
CONTC8	0514	ER16F	6521	ER31E	6461	HALTC	5411
CONTCP	0070	ER16G	6523	ERFX	4270	HALTCP	5413
CONTNP	0134	ER16H	6525	ERFX2	4326	I1	5476

Symbol	Value	Symbol	Value	Symbol	Value	Symbol	Value
I1I2	5510	LAS5	1141	M316	6151	NOTSRN	4526
I2	5503	LAS5P	0120	M331	6152	NSTR	3773
INIT	4425	LAS6	1147	M4	0037	NSTRP	3775
INTAGN	5607	LAS6P	0121	M40	0042	NSTRUC	3757
INTCON	5647	LAS7	1155	M43	0043	OD	5426
INTERR	6352	LAS7P	0122	M5	0040	ODD	0400
INTOK	5653	LAS8	1163	M50	3177	OFFLIN	0000
INTOKP	4773	LAS8P	0123	M6P1	7050	OLD	0150
INTSEP	4536	LAS9	1171	M6P1P	6074	P0	5661
INTSEV	5600	LAS9P	0124	M6P2	7052	P1	4542
IOT1	0166	LCAR	4473	M6P2P	6075	P2	4543
IOT2	0167	LCMR	4474	M7	0470	P3	4544
IS	4774	LDBR	4476	M77	1356	PARCAR	3235
K1	4561	LDPT	1742	M7P1	7061	PASCNT	4537
K10	0023	LDPTP	0127	M7P1P	4551	PRCNT1	5356
K100	0030	LFGR	4475	M9P1	7101	PRCNT2	5357
K1000	0034	LISN	5112	M9P1P	4555	PRGFLD	0156
K14	0024	LISN1	5137	M9P2	7102	PRMPT	5362
K17	0025	LISN2	5151	M9P2P	4554	PRNT	5254
K2	0020	LISN3	5165	MONIT	4600	PRNTCK	5337
K20	1177	LISNP	4772	MONITP	0061	PRNTK	5363
K200	0031	LISNT1	5173	MONP	5111	PRNTLP	5321
K2000	4562	LISNUM	5154	MQA	4436	PRNTP	0533
K207	2576	LOADPT	4527	MQL	4405	QHALT	5400
K212	6177	LOOP5	4520	MS	5457	QHALTP	5366
K215	0032	LOOP6	4521	MSG1	6776	QPRNT	5241
K2252	2535	LOOP7	4522	MSG11	7104	QUES	5106
K3	0472	LOOP8	4523	MSG12	7106	QUESP	4771
K377	5565	LOOP9	4524	MSG13	7116	RCAR	4500
K4	0021	LWCR	4472	MSG14	7120	RCMR	4502
K40	0026	M1	5646	MSG15	7124	RDBR	4504
K400	0033	M10	0471	MSG16	7126	RDCOMP	3000
K4040	0035	M100	1357	MSG17	7132	READ	2000
K4300	5367	M11	5644	MSG3	7026	RESTP	5703
K4324	0536	M14	0041	MSG4	7033	RESTPP	4770
K4343	5370	M142	5645	MSG6	7043	REWIND	1000
K4352	5371	M14P1	7121	MSG61	7043	REX	4430
K522	5372	M14P1P	5104	MSG7	7056	REXP	4765
K605	5373	M14P2	7122	MSG8	7063	RFSR	4503
K6360	6136	M14P2P	5105	MSG9	7076	RIF	6224
K6740	6076	M17	5643	MTFI	0100	RMF	6244
K7	0022	M2	0036	MTM2	7137	RMSR	4501
K700	6137	M20	5724	MTM3	7143	RWCR	4477
K72	5564	M2000	6103	MTM4	7166	SAVEAC	0154
K77	0027	M203	0044	MTM5	7236	SAVEL	0155
K7700	5374	M222	0045	MTM6	7242	SAVEP	5662
K8	6046	M240	5174	MTM7	7333	SAVEP1	5725
K80CT	6057	M260	0046	N10	6351	SAVEP2	5726
KCDF	0050	M267	6077	N14	7500	SAVEP3	5727
KCMD	0163	M270	0047	N400	3350	SAVEP4	5730
KJMPI3	4535	M271	6100	NOEXLP	4527	SAVEPP	4767
KRMF	4540	M3	3351	NOTSPN	4470	SBRM	4514

Symbol	Value	Symbol	Value	Symbol	Value	Symbol	Value
SCDF	4375	SRCARP	0100	T15J	0342	T22EX4	2134
SCDFI	4376	SRCMR	4056	T15LS1	0445	T22EX5	2135
SCDFIP	4541	SRCMRP	0102	T15LS2	0457	T22EX6	2136
SCDFP	0057	SRDBR	4066	T15TM1	0444	T22F	2137
SCLF	4116	SRDBRP	0104	T15X1	0367	T22G	2200
SCLFP	0111	SRFSR	4062	T15X2	0370	T22GL	2212
SCLT	4122	SRFSRP	0103	T15X3	0371	T22H	2236
SCLTP	0112	SRHOLD	5731	T15X4	0372	T22I	2262
SDLE	4513	SRMQA	3557	T15X5	0373	T22J	2314
SET1	4530	SRMQAP	0006	T15X6	0374	T22JK	2335
SET1R	6200	SRMQL	3554	T16A	0601	T22JKI	2350
SET1RP	0130	SRMQLP	0005	T16B	0641	T22JKJ	2360
SET2	4531	SRMQLT	3566	T16C	0645	T22K	2321
SET2R	6207	SRMSR	4052	T16D	0652	T22L7P	2374
SET2RP	0131	SRMSRP	0101	T16E	0660	T22LP7	2165
SET3	4532	SRPTS	5752	T16F	0665	T22LS	2171
SET3R	6216	SRWCR	4042	T16G	0673	T23A	2401
SET3RP	0132	SRWCRP	0077	T16H	0677	T23B	2407
SET4	4533	SSBRM	4132	T16I	0705	T23C	2415
SET4R	6224	SSBRMP	0114	T16J	0711	T23D	2425
SET4RP	0133	SSDLE	4126	T17A	1201	T23E	2433
SETA	6232	SSDLEP	0113	T17AL1	1206	T23EX1	2455
SETB	6254	SSKCB	4077	T17ATM	1212	T23EX2	2510
SETC	6270	SSKCBP	0106	T17B	1234	T23F	2443
SETD	6277	SSKEF	4072	T17C	1275	T23FR1	2473
SETE	6303	SSKEFP	0105	T17CL1	1301	T23FR2	2476
SETI	6330	SSKTD	4104	T17CLP	1424	T23FR3	2526
SETIST	6313	SSKTDP	0107	T17CP	1423	T23FR4	2531
SKCB	4506	SSKTR	4111	T17CTM	1375	T24A	2601
SKEF	4505	SSKTRP	0110	T17CTP	1425	T24B	2636
SKIPER	4136	START	0200	T17D	1327	T24C	2666
SKTD	4507	SYMADR	5353	T17DCK	1400	T24EX1	2720
SKTR	4510	SYMBOL	5361	T17DP	1426	T24T1	2736
SL	5071	SYMPT	6405	T17L7P	1355	T25A	3027
SLADDR	0160	SYMPTP	5364	T17LP6	1273	T25ASL	3045
SLCAR	4022	SYMSEV	5526	T17LP7	1413	T25B	3103
SLCARP	0073	SYMTEM	5563	T20A	1430	T25BUF	7342
SLCMR	4026	T15A	0204	T20B	1457	T25BUP	3176
SLCMRP	0074	T15B	0215	T20C	1512	T25C	3144
SLDBR	4036	T15C	0225	T21A	1601	T25CCK	3167
SLDBRP	0076	T15D	0240	T21B	1633	T25TM2	3175
SLFGR	4032	T15E	0253	T21C	1667	T26A	3205
SLFGRP	0075	T15EX1	0400	T22A	2001	T26ASL	3243
SLKNST	0157	T15EX2	0413	T22B	2021	T26SC1	3253
SLWCR	4016	T15EX3	0417	T22C	2044	T27A	3404
SLWCRP	0072	T15EX4	0423	T22D	2064	T27B	3411
SPCFWD	6000	T15EX5	0434	T22DE	2101	T27C	3420
SPCREV	7000	T15EX6	0437	T22DE1	2111	T27D	3431
SHRSW	3541	T15F	0262	T22DE2	2131	T27EX1	3473
SHRSWP	0004	T15G	0277	T22DEI	2117	T27EX2	3517
SHRSWT	3553	T15H	0313	T22DEJ	2122	T30A	3601
SRCAR	4046	T15I	0326	T22E	2072	T30B	3645

T30C	3656	TSPREP	0756
T30D	3673	TSPREV	1046
T30E	3706	TST	6421
T30F	3721	TST17P	1422
T30FIN	3753	TST22P	2345
T30FOK	3727	TSTAEX	4550
T30G	4000	TSTAT	0176
TA	4727	TSTATM	4766
TAL	6435	TSTEM1	4764
TALP	4557	TSTNUM	0177
TALPP	4547	TSTP	4556
TCR	4712	TSTPP	4546
TEST15	0203	TSTTAL	4552
TEST16	0600	TTOFLG	0173
TEST17	1200	TWC	4543
TEST20	1427	TWCP	0143
TEST21	1600	TWCR	4256
TEST22	2000	TXXTM1	0151
TEST23	2400	TXXTM2	0152
TEST24	2600	TXXTM3	0153
TEST25	3000	TYPE	2553
TEST26	3200	TYPEP	0067
TEST27	3400	TYPTEM	2570
TEST30	3600	WAIT1	4544
TFS	4542	WAIT1P	0144
TFSP	0142	WAIT1R	7413
TFSR	4243	WAIT2	4545
TMOFWD	1000	WAIT2P	0145
TMOFWP	0755	WAIT2R	7420
TMS	4541	WAITBT	7475
TMSP	0141	WAITTM	7476
TMSR	4230	WAITX	7425
TR	4700	WC	5433
TR31D	6457	WEOF	5000
TRACE	0172	WHAT	5365
TRK9	0161	WRITE	4000
TRPP	0534	XBUFF	0051
TS	4642	XGAP	0400
TSKCB	4537	YBUFF	3336
TSKCBP	0137		
TSKCBR	4214		
TSKEF	4535		
TSKEFP	2135		
TSKEFR	4200		
TSKTD	4536		
TSKTDP	0136		
TSKTDR	4206		
TSKTR	4540		
TSKTRP	0140		
TSKTRR	4222		
TSPFWD	1102		
TSPFWP	0757		

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 38 SECONDS

4K CORE USED