IDENTIFICATION

Product Code:	MAINDEC-09-Q4AF-D
Product Name:	TC59 Instruction Test
Date Revised:	January 14, 1969
Maintainer:	Diagnostic Group
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1. ABSTRACT

The TC59 Instruction Test is a series of incremental subtests designed to aid in the checkout and maintenance of the TC59 Magnetic Tape System.

2. REQUIREMENTS

2.1 Equipment

PDP-9 or PDP-9/L
TC59
TU20, 7 or 9 TRACK DRIVE

2.2 Storage

2.3 Preliminary Programs

All processor tests should run in their entirety before attempting to run the TC59 Instruction Test.

3. LOADING PROCEDURE

3.1 Method

The TC59 Instruction Test is a MACRO-9 .ABS Format binary tape.
Place the tape in the PTR
Set ADDRESS to 17720
Press I/O RESET
Press READ IN

4. STARTING PROCEDURE

4.1 Control Switch Settings

AC switches 14 to 17 may be utilized to select a specific test when starting the program. When the program reaches the last test, it will re-cycle, beginning with the first test selected by SWS 14-17.

SWS 14, 15, 16, 17	Test Description	Approximate Execution Time (in seconds)
0 0 0 0	IOT Test Part 1	1
0 0 0 1	COMMAND Register Bit and Data	18
0 0 1 0	Data Buffer Bit and Data	66
0 0 1 1	Data Channel Transfer Direction and Extended Memory Data Break	23
0 1 0 0	IOT Test Part 2	1
0 1 0 1	Partial Command Decoding	1
0 1 1 0	Initial Tape Motion	13
0 1 1 1	Combined Functions	5
1 0 0 0	Write Parity Test	5
1 0 0 1	Read Parity and Error Detection	10
1 0 1 0	API Static Test AC SW2 must = 1	1
1 0 1 1	Error Functions	32
1 1 0 0	CRC Generation Test AC SW12 = 1 (9 track only)	6
1 1 0 1	Change Direction and Continue Mode	8
1 1 1 0	Manual Intervention Tests AC SW10 = 1	(operator dependent)

AC SW 2 = 1 Test Automatic Priority Interrupt

Extended Memory Select utilized AC SWS3, 4, and 5. Set them to indicate the last 4K of memory available. The minimum memory configuration that should be selected with a PDP-9 is 8K (AC SW3-5 = 001).

SWS 3, 4, 5		Memory Tested	SWS 3, 4, 5		Memory Tested
000	=	4K	100	=	20K
001	=	8K	101	=	24K
010	=	12K	110	=	28K
011	=	16K	111	=	32K

AC SW6 = 1	Ring Bell if error occurs during a scope loop
AC SW7 = 1	Remain in HALT mode during a scope loop
AC SW8 = 1	Restore NORMAL mode and stop (exit scope loop)
AC SW9 = 1	Repeat test now selected (not to be considered a scope loop)
AC SW10 = 1	Execute manual intervention test
AC SW12 = 0	7 track drive
AC SW12 = 1	9 track drive

4.2 Starting Address

The TC59 Instruction test starts at address 0200.

4.3 Program and/or Operator Action

Set ADDRESS to 00200

Set AC SW3, 4, 5 to select memory

Set AC SW2 = 1 if API is to be tested.

Set AC SW10 = 1 if manual intervention test is to be executed.

Set AC SW12 = 1 if drive is 9 TRACK (0 if drive is 7 track).

Press I/O RESET

Press START

The program will type the initial test number selected and as it proceeds from test to test will type each test number. As hardware option tests are executed, each option test will indicate specifically if it has not been run. (i.e., if API is not selected (AC SW2 = 0) TEST will type "API NOT TESTED".)

5. OPERATING PROCEDURE

5.1 Operational Switch Settings

SW6 = 1 is Ring Bell if error occurs during scope loop

SW7 = 1 is remain in HALT mode during scope loop.

SW8 = 1 is Restore Normal mode and Halt (Exit Error Scope Mode).

5.2 Manual Intervention Test

If this test is selected, the user is required to perform certain operations. The nature of these operations will be described in the form of messages on the teletype.

6. ERRORS

All hardware malfunctions detected by the TC59 Instruction Test will result in an error coded typeout and a processor halt. This sequence may then be followed by a fixed "Scope Loop". It is important to note that not all of the error information printed is pertinent for every error. When an error occurs, it is necessary to first refer to the program listing and read the commentary that describes the sequence under test; then, after it has been determined what the expected result should have been,

the user can reference the error typeout. This will indicate the contents of the various sources of information at the time of the error.

Each error typeout will contain the following information:

TEST	ADRS		(AC)	(WC)	(CA)	COMD	STAT	CADATA
a.	b.	c.	d.	e.	f.	g.	h.	i.

a. TEST - A letter code which indicates the category of test that failed.

TSIOTS	=	IOT test (Part 1)
CMDATS	=	Command register bit and data test
DBDATS	=	Data buffer bit and data test
DCHCTS	=	Data channel transfer direction
IOTES2	=	IOT test (Part 2)
CDECOD	=	Partial command decoding
TAPEMO	=	Initial tape motion
TESFNS	=	Combined functions
WRTPAR	=	Write parity test
TESTPE	=	Read parity test
APITST	=	Automatic priority interrupt test
ERRFUN	=	Error functions
CRCTES	=	CRC generation test
CHNGDC	=	Change direction and continue test
MANTST	=	Manual intervention test

b. ADRS — The starting address of the subtest that contains the sequence of instructions where the error occurred.

c. — This number is the contents of a temporary storage location called "GDDATA". This location is used for several different functions and is necessary to refer to the subtest in question to determine the nature of its contents.

d. AC — The contents of the accumulator when the error condition was realized.

e. WC — The contents of the Word Count location.

f. CA — The contents of the Current Address location.

g. COMD — The contents of the Magtape Command Register.

h. STAT — The contents of the Magtape Status Register.

i. CADATA — The contents of the location which the current Address location points to.

6.1 Error Halts and Description

The starting address of each error routine is included as part of the error typeout information. Refer to the program listing for a complete description of the sub test being performed at the time of the failure.

6.2 Error Recovery

After every error typeout the processor will halt. The contents of the AC at this point indicates the final address of the subtest that failed. The address typed on the teleprinter indicates the starting address of the test that failed.

At this point in the program you may

a. Restart the program from address 0200, or

b. Press CONTINUE and the program will enter a scope mode loop.

The Scope mode loop has two phases. The first phase entered in the scope loop is HALT MODE, that is, the program will do all the initialization necessary to set up the test without actually doing it and then HALT. Press CONTINUE and the test will be executed, status information (not necessarily the MT STATUS REGISTER) loaded into the AC, and then a second HALT reached. This phase allows for the initial conditions and the final conditions to be checked individually under almost static operation. Now, the second phase of the scope loop which is the HIGH SPEED MODE can be entered by pressing CONTINUE. This phase causes the program to continually recycle the test that failed and allows for troubleshooting using a scope.

If AC SW6 = 1, the teletype bell will ring each time an error occurs.

If AC SW7 = 1, the program will reset the scope mode to normal operation and then HALT.

If AC SW8 = 1, the program will remain in HALT MODE during scope loop.

Once the Scope mode is entered, it is not possible to stop the program unless the scope mode is reset using AC SW8 = 1. If for any reason the program is stopped while in Scope mode and AC SW8 was not set, then the program tape must be reloaded.

9. TEST DESCRIPTION

Test		
0	IOT Test (Part 1)	Tests for the existence of all possible Magtape IOT's
1	Command Register Test	Test to see that all command combinations may be loaded into command register.
2	Data Buffer Bit Test	Test to see that all bit combinations may be loaded and read back from the data buffer.
3	Data Channel Transfer	Test for the correct direction of data transfers during READ, WRITE, and READ/COMPARE.
4	IOT Test (Part 2)	Further tests are made on the IOT's now that the command register and data buffer are known to operate correctly.
5	Partial Command Decoding	Test the command decoding of the backspace, rewind, and write commands.

6	Initial Tape Motion	Test the command decoding and tape motion of write from beginning of tape (BOT), backspace to BOT, read from BOT, space forward from BOT, Read/ Compare from BOT, and write End-of-File.
7	Combined Functions	Test for the correct operation of different series of commands, i.e., write, backspace, read or write two records, write EOF, backspace to BOT.
10	Write Parity	Test that an incrementing pattern can be written at odd and even parity.
11	Read Parity	Test ability to read odd and even parity by writing an incrementing pattern in each parity and reading it back in the opposite parity.
12	API Static Test	Test for correct operation of the Automatic Priority Interrupt during Magtape operation if AC SW2 = 1.
13	Error Functions	Test to make certain that all error conditions will be indicated in the status register.
14	CRC Generation Test	Test for correct operation of the CRC during 9 track operation.
15	Change Direction and Continue Mode	Test for the correct operation of command sequences which require the tape transport to move in both forward and reverse directions
16	Manual Intervention Test	Test for the correct operation of the LOCAL/REMOTE switches, drive number selection switch and the write lock ring interlocked.

```
                .TITLE TC59IT
                .ABS
/TC 59 INSTRUCTION TEST TAPE 1
/COPYRIGHT 1968, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
/STARTING ADDRESS IS @200
/AC SWS 13 TO 17 SELECT STARTING TEST
/TEST REQUIRES THAT DRIVE 0 BE ON LINE
/WRITE ENABLED AND AT LOAD POINT (BOT)
/IF DRV@ IS 9TRK SW 12 MUST=1
/IF API IS TO BE TESTED SW2 MUST=1
/FOR EXTENDED MEMORY USE SWS 3,4,5
/TO RE-EXECUTE A SINGLE TEST SW9=1
/
/TEST       DESCRIPTION
/0          IOT TEST PART 1
/1          COMMAND REGISTER BIT AND DATA
/2          DATA BUFFER BIT AND DATA
/3          DATA CHANNEL CONTROL AND TRANSFER DIRECTION
/4          IOT TEST PART 2
/5          PARTIAL COMMAND DECODING
/6          INITIAL TAPE MOTION TESTS
/7          COMBINED FUNCTIONS TEST
/10         WRITE PARITY TEST
/11         READ PARITY ERROR TEST
/12         API STATIC TEST
/13         ERROR FUNCTIONS
/14         CRC TEST 9TRK ONLY
/15         CHANGE DIRECTION AND CONTINUE MODE
/16         MANUAL INTERVENTION UNIT SELECT TESTS
/
/SWITCH USAGE FOR ERRORS
/IF AN ERROR OCCURS A SCOPE LOOP IS FORCED
/ERROR=ERROR TYPEOUT THEN HALT
/PRESS CONTINUE - SETUP - HALT
/PRESS CONTINUE - EXECUTE TEST HALT
/PRESS CONTINUE - HIGH SPEED SCOPE LOOP
/YOU HAVE THE FOLLOWING OPTIONS
/1- RING BELL IF ERROR STILL OCCURS SW6=1
/2- STAY IN THE DC OR SLOW SCOPE MODE SW7=1
/3- TO BRING THE TEST TO AN ORDERLY HALT-RESTART SW8=1
/PRESSING CONTINUE AFTER THIS HALT CAUSES SAME TEST TO BE RESTARTED
/4- DEPRESS STOP-IO RESET RESTART FROM 200
/
                .EJECT
```

```
                        /MAGTAPE IOT DEFINITIONS
                        /
          707352        MTRS=707352                    /READ STATUS
          707312        MTRC=707312                    /READ COMMAND
          707341        MTSF=707341                    /SKIP MAGTAPE FLAG
          707321        MTCR=707321                    /SKIP CONTROL READY
          707301        MTTR=707301                    /SKIP DRIV READY
          707326        MTLC=707326                    /CLR AND LOAD COMMAND
          707304        MTGO=707304                    /TAPE GO
          707322        MTAF=707322                    /MAG TAPE CLEAR FLAGS
          707324        LCM=707324                     /LOAD COMMAND NO CLEAR
          707324        MTCM=LCM                       /JAM TRNSFER 6-7-0
          707404        LDB=707404                     /LOAD DATA BUFFER MAINTENANCE
          707412        RDB=707412                     /READ DATA BUFFER MAINTENANCE
          707401        SDF=707401                     /SET DATA FLAG MAINTENANCE
          000032        WCLOC=32                       /WORD COUNT IS IN 32
          000033        CALOC=33                       /CURRENT ADDRESS IS 33
          000045        APILOC=45                      /API BREAKS TO 45
          000207        BELL=207
          007700        FAKECA=7700
                        /LOCATIONS FROM 100 UP FOR TEST
                        /TEMPORARY STORAGE LOCATIONS
00100                           .LOC 140
00100     000000        GDDATA  0
00101     000000        REGIS   0
00102     000000        BITMSK  0
00103     000000        BITNUM  0
00104     000000        ERSERR  0
00105     000000        TWOERR  0
00106     000000        TESCNT  0
00107     000000        SPACEC  0
00110     000000        PASCTR  0
                        /
                                .EJECT
```

```
00200                          .LOC 200
00200    100324       INSTES   JMS RESTOR           /SET UP FOR FIRST ERROR
00201    750004                LAS
00202    507556                AND (37              /GET START TEST NUMBER
00203    040106                DAC TESCNT           /SAVE IT
00204    347557                TAD (-TESTK
00205    741100                SPA                  /TEST SELECTED AVAILABLE
00206    600211                JMP .+3              /YES
00207    740040                HLT                  /NOT VALID TEST
00210    600200                JMP INSTES           /TRY AGAIN
                      /
00211    207560       STRTST   LAC (TESTEX
00212    100455                JMS TYPET            /TYPE TEST
00213    200106                LAC TESCNT
00214    100557                JMS TY2OCT           /TYPE XX
00215    200106                LAC TESCNT           /GET TEST NUMBER
00216    340246                TAD TESTBL           /+ TABLE ADDRS
00217    040245                DAC TESTDX           /TO GET TO JMS
00220    420245                XCT* TESTDX          /DO NEXT TEST
00221    750004                LAS
00222    507561                AND (400)
00223    740200                SZA                  /CYCLE ON THIS TEST
00224    600220                JMP .-4              /YES
00225    440106                ISZ TESCNT           /+1 TEST NUMBER
00226    200106                LAC TESCNT
00227    347562                TAD (-TESTK
00230    741100                SPA                  /END OF TESTS
00231    600211                JMP STRTST           /NO DO NEXT
00232    104062                JMS RAKBOT
00233    600200                JMP INSTES           /START OVER FROM SWS
                      /ROTATE BITMSK RIGHT 1 POSITION
                      /IF MASK ANDED AC = 0 SKIP EXIT
00234    600234       PMSKRT   JMP .
00235    200102                LAC BITMSK
00236    744020                RCR                  /ROTATE 1 POS RIGHT
00237    040102                DAC BITMSK                   /RESTORE
00240    520234                AND* PMSKRT                  /MASK BIT LIMITS
00241    741200                SNA                  /DONE ALL
00242    440234                ISZ PMSKRT                   /YES EXTRA +1 EXIT
00243    440234                ISZ PMSKRT                   /+1 FOR MASK
00244    620234                JMP* PMSKRT                  /EXIT JMS +2 OR +3 END BITS
                      /
                               .EJECT
```

```
                        /TABLE OF TESTS CURRENTLY
                        /AVAILABLE IN THE TC59 INSTRUCTION TEST
001245  000247          TESTBX  .+2
001246  000247          TESTBL  .+1
001247  100733                  JMS TSTOTS              /TEST 8 OUT INS PART 1
001250  101312                  JMS CMDATS              /COMMAND REG BIT AND DATA
001251  101243                  JMS DBUATS              /DATA BUFFER BIT AND DATA
001252  101634                  JMS DCHCTS              /DATA CHANNEL CONTROL TEST
001253  102275                  JMS IOTES2
001254  102424                  JMS CDFCOD
001255  102627                  JMS TAPEMO              /TAPE MOTION TEST
001256  103351                  JMS TESENS              /COMBINED FUNCTIONS
001257  103113                  JMS WRTPAR              /TEST WRITE PARITY
001260  103152                  JMS TESTPE              /TEST READ PARITY ERR
001261  104141                  JMS APITST              /API STATIC TEST
001262  105245                  JMS ERRFUN              /TEST ERROR FUNCTIONS
001263  105634                  JMS CRCTES              /9 TRACK CRC TEST
001264  107041                  JMS CHNGDC
001265  106175                  JMS MAPTST
                        /
        000017          TESTN=.-TESTBL-1
                        /
001305                          .LOC TESTBL+37
                        /
001305  000307          ERRDEX  0
001306  000307          ERRCOD  .+1
001307  542604                  .ASCII  'XX '<177>
001310  077400
001311  000312          CRLFTX  .+1
001312  064257                  .ASCII  <15><12><177>
001313  700000
001314  064252          TESTEX  .ASCII  <15><12>'TEST '<177>
001315  442646
001316  521017
001317  700000
                        /
                                .EJECT
```

```
                        /TEST FOR INITIAL EXISTENCE OF
                        /SOME OF THE TC59 IOT INSTRUCTIONS
                        /
00700                           .LOC 700
00700   600700          TSTIOTS JMP .
00701   207443                  LAC TSTXM0
00702   040101                  DAC BEGIS
00703   140102                  DZM BITMSK              /IT IS NOT A BIT TEST
00704   777000                  LAW -1 00
00705   040111                  DAC PASCTR
                        /
00706   200712                  LAC TSMTCR+2
00707   040100                  DAC GODATA
                        /TC59 INSTRUCTION TEST
                        /IOT INSTRUCTIONS PART 1
                        /TEST FOR EXISTENCE OF ALL POSSIBLE IOT'S
                        /SOME TESTS CANNOT REALLY BE MADE TILL LATER
                        /FIRST TEST MTCR TO SKIP
                        /
00710   750000          TSMTCR  CLA
00711   400453                  XCT DSCOPE              /NOP OR HLT
00712   707321                  MTCR                    /CONTROL RDY SHD SKIP
00713   740001                  CMA                     /CMA SHD NOT BE XCT
00714   400453                  XCT DSCOPE              /NOP OR HLT
00715   741200                  SNA                     /SKIP ON MTCR
00716   100445                  JMS TESTOK              /YES OK SKIP NEXT 2
00717   100350                  JMS ERROR               /ERR TYPEOUT
00720   600717                  JMP TSMTCR              /FORCE SCOPE LOOP
                        /
00721   200725                  LAC TSMTLC+2
                        /TEST MTLC MTRC TO EXIST
00722   040100                  DAC GODATA
                        /
00723   777777          TSMTLC  LAW -1                  /SET AC = -1
00724   400453                  XCT DSCOPE              /NOP OR HALT
00725   707326                  MTLC                    /LOAD COMMAND
00726   707312                  MTRC                    /READ IT BACK
00727   400453                  XCT DSCOPE              /NOP OR HALT
00730   740200                  SZA                     /ANYTHING GET READ BACK
00731   100445                  JMS TESTOK              /YES
00732   100350                  JMS ERROR               /EITHER LC OR RC DOES NOT EXIST
00733   600723                  JMP TSMTLC              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
ØØ734    2ØØ743          LAC TSMTAF+5
                 /TEST MTAF INSTRUCTION TO EXIST
ØØ735    Ø4Ø1ØØ          DAC GDDATA
                 /
ØØ736    777777  TSMTAF  LAW -1
ØØ737    7Ø7326          MTLC                /FAKE SET TO ONES
ØØ74Ø    7Ø7312          MTRC                /READ IT BACK
ØØ741    Ø4ØØ1Ø          DAC 1Ø              /SAVE FOR COMPARE
ØØ742    4ØØ453          XCT DSCOPE          /NOP OR HLT
ØØ743    7Ø7322          MTAF                /SHD CLR AT LEAST 1 BIT
ØØ744    7Ø7312          MTRC                /READ COMMAND AGAIN
ØØ745    4ØØ453          XCT DSCOPE          /NOP OR HLT
ØØ746    54ØØ1Ø          SAD 1Ø              /WAS CM CHANGED BY MTAF
ØØ747    741ØØØ          SKP                 /NO MTAF DOES NOT EXIST
ØØ75Ø    1ØØ445          JMS TESTOK
ØØ751    1ØØ35Ø          JMS ERROR           /TYPEOUT
ØØ752    6ØØ736          JMP TSMTAF          /FORCE SCOPE LOOP
                 /
ØØ753    2ØØ762          LAC TSTCAF+5
                 /IO PWR CLEAR SHOULD CLR AT LEAST 1 CM BIT
ØØ754    Ø4Ø1ØØ          DAC GDDATA
ØØ755    777777  TSTCAF  LAW -1
ØØ756    7Ø7326          MTLC                /FAKE LOAD ONES
ØØ757    7Ø7312          MTRC                /READ BACK ESULT
ØØ76Ø    Ø4ØØ1Ø          DAC 1Ø              /SAVE FOR COMPARE
ØØ761    4ØØ453          XCT DSCOPE          /NOP OR HALT
ØØ762    7Ø33Ø2          CAF                 /IO PWR CLR
ØØ763    7Ø7312          MTRC                /SHD CLEAR A BIT OR 2
ØØ764    4ØØ453          XCT DSCOPE          /NOP OR HLT
ØØ765    54ØØ1Ø          SAD 1Ø              /CM CHNG AT PWR CLR
ØØ766    741ØØØ          SKP                 /YES
ØØ767    1ØØ445          JMS TESTOK          /SKIP ERR TYPE
ØØ77Ø    1ØØ35Ø          JMS ERROR           /TYPEOUT
ØØ771    6ØØ755          JMP TSTCAF          /FORCE SCOPE LOOP
                 /
ØØ772    2ØØ777          LAC TSMTRS+3
                 /IO PWR CLEAR SHD MAKE ALL STATUS BITS
                 /EXCEPT POSSIBLY BOT = Ø
ØØ773    Ø4Ø1ØØ          DAC GDDATA
ØØ774    4ØØ453  TSMTRS  XCT DSCOPE          /NOP OR HALT
ØØ775    7Ø33Ø2          CAF                 /IO PWR CLR
ØØ776    7Ø7352          MTRS                /READ STATUS
ØØ777    4ØØ453          XCT DSCOPE          /NOP OR HALT
Ø1ØØØ    5Ø7563          AND (677777         /MASK OFF BOT
Ø1ØØ1    7412ØØ          SNA                 /ALL OTHER BITS SHD = Ø
Ø1ØØ2    1ØØ445          JMS TESTOK          /OK
Ø1ØØ3    1ØØ35Ø          JMS ERROR           /ERR TYPE
Ø1ØØ4    6ØØ774          JMP TSMTRS          /FORCE SCOPE LOOP
Ø1ØØ5    44Ø11Ø          ISZ PASCTR
Ø1ØØ6    6ØØ71Ø          JMP TSMTCR
Ø1ØØ7    62Ø7ØØ          JMP* TSIOTS
                 /
                         .EJECT
```

```
                        /COMMAND REGISTER (CM) BIT AND DATA TESTS
                        /TEST 01
                        /
01010   601010          CMBAIS  JMP .
01011   207450                  LAC TSTXP1
01012   040101                  DAC REGIS               /(REGIS) INDICATES CM
                        /
                        /TC59 INSTRUCTION TEST
                        /CM BIT AND DATA TESTS
                        /
                        /IO RESET SHOULD HAVE CLEARED ALL CM BITS TO 0
                        /USE CAF IOT IO POWER CLEAR TO SIMULATE
                        /
01013   777740                  LAC -40
01014   040110                  DAC PASCTR
01015   140103                  DZM BITNUM
01016   207564                  LAC (400000
01017   040102                  DAC BITMSK
                        /TEST COMMAND REGISTER IO CLEAR LOOP
01020   400453          CMIOCL  XCT DSCOPE              /NOP OR HLT
01021   703302                  CAF                     /IO POWER CLEAR
01022   707312                  MIRC                    /READ CM REG
01023   400453                  XCT DSCOPE              /NOT OR HALT
01024   500102                  AND BITMSK              /MASK BIT
01025   741200                  SNA                     /SHOULD = 0
01026   100445                  JMS TESTOK              /OK
01027   100350                  JMS ERROR               /ERR TYPE
01030   601020                  JMP CMIOCL              /FORCE SCOPE LOOP
01031   100234                  JMS PMSKRT              /MOVE BIT MASK RIGHT
01032   777700                      777700              /1 POSITION FOR 12 BITS
01033   601020                  JMP CMIOCL              /DO NEXT BIT
                        /TEST EACH COMMAND REGISTER BIT TO SET TO 1
01034   140103                  DZM BITNUM
01035   207564                  LAC (400000
01036   040102                  DAC BITMSK
                        /
01037   703302          CMBIT1  CAF                     /IO POWER CLEAR
01040   200102                  LAC BITMSK              /GET BIT
01041   400453                  XCT DSCOPE              /NOP OR HLT
01042   707324                  LCM                     /SHOULD MAKE BIT = 1
01043   707312                  MIRC                    /READ IT BACK
01044   400453                  XCT DSCOPE              /NOP OR HLT
01045   500102                  AND BITMSK              /MASK BIT
01046   742200                  SZA                     /SHOULD = 1
01047   100445                  JMS TESTOK              /OK SKIP IS ERR
01050   100350                  JMS ERROR               /ERR TYPE
01051   601037                  JMP CMBIT1              /FORCE SCOPE LOOP
01052   100234                  JMS PMSKRT              /MOVE BIT MASK OVER
01053   777700                      777700
01054   601037                  JMP CMBIT1              /DO NEXT BIT TO 11
                        /
                                .EJECT
```

```
                                /TEST MTAF IOT TO CLEAR EACH CM BIT
                                /
    01055      140103                   DZM BITNUM
    01056      207564                   LAC (400000
    01057      040102                   DAC BITMSK
                                /
    01060      703302           TSCMCL  CAF
    01061      200102                   LAC BITMSK
    01062      707324                   LCM                 /LOAD A 1 BIT IN CM
    01063      400453                   XCT DSCOPE          /NOP OR HLT
    01064      707322                   MTAF                /MAG TAPE CLEAR ALL
    01065      707312                   MTRC                /READ CM REG
    01066      400453                   XCT DSCOPE          /NOP OR HLT
    01067      500102                   AND BITMSK          /MASK BIT
    01070      741200                   SNA                 /SHOULD = 0  SKIP IS ERR
    01071      100445                   JMS TESTOK          /OK
    01072      100350                   JMS ERROR           /ERR TYPE
    01073      601060                   JMP TSCMCL          /FORCE SCOPE LOOP
    01074      100234                   JMS PMSKRT          /MOVE BIT OVER
    01075      777700                       777700
    01076      601060                   JMP TSCMCL          /DO NEXT BIT
                                /
                                /
                                /TEST EACH BIT TO GO 1 TO 1
                                /
    01077      207564                   LAC (400000
    01100      040102                   DAC BITMSK
    01101      140103                   DZM BITNUM
                                /
    01102      703302           CM1T01  CAF
    01103      200102                   LAC BITMSK
    01104      707324                   LCM                 /LOAD A 1 BIT TO CM
    01105      400453                   XCT DSCOPE          /NOP OR HLT
    01106      707324                   LCM                 /2ND LOAD BIT SHOULD STAY A 1
    01107      707312                   MTRC                /READ BACK
    01110      400453                   XCT DSCOPE          /NOP OR HLT
    01111      500102                   AND BITMSK          /MASK BIT
    01112      740200                   SZA                 /SHOULD = 1  0 SKIP IS ERR
    01113      100445                   JMS TESTOK          /OK
    01114      100350                   JMS ERROR           /ERR TYPE
    01115      601102                   JMP CM1T01          /FORCE SCOPE LOOP
    01116      100234                   JMS PMSKRT
    01117      777700                       777700
    01120      601102                   JMP CM1T01
                                /
                                        .EJECT
```

```
                                /DATA TEST OF COMMAND REGISTER
                                /WILL IT HOLD ALL COMBINATIONS OF DATA
                                /
01121     140102                       DZM BITMSK
01122     140100                       DZM GDDATA
                                /
01123     750002                CMDATA CAF                    /CLEAR ALL TO 0
01124     200100                       LAC GDDATA             /GET DATA
01125     400453                       XCT DSCOPE             /NOP OR HALT
01126     707324                       LCM                    /LOAD IT
01127     707312                       MTRC                   /READ IT
01130     400453                       XCT DSCOPE             /NOP OR HALT
01131     540100                       SAD GDDATA             /DATA BACK = DATA OVER
01132     100445                       JMS TESTOK             /OK SKIP IS ERR
01133     100350                       JMS ERROR              /ERR TYPE
01134     601123                       JMP CMDATA             /FORCE SCOPE LOOP
01135     200100                       LAC GDDATA
01136     347565                       TAD (100               /+1 CM PORTION
01137     040100                       DAC GDDATA
01140     740200                       SZA                    /DONE ALL COMB
01141     601123                       JMP CMDATA             /NO
                                /
                                /
                                /TEST WILL CM CLEAR AND LOAD DATA
                                /WITH MTLC COMMAND CM INITIAL IS COMPLEMENT
                                /
01142     140100                       DZM GDDATA
                                /
01143     750002                CMDACM CAF
01144     200100                       LAC GDDATA             /GET DATA
01145     740001                       CMA                    /MAKE IT COMP
01146     707324                       LCM                    /LOAD IT
01147     740001                       CMA                    /MAKE NORMAL
01150     400453                       XCT DSCOPE             /NOP OR HLT
01151     707326                       MTLC                   /CLEAR AND LOAD
01152     707312                       MTRC                   /READ IT BACK
01153     400453                       XCT DSCOPE             /NOP OR HLT
01154     540100                       SAD GDDATA             /DATA BACK = DATA OVER
01155     100445                       JMS TESTOK             /OK
01156     100350                       JMS ERROR              /ERROR TYPEOUT
01157     601143                       JMP CMDACM             /FORCE SCOPE LOOP
01160     200100                       LAC GDDATA
01161     347565                       TAD (100               /+1 CM PORTION
01162     040100                       DAC GDDATA
01163     740200                       SZA                    /DONE ALL COMB
01164     601143                       JMP CMDACM             /NO DO NEXT
                                /
                                       .EJECT
```

```
                        /TEST MTLC MTRC CLEAR AND LOAD INTO SAME
                        /
01165   14[illegible]           DZM GDDATA
                        /
01166   707322          CMDADA  CAF                     /CLEAR ALL
01167   2[illegible]            LAC GDDATA
01170   707324                  LCM                     /LOAD DATA ONCE
01171   400453                  XCT DSCOPE              /NOP OR HLT
01172   707326                  MTLC                    /CLEAR AND LOAD
01173   707312                  MTRC                    /READ IT BACK
01174   400453                  XCT DSCOPE              /NOP OR HLT AG
01175   540100                  SAD GDDATA              /DATA BACK = OVER
01176   100445                  JMS TESTOK              /YES = OK
01177   100357                  JMS ERROR               /ERR TYPE
01200   601166                  JMP CMDADA              /FORCE SCOPE
01201   200100                  LAC GDDATA
01202   347565                  TAD (140                /+1 CM PORTION
01203   040100                  DAC GDDATA
01204   740200                  SZA                     /DONE ALL COMB
01205   601166                  JMP CMDADA
                        /TEST LCM COMMAND CM BITS 6-7-8
                        /ALL COMB 0 TO 7 INTO ALL COMB 0 TO 7
                        /
01206   140100                  DZM GDDATA              /START WITH 0
01207   140110          LCMTST  DZM 10                  /TO 0
01210   703302                  CAF                     /POWER CLEAR ALL
01211   2[illegible]            LAC 10                  /GET LCM INITIAL
01212   707324                  LCM                     /LOAD IT
01213   200100                  LAC GDDATA              /GET LCM END
01214   400453                  XCT DSCOPE              /NOP OR HALT
01215   707324                  LCM                     /LOAD NEW COMB
01216   707312                  MTRC                    /READ IT BACK
01217   400453                  XCT DSCOPE              /NOP OR HALT
01220   540100                  SAD GDDATA              /CM = LAST AC LCM
01221   100445                  JMS TESTOK              /OK
01222   100357                  JMS ERROR               /ERR TYPE
01223   601210                  JMP LCMTST+1            /FORCE SCOPE LOOP
01224   200110                  LAC 10
01225   347566                  TAD (1700               /+1 CM INITIAL
01226   547567                  SAD (170000             /DONE 0 TO 7
01227   601232                  JMP .+3                 /YES
01230   040010                  DAC 10                  /NEXT CM INITIAL
01231   601210                  JMP LCMTST+1            /TRY AGAIN
01232   200100                  LAC GDDATA              /GET CM END DATA
01233   347566                  TAD (1700               /+1 6-7-8
01234   040100                  DAC GDDATA              /SAVE IT
01235   547567                  SAD (170000             /DONE ALL COMB
01236   741000                  SKP                     /YES DO NEXT TEST
01237   601207                  JMP LCMTST              /DO NEXT LCM COMB
01240   440110                  ISZ PASCTR
01241   601015                  JMP CMIOCL-3
01242   621010                  JMP* CMDATS             /END OF CM DATA TEST
                        /
                                .EJECT
```

```
                        /
                        /DATA BUFFER BIT AND DATA TESTS
                        /
01243   601243          DBDATS  JMP .
01244   207455                  LAC TSTX02
01245   040101                  DAC REGIS
01246   207564                  LAC (400000
01247   040102                  DAC BITMSK
                        /
                        /
                        /TC59 INSTRUCTION TEST
                        /DATA BUFFER BIT AND DATA TESTS
                        /
                        /NEXT SERIES OF TESTS ARE DATA BUFFER BIT TESTS
                        /TEST CAF TO CLEAR THE BIT
                        /LDB TO SET TO 1 RDB TO READ BACK A 1
                        /LDB 1 LDB 0 TO CLEAR THE BIT
                        /LDB 1 RDB RCB TO CLEAR THE BIT
                        /LDB 1 LDB 1 WITH READ COMPARE TO END=0
                        /TEST ALL COMB LDB READ COMPARE 1 TO 1 1 TO 0 0 TO 1 AND 0 TO 0
                        /
                        /
                        /FIRST TEST DOES IO CLEAR CLEAR THE BIT
01250   207570          DBIOCL  LAC (4100
01251   707324                  LCM                     /LOAD WRITE COMMAND
01252   777777                  LAC -1
01253   707404                  LDB                     /FAKE SET DB=777777
01254   400453                  XCT DSCOPE              /NOP OR HALT
01255   703302                  CAF                     /IO PWR CLR
01256   707412                  RDB                     /READ BUFFER BACK
01257   400453                  XCT DSCOPE              /AND NOP OR HALT
01260   500102                  AND BITMSK              /MASK BIT UNDER TEST
01261   741200                  SNA                     /DOES IT = 0
01262   100445                  JMS TESTOK              /YES TEST PASSED
01263   100350                  JMS ERROR               /ERROR TYPEOUT
01264   601250                  JMP DBIOCL              /AND FORCED SCOPE LOOP
                        /2ND TEST DOES MTAF CLEAR THE BIT
01265   207570          DBMTAF  LAC (4100
01266   707324                  LCM                     /WRITE COMMAND
01267   777777                  LAC -1
01270   707404                  LDB                     /LOAD BUFFER TO 777777
01271   400453                  XCT DSCOPE              /NOP OR HALT
01272   707322                  MTAF                    /SHOULD CLEAR DB
01273   707412                  RDB                     /READ IT BACK
01274   400453                  XCT DSCOPE              /NOP OR HALT
01275   500102                  AND BITMSK              /MASK BIT UNDER TEST
01276   741200                  SNA                     /IT SHOULD = 0
01277   100445                  JMS TESTOK              /OK
01300   100350                  JMS ERROR               /ERROR TYPEOUT
01301   601265                  JMP DBMTAF              /FORCED SCOPE LOOP
                        /
                                .EJECT
```

```
                        /SND TEST DOES LOB REALLY SET THE BIT TO 1
                        /AND READ BACK AS A 1
01302   707302          BBIT1   CAF
01303   207571                  LAC (4700
01304   707324                  LCM                     /LOAD WRITE COMMAND
01305   200102                  LAC BITMSK              /GET BIT UNDER TEST
01306   400453                  XCT DSCOPE              /NOP OR HALT
01307   707404                  LOB                     /SHD SET DB=1
01310   207571                  LAC (2700
01311   707324                  LCM                     /CHNGE TO READ
01312   400453                  XCT DSCOPE              /NOP OR HLT DB SHL=1
01313   707412                  RDB                     /READ DATA BUFFER
01314   500102                  AND BITMSK              /MASK THE BIT
01315   740200                  SZA                     /IT SHD = 1
01316   100445                  JMS TESTOK              /OK
01317   100350                  JMS ERROR               /TYPEOUT
01320   601302                  JMP DBBIT1              /FORCE SCOPE LOOP
                        /
                        /FOURTH TEST DOES RDB CLEAR THE BIT
01321   207570          BRDBC   LAC (4700
01322   707302                  CAF
01323   707324                  LCM                     /WRITE COMMAND
01324   200102                  LAC BITMSK
01325   707404                  LOB                     /SET DB ONE BIT
01326   207571                  LAC (2700
01327   707324                  LCM                     /CHANGE TO READ
01330   400453                  XCT DSCOPE              /NOP OR HALT
01331   707412                  RDB                     /READ SHOULD CLEAR THE BIT
01332   400453                  XCT DSCOPE              /NOP OR HALT
01333   707412                  RDB                     /READ BUFFER A 2ND TIME
01334   500102                  AND BITMSK              /MASK BIT
01335   741200                  SNA                     /SHD=0 ON 2ND READ
01336   100445                  JMS TESTOK              /OK
01337   100350                  JMS ERROR               /TYPEOUT
01340   601321                  JMP DBRDBC              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
                        /FIFTH TEST DOES THE BIT NOT SO TO A1 IF AC = 0
01341   703302  DBLDR0  CAF
01342   207577          LAC (4777
01343   707324          LCM                     /WRITE COMMAND
01344   752000          CLA
01345   400453          XCT DSCOPE              /HALT 2ND ERR PASS
01346   707404          LDB                     /LOAD ZEROS
01347   400453          XCT DSCOPE              /HALT OR NOP
01350   207571          LAC (2000
01351   707324          LCM                     /CHNG TO READ
01352   707412          RDB                     /READ THE BUFFER
01353   500102          AND BITMSK              /MASK BIT
01354   741200          SNA                     /IT SHD = 0
01355   100445          JMS TESTOK              /OK
01356   100350          JMS ERROR               /TYPEOUT
01357   601341          JMP DBLDR0              /FORCE SCOPE LOOP
                        /SIXTH TEST DOES LDB CLEAR THE BIT
                        /BEFORE DATA TRANSFER IS ACTUALLY MADE
01360   703302  DBLDRC  CAF
01361   207577          LAC (4777
01362   707324          LCM                     /LD WRT COMMAND
01363   200102          LAC BITMSK
01364   707404          LDB                     /LOAD 1 BIT INTO DR
01365   400453          XCT DSCOPE              /NOP OR HALT
01366   707414          LDB 10                  /LOAD ZEROS INTO DR
01367   400453          XCT DSCOPE              /NOP OR HALT
01370   207571          LAC (2000
01371   707324          LCM                     /CHNG TO READ
01372   707412          RDB                     /READ THE BUFFER
01373   500102          AND BITMSK              /MASK TEST BIT
01374   741200          SNA                     /SHD = 0
01375   100445          JMS TESTOK              /OK LDR CLRD BEFORE LOAD
01376   100350          JMS ERROR               /TYPEOUT
01377   601360          JMP DBLDRC              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                        /NEXT FOUR TESTS ARE READ COMPARE TESTS
                        /TEST 1 TO 0 TO 1 TO 0 AND 1 TO 1
                        /DATA BUFFER SHOULD NOT CLEAR AS IN WRITE
                        /FIRST READ COMPARE TEST 0 TO 0
01400   703302          DBRC00  CAF
01401   207572                  LAC (5400               /READ COMPARE FUNCTION
01402   707324                  LCM
01403   750100                  CLA
01404   400453                  XCT DSCOPE              /NOP OR HALT
01405   707404                  LDR                     /LOAD ZEROS
01406   400453                  XCT DSCOPE              /NOP OR HALT
01407   207571                  LAC (2400
01410   707324                  LCM                     /CHNG TO READ
01411   707412                  RDR
01412   500102                  AND BITMSK              /MASK TEST BIT
01413   741200                  SNA                     /SHD = 0
01414   100445                  JMS TESTOK              /OK
01415   100350                  JMS ERROR               /TYPE OUT
01416   601400                  JMP DBRC00              /FORCE SCOPE LOOP
                        /SECOND READ COMPARE TEST 0 TO 1
01417   703302          DBRC01  CAF
01420   207570                  LAC (4400
01421   707324                  LCM                     /WRITE COMMAND
01422   200102                  LAC BITMSK              /GET 1 BIT
01423   707404                  LDR                     /LOAD A 1
01424   207572                  LAC (3400
01425   707324                  LCM                     /CHG TO RD COMP
01426   750100                  CLA
01427   400453                  XCT DSCOPE              /NOP OR HALT
01430   707404                  LDR                     /LOAD ZERO BIT SHD = 1
01431   400453                  XCT DSCOPE              /NOP OR HALT
01432   207571                  LAC (2400
01433   707324                  LCM                     /CHG TO READ
01434   707412                  RDR                     /RD THE BUFFER
01435   500102                  AND BITMSK              /MASK BIT
01436   741200                  SZA                     /IT SHD = 1
01437   100445                  JMS TESTOK              /OK
01440   100350                  JMS ERROR               /TYPE OUT
01441   601417                  JMP DBRC01              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
                        /THIRD READ COMPARE TEST 1 TO 2
01442   703542  DBEC10  CAF                     /CLEAR ALL
01443   207572          LAC (3'00
01444   707324          LCF                     /READ COMP FUNCTION
01445   201102          LAC BITMSK              /GET BIT
01446   400453          XCT DSCOPE              /NOP OR HALT
01447   707404          LDF                     /BIT SHD GO TO A 1
01450   400453          XCT DSCOPE              /NOP OR HALT
01451   207571          LAC (2'00
01452   707324          LCF                     /CHNG TO READ
01453   707412          RDF                     /READ THE BUFFER
01454   501102          AND BITMSK              /MASK THE BIT
01455   741200          SZA                     /IT SHD = 1
01456   100445          JMS TESTOK              /AND DOES
01457   100350          JMS ERROR               /TYPEOUT
01460   601442          JMP DB-C10              /FORCED SCOPE LOOP
                        /FOURTH READ COMPARE TEST 1 TO 1
01461   703302  DBEC11  CAF
01462   207572          LAC (4'00
01463   707324          LCF                     /WRITE COMMAND
01464   201102          LAC BITMSK
01465   707404          LDF                     /LOAD A 1 BIT
01466   207572          LAC (3'00
01467   707324          LCF                     /CHNG TO READ COMP
01470   201102          LAC BITMSK              /GET BIT AG
01471   400453          XCT DSCOPE              /NOP OR HALT
01472   707404          LDF                     /BIT SHD GO TO 0
01473   400453          XCT DSCOPE              /NOP OR HALT
01474   207571          LAC (2'00
01475   707324          LCF                     /CHNG TO READ
01476   707412          RDF                     /READ THE BUFFER
01477   501102          AND BITMSK              /MASK BIT
01500   741200          SZA                     /IT SHD = 0
01501   100445          JMS TESTOK              /AND DOES
01502   100350          JMS ERROR               /TYPE OUT
01503   601461          JMP DB-C11              /FORCED SCOPE LOOP
                        /
                        .EJECT
```

```
                        /TEST ALL COMBINATIONS OF DATA TO DATA BUFFER
                        /FIRST TEST INTO BUFF
01504   144140          DZM GDDATA
01505   703302  DBDATA  CAF
01506   207570          LAC (4400
01507   707324          LCM                     /LOAD & WRITE FUNC
01510   200100          LAC GDDATA              /GET DATA
01511   400453          XCT DSCOPE              /HALT OR NOP
01512   707404          LDB                     /LOAD THE BUFFER
01513   400453          XCT DSCOPE              /NOP OR HALT
01514   207571          LAC (2400
01515   707324          LCM                     /CHNG TO READ
01516   707412          RDB                     /READ THE BUFFER
01517   540100          SAD GDDATA              /SHD = DATA OVER
01520   100445          JMS TESTOK              /OK
01521   100350          JMS ERROR               /TYPE OUT
01522   601505          JMP DBDATA              /FORCE SCOPE LOOP
                        /TEST ALL COMBINATIONS OF DATA TO DB
                        /OR INITIAL = COMPLEMENT OF DATA
01523   703302  DBDACM  CAF
01524   207570          LAC (4400
01525   707324          LCM                     /WRITE
01526   200100          LAC GDDATA
01527   740001          CMA                     /MAKE COMP DATA
01530   707404          LDB                     /LOAD IT
01531   740001          CMA
01532   400453          XCT DSCOPE              /NOP OR HALT
01533   707404          LDB                     /LOAD UNCOMP DATA
01534   400453          XCT DSCOPE              /NOP OR HALT
01535   207571          LAC (2400
01536   707324          LCM                     /CHNG TO READ
01537   707412          RDB
01540   540100          SAD GDDATA              /DATA BACK = DATA OVER
01541   100445          JMS TESTOK              /OK
01542   100350          JMS ERROR               /TYPEOUT ERR
01543   601523          JMP DBDACM              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                                /TEST ALL COMBINATIONS OF DATA TO DATA BUFFER
                                /DATA BUFFER INITIAL = DATA BUFFER EXPECTED
     01544    703302            DBDATA    CAF
     01545    207570                      LAC (4000
     01546    707324                      LCM                   /WRITE
     01547    200100                      LAC GDDATA            /GET DATA
     01550    707404                      LDB                   /LOAD IT
     01551    400453                      XCT DSCOPE            /NOP OR HALT
     01552    707404                      LDB                   /LOAD IT A 2ND TIME
     01553    400453                      XCT DSCOPE            /NOP OR HALT
     01554    207571                      LAC (2000
     01555    707324                      LCM                   /READ
     01556    707412                      RDB                   /GET BUFFER
     01557    540100                      SAD GDDATA            /DATA OVER = DATA READ
     01560    100445                      JMS TESTOK            /OK
     01561    100350                      JMS ERROR             /TYPE ERRO
     01562    601544                      JMP DBDATA            /FORCE SCOPE LOOP
                                /TEST READ COMPARE DB = COMPLEMENT OF AC
     01563    703302            DBCMRC    CAF
     01564    207570                      LAC (4000
     01565    707324                      LCM                   /WRITE COMMAND
     01566    200100                      LAC GDDATA            /GET DATA
     01567    740001                      CMA                   /MAKE COMP
     01570    707404                      LDB                   /LOAD
     01571    207572                      LAC (3000
     01572    707324                      LCM                   /CHNG TO READ COMP
     01573    200100                      LAC GDDATA            /GET DATA AG
     01574    400453                      XCT DSCOPE            /NOP OR HALT
     01575    707404                      LDB                   /SHD SET DB = 777777
     01576    400453                      XCT DSCOPE            /NOP OR HLT
     01577    207571                      LAC (2000
     01600    707324                      LCM                   /CHNG TO READ
     01601    707412                      RDB                   /GET BUFFER
     01602    547573                      SAD (LAW -1           /DOES IT = 777777
     01603    100445                      JMS TESTOK            /OK
     01604    100350                      JMS ERROR             /ERROR TYPEOUT
     01605    601563                      JMP DBCMRC                        /FORCE SCOPE LOOP
                                /
                                          .EJECT
```

```
                        /TEST READ COMPARE DATA BUFFER = DATA
01606   703300  DBREARC CAF
01607   207577          LAC (4 00
01610   707324          LCS                     /CLEAR WRITE
01611   201000          LAC GUDATA              /GET DATA
01612   707404          LDF                     /LOAD IT
01613   207572          LAC (3700
01614   707324          LCS                     /READ COMP
01615   201000          LAC GUDATA              /GET DATA
01616   400453          XCT     DSCOPE
01617   400453          XCT DSCOPE              /NOP OR HLT
01620   707404          LDB                     /SHD MAKE DB = 0
01621   400453          XCT DSCOPE              /NOP OR HLT
01622   207571          LAC (2700 /CHNG TO READ
01623   707324          LCS
01624   707412          RDR                     /GET BUFFER
01625   741200          SNA                     /SHD = 0
01626   100445          JMS TESTOK              /OK
01627   100350          JMS ERROP /ERROR TYPEOUT
01630   601606          JMP DBREARC             /FORCE SCOPE LOOP
01631   441000          ISZ GUDATA              /+1 DATA
01632   601525          JMP DBDATA              /NOT DONE ALL COMP
                /
01633   621243          JMP* DRDATS             /END OF DB TESTS
                        .EJECT
```

```
                        /TC59 INSTRUCTION TEST TAPE 2
                        /TRANSFER DIRECTION AND DCH CONTROL TEST
                        /
01634   601634  DCHCTS  JMP .
01635   207462          LAC TSTX03              /3 IS CODE FOR TRANSFER DIREC
01636   040101          DAC REGIS               /(REGIS) INDICATES TO
01637   140102          DZM BITMSK              /NOT A BIT TEST
01640   777700          LAW -100
01641   040110          DAC PASCTR
                        /
                        /
                        /TC59 INSTRUCTION TEST
                        /TRANSFER DIRECTION AND DCH STATIC TESTS
                        /
                        /
01642   207570          LAC (4700
01643   040107          DAC SPACFC
                        /TRANSFER DIRECTION TESTS
                        /FIRST TEST OUTPUT TO MAKE EFFORT
                        /TO PREVENT CLOBBER
                        /FIRST PASS WRITE 2ND PASS READ COMPARE
                        /FIRST TEST DOES WC GET INCREMENTED
01644   703302  TROUTW  CAF                     /PWR CLR
01645   200107          LAC SPACFC              /GET COMMAND
01646   707324          LCM                     /LOAD IT
01647   777777          LAW -1
01650   040032          DAC WCLOC               /SET WC TO -1
01651   207574          LAC (FAKECA
01652   040033          DAC CALOC               /AND CA OUT OF WAY
01653   140100          DZM GODATA              /CLR DATA EXEPECTED
01654   400453          XCT DSCOPE              /NOP OR HLT
01655   707401          SDF                     /SET DATA FLAG
01656   740000          NOP                     /WAIT FOR
01657   740000          NOP                     /DATA BREAK
01660   200032          LAC WCLOC               /GET WC LOCATION
01661   400453          XCT DSCOPE              /IT SHD = 0
01662   741200          SNA                     /DOES IT
01663   100445          JMS TESTOK              /OK
01664   100350          JMS ERROR               /TYPE OUT
01665   601644          JMP TROUTW              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
                        /2'S TEST DOES CA GET INCREMENTED
                        /FIRST PASS WRITE 2ND PASS READ COMPARE
01666   703302  TROUTC  CAF
01667   200107          LAC SPACEC              /GET COMMAND
01670   707324          LCM                     /LOAD IT
01671   777777          LAW -1                  /SET AC TO -1
01672   040032          DAC WCLOC
01673   207574          LAC (FAKECA             /SET UP
01674   040033          DAC CALOC               /CA
01675   044100          DAC GODATA
01676   440100          ISZ GODATA              /INDICATE SHD +1
01677   400453          XCT DSCOPE              /NOP OR HALT
01700   707401          SDF                     /SET DATA FLAG
01701   740000          NOP                     /WAIT FOR
01702   740000          NOP                     /DATA BREAK AFTER 2ND NOP
01703   200733          LAC CALOC               /GET CA
01704   400453          XCT DSCOPE              /NOP OR HALT AGN
01705   540100          SAD GODATA              /CA GET +1
01706   100445          JMS TESTOK              /YES
01707   100350          JMS ERROR               /ERROR TYPEOUT
01710   601666          JMP TROUTC              /SCOPE LOOP FORCED
                        /
                        /NOW TEST TRANSFER DIRECTION OUT
                        /MAKE SURE OUTPUT NOT INPUT
                        /FIRST PASS WRITE 2ND PASS NO COMP
01711   703302  TROUTD  CAF                     /PWR CLR
01712   200107          LAC SPACEC              /GET COM
01713   707324          LCM                     /LOAD IT
01714   777777          LAW -1
01715   040032          DAC WCLOC               /MAKE WC -1
01716   047700          DAC FAKECA              /MAKE 2 BUFFER LOC
01717   047701          DAC FAKECA+1            /=-1 ALSO
01720   207574          LAC (FAKECA
01721   040033          DAC CALOC               /SET UP CA
01722   400453          XCT DSCOPE              /NOP OR HALT
01723   707401          SDF                     /SET DATA FLAG
01724   740000          NOP                     /WAIT BREAK TO
01725   740000          NOP                     /SYNCHRONIZE
01726   207701          LAC FAKECA+1            /GET BUFFER LOCATION
01727   400453          XCT DSCOPE
01730   547573          SAD (LAW -1             /IS IT STILL ALL ONES
01731   100445          JMS TESTOK              /OK IF DIR IS OUT
01732   100350          JMS ERROR               /ERROR TYPEOUT
01733   601711          JMP TROUTD              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                        /MAKE SURE THAT AC IS NOT TRANSFERRED OUT
                        /INSTEAD OF MB IF DATA BREAK PROCEEDED BY AN IOT
                        /MORE OF A PROCESSOR DCH TEST THAN A TC59 TEST
01734   703302  TRIOTI  CAF                     /POOR CLR
01735   200107          LAC SP4CEC              /LOAD COMMAND
01736   707324          LCS
01737   207574          LAC (FAKECA
01740   040033          DAC CALOC               /SET UP CA
01741   777777          LAS -1
01742   040032          DAC WCLOC               /AND WC = -1
01743   147701          DZM FAKECA+1            /CLEAR BUFFER WORD
01744   400453          XCT OSCOPE              /NOP OR HLT
01745   707401          SDF                     /SET DATA FLAG
01746   740003          NOP                     /1 IO SYNC
01747   703304          DBK                     /DO AN IOP4
01750   400453          XCT OSCOPE              /NOP OR HLT DB SHD = 0
01751   207571          LAC (2 00
01752   707324          LCS
01753   707412          RCS                     /READ BUFFER
01754   741200          SNA                     /IT SHD = 0
01755   100445          JMS TESTOK
01756   100350          JMS ERROR               /ERR TYPE
01757   601734          JMP TRIOTI              /FORCE SCOPE
                        /
                        /MAKE SURE THAT IORS INSTRUCTION
                        /DOES NOT GOOF UP IO ADDRS LINES
                        /IF FOLLOWED BY A DATA BREAK (DCH TEST)
01760   703302  TRIORS  CAF
01761   200107          LAC SP4CEC              /GET COMMAND
01762   707324          LCS                     /LOAD IT
01763   777777          LAS -1                  /SET WC = -1
01764   040032          DAC WCLOC
01765   207574          LAC (FAKECA             /SET UP CA
01766   040033          DAC CALOC
01767   777775          LAS -3
01770   040007          DAC 7                   /SET CLOCK TO -3
01771   400453          XCT OSCOPE              /NOP OR HLT
01772   707401          SDF                     /SET DATA FLAG
01773   707044          CLEN                    /SO IORS BIT 7 = 1
01774   707314          IORS                    /READ IO STATUS
01775   707004          CLOF                    /SHUT CLOCK OFF AGAIN
01776   200032          LAC WCLOC               /GET WC
01777   400453          XCT OSCOPE              /NOP OR HLT AGAIN
02000   741200          SNA                     /WC SHD = 0 BY NOW
02001   100445          JMS TESTOK              /OK
02002   100350          JMS ERROR               /ERR TYPE DATA B TO WRNG ADDR
02003   601760          JMP TRIORS              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                        /
                        /MAKE SURE THAT ENABLE B IS CLEARED
                        /BEFORE AN IOP 1 CAN BE GENERATED AT SOF
                        /TEST OF DCM AND TC59 ENABLE B
02004   703302          TRIOP1  CAF
02005   200107                  LAC SPACFC              /GET COMMAND
02006   707324                  LCM                     /LOAD IT
02007   777776                  LAW -2
02010   040032                  DAC WCLOC               /SET WC = -2
02011   207574                  LAC (FAKECA
02012   040033                  DAC CALOC               /SET UP CA
02013   400453                  XCT DSCOPE              /NOP OR HLT
02014   707401                  SDF                     /SET DATA FLAG
02015   740000                  NOP                     /LET BREAK SYNC
02016   740000                  NOP                     /SHD OCCUR AFTER THIS NOP
02017   707341                  MISF                    /IF ENB = 1 WILL SET OF AG
02020   740000                  NOP
02021   740000                  NOP
02022   200032                  LAC WCLOC
02023   400453                  XCT DSCOPE              /AC SHD = -1
02024   547573                  SAD (LAW -1             /DOES IT
02025   100445                  JMS TESTOK              /YES
02026   100350                  JMS ERROR               /ERR TYPE
02027   602004                  JMP TRIOP1              /FORCE LOOP
02030   207572                  LAC (3300
02031   540107                  SAD SPACFC              /DONE RD COMP
02032   741000                  SKP                     /YES
02033   601643                  JMP TROUTW-1            /DO 2ND PASS
                        /
02034   207575                  LAC (6300
02035   040107                  DAC SPACFC
                        /END OF TRANSFER DIRECTION OUT TESTS
                        /NOW TEST INC THE MB TO OPERATE CORRECTLY
                        /THE WCLOC SHOULD BE +1 SPACE FWD IN CM
02036   703302          INCMB   CAF
02037   200107                  LAC SPACFC              /FIRST PASS SPACE FWD 2ND REVERSE
02040   707324                  LCM                     /LOAD COMMAND
02041   777777                  LAW -1
02042   040032                  DAC WCLOC               /SET WC = -1
02043   207574                  LAC (FAKECA
02044   040033                  DAC CALOC               /SET UP CA
02045   400453                  XCT DSCOPE              /NOP OR HLT
02046   707401                  SDF                     /SET DATA FLAG
02047   740000                  NOP                     /WAIT BREAK SYNC
02050   740000                  NOP                     /SHD OCCUR NEXT
02051   200032                  LAC WCLOC               /GET WC
02052   400453                  XCT DSCOPE              /NOP OR HLT
02053   741200                  SNA                     /WC GO TO 0
02054   100445                  JMS TESTOK              /YES
02055   100350                  JMS ERROR               /ERROR TYPEOUT
02056   602036                  JMP INCMB               /FORCED LOOP ON ERR
                        /
                                .EJECT
```

```
                                /
                                /THE CA SHOULD NOT GET INCREMENTED
                                /WITH A SPACE IN THE CM
                                /FIRST SPACE FWD THEN SPACE REVERSE
02057   703302          INCMBN  CAF
02060   200107                  LAC SPACFC              /GET COMMAND
02061   707324                  LCM                     /LOAD IT
02062   777777                  LAW -1
02063   040033                  DAC CALOC               /SET WC = -1
02064   207574                  LAC (FAKECA
02065   040033                  DAC CALOC               /SET UP CA
02066   040100                  DAC GDDATA              /IT SHD NOT +1
02067   400453                  XCT DSCOPE              /NOP OR HALT
02070   707401                  SDF                     /SET DATA FLAG
02071   740000                  NOP                     /WAIT FOR SYNCS
02072   740000                  NOP
02073   200033                  LAC CALOC               /GET CA AFTER BREAK
02074   400453                  XCT DSCOPE              /NOP OR HLT
02075   540100                  SAD GDDATA              /DID CA INCR
02076   100445                  JMS TESTOK              /NO IT SHOULD NOT
02077   100350                  JMS ERROR               /ERROR TYPEOUT
02100   602057                  JMP INCMBN              /FORCE SCOPE LOOP
                                /
                                /DATA SHOULD NOT BE INPUT ON A SPACE FWD
02101   703302          INCMBD  CAF
02102   200107                  LAC SPACFC              /LOAD COMMAND
02103   707324                  LCM
02104   777777                  LAW -1                  /SET WC
02105   040032                  DAC WCLOC               /TO -1
02106   040100                  DAC GDDATA              /EXPECT BUFFER TO REMAIN ONES
02107   047700                  DAC FAKECA
02110   207574                  LAC (FAKECA
02111   040033                  DAC CALOC               /SET UP CA
02112   400453                  XCT DSCOPE              /NOP OR HLT
02113   707401                  SDF                     /SET DATA FLAG
02114   740000                  NOP                     /WAIT SYNCS
02115   740000                  NOP
02116   207700                  LAC FAKECA              /GET MEM CONTENTS 1
02117   400453                  XCT DSCOPE              /NOP OR HALT
02120   540100                  SAD GDDATA              /MEM CHANGE
02121   100445                  JMS TESTOK              /NO STILL = 777777
02122   100350                  JMS ERROR               /ERROR TYPEOUT
02123   602101                  JMP INCMBD              /FORCE SCOPE LOOP
                                /
                                .EJECT
```

```
                        /
                        /DATA SHOULD NOT BE OUTPUT ON A SPACE
                        /FIRST PASS SP F-D 2ND PASS SPACE REV
02124   703302  INCMR0  CAF
02125   200107          LAC SPACEC              /GET COMMAND
02126   707324          LCM                     /LOAD IT
02127   777777          LAW -1
02130   040032          DAC WCLOC               /SET WC = -1
02131   047700          DAC FAKECA              /AND MEM LOC
02132   207574          LAC (FAKECA
02133   040033          DAC CALOC               /SET UP CA
02134   400453          XCT DSCOPE              /NOP OR HLT
02135   707401          SDF                     /SET DATA FLAG
02136   740000          NOP                     /WAIT FOR SYNCS
02137   740000          NOP
02140   400453          XCT DSCOPE              /NOP OR HLT DB SHD = 0
02141   207571          LAC (2000
02142   707324          LCM                     /CHNG TO READ
02143   707412          RDF                     /READ THE BUFFER
02144   741200          SNA                     /IT SHOULD = 0
02145   100445          JMS TESTOK              /OK
02146   100352          JMS ERROR               /ERROR TYPEOUT
02147   602124          JMP INCMR0              /FORCE SCOPE LOOP
                        /
                        /ENABLE B SHOULD CLEAR BEFORE NEXT IOP 1
                        /IF IT DOES NOT THE DATA FLAG WILL SET AGAIN
02150   703302  INCMR1  CAF
02151   200107          LAC SPACEC              /GET COMMAND
02152   707324          LCM                     /LOAD IT
02153   777776          LAW -2
02154   040032          DAC WCLOC               /SET WC = -2
02155   207574          LAC (FAKECA
02156   040033          DAC CALOC               /SET UP CA
02157   400453          XCT DSCOPE              /NOP OR HALT
02160   707401          SDF                     /SET DATA FLAG
02161   740000          NOP                     /WAIT BREAK SYNC
02162   740000          NOP
02163   707341          MTSF                    /GENERATE IOP 1
02164   740000          NOP                     /WAIT SYNC FOR 2ND
02165   740000          NOP                     /BREAK WHICH SHOUT OCCUR
02166   400453          XCT DSCOPE              /NOP OR HLT
02167   200032          LAC WCLOC               /GET WC REG
02170   547573          SAD (LAW -1             /SHD = -1 ONLY 1 BREAK
02171   100445          JMS TESTOK              /OK
02172   100350          JMS ERROR               /ERROR TYPEOUT
02173   602150          JMP INCMR1              /FORCE SCOPE LOOP
                        /
                        /SEE IF SPACE REV EXECUTED
02174   207576          LAC (7400               /SPACE REV
02175   540107          SAD SPACEC              /DONE SPACE REV
02176   741000          SKP                     /YES
02177   602035          JMP INCMR-1             /REPEAT TESTS SPACE REV
                        /
                        .EJECT
```

```
                                /
                                /END OF INC THE WC TESTS
                                /NOW TEST READ TRANSFER DIRECTION INPUT
                                /
                                /MAKE SURE WC IS INCREMENTED ON READ
                                /DATA FLAG HANG UP HERE IS INSTANT WIPE OUT
002200  7 33402       TRINWC  CAF
002201  207571                LAC (2700
002202  707324                LCM                     /LOAD READ COMMAND
002203  777777                LAW -1
002204  040032                DAC WCLOC               /SET WC = -1
002205  207574                LAC (FAKECA
002206  040033                DAC CALOC               /SET UP CA
002207  400453                XCT DSCOPE              /NOP OR HLT
002210  707401                SDF                     /1 TO DATA FLAG
002211  740700                NOP                     /SHD OCCUR AFT THIS NOP
002212  740000                NOP
002213  703302                CAF                     /POWER CLR JUST IN CASE
002214  200032                LAC WCLOC               /GET WC
002215  400453                XCT DSCOPE              /NOP OR HLT
002216  741200                SNA                     /DID IT +1 TO 0
002217  100445                JMS TESTOK              /YES
002220  100350                JMS ERROR               /ERROR TYPEOUT
002221  602200                JMP TRINWC              /FORCE SCOPE LOOP
                                /
                                /MAKE SURE CA IS INCREMENTED ON READ
002222  703302        TRINCA  CAF
002223  207570                LAC (4400
002224  707324                LCM                     /LOAD WRITE COM
002225  777777                LAW -1
002226  707404                LDR                     /SET DR TO 777777
002227  040032                DAC WCLOC               /AND WC = -1
002230  207574                LAC (FAKECA
002231  040033                DAC CALOC               /SET UP CA
002232  207571                LAC (2700
002233  707324                LCM                     /CHNG COM TO READ
002234  400453                XCT DSCOPE              /NOP OR HLT
002235  707401                SDF                     /SET DATA FLAG
002236  740000                NOP                     /WAIT BREAK SYNC
002237  740000                NOP
002240  200033                LAC CALOC               /GET CA
002241  400453                XCT DSCOPE              /NOP OR HLT
002242  547577                SAD (FAKECA+1           /DID CA +1
002243  100445                JMS TESTOK              /OK
002244  100350                JMS ERROR               /ERROR TYPEOUT
002245  602222                JMP TRINCA              /FORCE SCOPE LOOP
                                /
                                .EJECT
```

```
                        /
                        /MAKE SURE TRANSFER DIRECTION IS INPUT
02246   703322  TRININ  CAF
02247   207571          LAC (2
02250   707324          IOT                     /LOAD READ COMMAND
02251   207574          LAC (FAKECA
02252   040033          DAC CALOC               /SET UP CA
02253   777777          LAC -1
02254   040032          DAC WCLOC               /WC = -1
02255   047701          DAC FAKECA+1            /BREAK LOC = -1
02256   400453          XCT DSCOPE              /NOP OR HALT
02257   707401          SDF                     /1 TO DF
02260   740002          NOP                     /WAIT BREAK SYNC
02261   740002          NOP                     /BRK OCCURS NEXT
02262   207701          LAC FAKECA+1            /GET INPUT MEM LOC
02263   400453          XCT DSCOPE              /NOP OR HALT
02264   741200          SNA                     /WAS TR DIR INPUT
02265   100445          JMS TESTOK              /YES
02266   100352          JMS ERROR               /MEM LOC DOES NOT = 0 TYPEOUT
02267   602246          JMP TRININ              /FORCE SCOPE LOOP
02270   441110          ISZ PASCTR
02271   601642          JMP TROUTW-2
02272   104765          JMS EXTBRK
02273   106764          JMS BRKDAT
02274   621634          JMP* DCHCTS             /END OF DCH CONTROL TEST
                        /
                        /IOT TEST PART 2
                        /NOW THAT CM DATA IS VALIDATED
                        /OTHER TESTS MAY BE MADE ON IOT'S
                        /
02275   602275  IOTES2  JMP .
02276   207467          LAC TSTX04
02277   040101          DAC REGIS
02300   140102          DZM BITMSK              /NOT A BIT TEST
                        /
                        /DRIVE 0 SHOULD BE READY
                        /TEST MTTR TO SKIP
                        /
02301   202305          LAC TSMTTR+2
02302   040100          DAC GODATA
                        /
                        /TEST MTTR TO SKIP WITH DRIVE 0 READY
02303   703312  TSMTTR  CAF 10                  /CLEAR ALL TO 0
02304   400453          XCT DSCOPE              /NOP OR HALT
02305   707301          MTTR                    /DRIVE 0 SHD BE RDY
02306   740001          CMA                     /SHD NOT BE EXCT
02307   400453          XCT DSCOPE              /NOP OR HLT
02310   741200          SNA                     /AC SHD = 0
02311   100445          JMS TESTOK              /OK
02312   100352          JMS ERROR               /MTTR NO SKIP TYPEOUT
02313   602303          JMP TSMTTR              /SCOPE LOOP
                        /
                        .EJECT
```

```
02314   202320          LAC TSMTGO+2
                        /TEST MTGO TO EXIST SHOULD SET
                        /ILLEGAL FUNCTION BIT TO A 1
                        /MTRS HAS NEVER BEEN TEST (1) BEFORE EITHER
02315   044107          DAC GODATA
02316   703302  TSMTGO  CAF                     /CLEAR ALL
02317   400453          XCT DSCOPE              /NOP OR HLT
02320   707304          MTGO                    /GO SHD CAUSE ILL FUNC
02321   707352          MTRS                    /READ STATUS
02322   400453          XCT DSCOPE              /NOP OR HLT
02323   507600          AND (440000             /MASK IF
02324   740202          SZA                     /BIT SHD = 1
02325   100445          JMS TESTOK              /OK
02326   100350          JMS ERROR               /ERROR TYPEOUT
02327   602316          JMP TSMTGO              /FORCE SCOPE LOOP
02330   202335          LAC TSEFIF+3
                        /ILLEGAL FUNCTION ON A 1 SHD SET EF
                        /STATUS REGISTER BIT 0
02331   044100          DAC GODATA
02332   703302  TSEFIF  CAF
02333   400453          XCT DSCOPE              /NOP OR HLT
02334   707304          MTGO                    /GO SHD CAUSE EF
02335   707352          MTRS                    /AND BIT 0 SHD = 1
02336   400453          XCT DSCOPE              /NOP OR HLT AC = STATUS
02337   741100          SPA                     /EF = 1
02340   100445          JMS TESTOK              /YES
02341   100350          JMS ERROR               /ERR TY
02342   602332          JMP TSEFIF              /FORCE SCOPE LOOP
                        /
                        /CLEAR ALL FLAGS TO IO PWR CLR SHD CLR IF AND EF
02343   202350          LAC TIFCAF+3
02344   044100          DAC GODATA
02345   707322  TIFCAF  MTAF                    /MT CLR ALL
02346   707304          MTGO                    /TAPE GO 1 TO IF
02347   400453          XCT DSCOPE              /NOP OR HLT
02350   703302          CAF                     /IO PWR CLR
02351   707352          MTRS                    /READ STATUS
02352   400453          XCT DSCOPE              /NOP OR HLT
02353   507601          AND (440000             /MASK EF AND IF
02354   741200          SNA                     /BOTH SHD BE 0
02355   100445          JMS TESTOK              /OK
02356   100350          JMS ERROR               /ERR TYPE
02357   602345          JMP TIFCAF              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                             /
                             /MTAF I 1 SHOULD CLEAR IF A   FF
02360     202365                     LAC TMTAFC+3
02361     040100                     DAC GDDATA
                             /
02362     703302             TMTAFC  CAF                  /PWR CLR
02363     707304                     MIOO                 /SET IF
02364     400453                     XCT DSCOPE           /NOP OR HLT
02365     707322                     MTAF                 /SHD CLR IF
02366     707352                     MTRS                 /READ STATUS
02367     400453                     XCT DSCOPE           /NOP OR HLT
02370     507601                     AND (440000
02371     741200                     SNA                  /IF SHD = 0 AND FF
02372     100445                     JMS TESTOK           /OK
02373     100350                     JMS ERROR            /IF DID NOT CLR TYPE
02374     602362                     JMP TMTAFC           /FORCE SCOPE LOOP
                             /
                             /MTSF SHOULD SKIP WITH EF = 1
02375     202402                     LAC TSMTEF+3
02376     040100                     DAC GDDATA
                             /
02377     703302             TSMTEF  CAF                  /PWR CLR
02400     707304                     MIOO                 /SET IF AND FF
02401     400453                     XCT DSCOPE           /NOP OR HLT
02402     707351                     MTSF 1               /SHD SKIP EF = 1
02403     740041                     CMA                  /SHD NOT BE XCT
02404     400453                     XCT DSCOPE           /NOP OR HLT
02405     741200                     SNA                  /SKIP OK AC = 0
02406     100445                     JMS TESTOK           /OK
02407     100350                     JMS ERROR            /ERR TYPEOUT
02410     602377                     JMP TSMTEF           /FORCE SCOPE LOOP
02411     202414                     LAC TSBOTR+1
                             /MTRS   SHD READ BOT BACK AS A1
02412     040100                     DAC GDDATA
02413     400453             TSBOTR  XCT DSCOPE
02414     707352                     MTRS                 /GET STATUS
02415     400453                     XCT DSCOPE
02416     507602                     AND (100000          /MASK BOT BIT
02417     740200                     SZA                  /IT SHD=1
02420     100445                     JMS TESTOK           /OK
02421     100350                     JMS ERROR            /BOT DOES NOT=1
02422     602413                     JMP TSBOTR           /FORCE SCOPE LOOP
02423     622275                     JMP* IOTES2
                             /
                             /
                                     .EJECT
```

```
                        /COMMAND DECODING PART 1
                        /DRIVE 1 MUST BE AT LOAD POINT
                        /ON LINE WRITE ENABLED
02424   602424  COFCOD  JMP .
02425   207474          LAC TSTXR5
02426   040171          DAC REGIS               /CODE TO COMMAND DECODING
02427   143172          DZM BITMSK                      /NOT A BIT TEST
02430   750704          LAS                     /GET SWS
02431   507603          AND (4                  /MSK 13
02432   740240          SZA                     /ORV = 9TRK
02433   207634          LAC (340                /YES
02434   040107          DAC SPACEC              /0 OR 300 9TRK
                        /
                        /TC59 INSTRUCTION TEST
                        /COMMAND DECODING
                        /REWIND COMMAND AT LOAD POINT SHD CAUSE IF
02435   207566          LAC (1700
02436   040100          DAC GODATA
02437   703302  TREWIF  CAF                     /PWR CLR
02440   207566          LAC (1700
02441   340107          TAD SPACEC              /IN CASE 0 IS 9TRK
02442   707326          MTLC                    /LOAD REWIND
02443   400453          XCT DSCOPE              /NOP OR HALT
02444   707304          MTGO                    /GO SHD SET IF
02445   707352          MTRS                    /READ STATUS
02446   400453          XCT DSCOPE              /NOP OR HALT
02447   507600          AND (400000             /MASK IF BIT
02450   740200          SZA                     /IT SHD = 1
02451   100445          JMS TESTOK              /OK
02452   100352          JMS ERROR               /ERROR TYPE
02453   602437          JMP TREWIF              /FORCE SCOPE LOOP
                        /
                        /TEST COMMAND DECODING BACKSPACE
                        /BACKSPACE COMMAND AT LOAD POINT
                        /SHD CAUSE IF
02454   207576          LAC (7700
02455   040100          DAC GODATA              /INDICATE BACKSPACE
02456   703302  TBAKIF  CAF                     /PWR CLR
02457   207576          LAC (7700
02460   340107          TAD SPACEC              /MAYBE 9TRK
02461   707326          MTLC                    /LOAD BKSPACE COMMAND
02462   400453          XCT DSCOPE              /NOP OR HLT
02463   707304          MTGO                    /TAPE GO
02464   707352          MTRS                    /READ STATUS
02465   703302          CAF                     /PWR CLR TO MAYBE STOP
02466   400453          XCT DSCOPE              /NOP OR HLT
02467   507600          AND (400000             /MASK IF BIT
02470   740200          SZA                     /IT SHD = 1
02471   100445          JMS TESTOK              /OK
02472   100350          JMS ERROR               /ERR TYPE IF = 0
02473   602456          JMP TBAKIF              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                        /COMMAND DECODING
                        /TEST WRITE FUNCTION VALIDITY
                        /ONE ASPECT OF WRITE FUNCTION PER TEST
02474   207600          LAC (440000
                        /TEST WRITE FUNCTION SEQUENCE
                        /1 TEST - WRITE GO DOES NOT SET ILL FUNCTIONS
02475   044100          DAC GOMATA
02476   703302  TWRIEN  CAF                     /IO PWR CLR
02477   207605          LAC (440000
02500   340107          TAD SPACEC              /IN CASE 9TRK
02501   707326          MTLC                    /LOAD WRITE COMMAND
02502   707301          MTTR                    /WAIT DRV 0 RDY
02503   602502          JMP .-1
02504   777777          LAW -1                  /SET WC = -1
02505   040032          DAC WCLOC
02506   047701          DAC FAKECA+1
02507   207574          LAC (FAKECA             /SET UP CA
02510   040033          DAC CALOC
02511   400453          XCT DSCOPE              /NOP OR HLT
02512   707304          MTGO                    /TAPE GO
02513   740200          NOP                     /WAIT
02514   707352          MTRS                    /READ STATUS
02515   703302          CAF                     /IO PWR CLR
02516   400453          XCT DSCOPE              /NOP OR HLT
02517   507563          AND (677777
02520   741200          SNA                     /NO BITS EXCEPT NOT VALID
02521   100445          JMS TESTOK              /OK
02522   100350          JMS ERROR               /ERROR TYPE
02523   602476          JMP TWRIEN              /FORCE SCOPE LOOP
                        /TEST WRITE FUNCTION SEQUENCE
                        /USES DRIVE 0 ONLY
                        /2ND TEST MTCR SHOULD NOT SKIP AFTER GO
02524   703302  TSWRIT  CAF                     /CLR ALL
02525   207570          LAC (4000
02526   340107          TAD SPACEC              /IN CASE 9TRK
02527   707326          MTLC                    /LOAD WRITE COMMAND
02530   707301          MTTR                    /WAIT DRIVE 0 READY
02531   602530          JMP .-1
02532   777777          LAW -1
02533   047701          DAC FAKECA+1
02534   040032          DAC WCLOC               /SET WC = -1
02535   207574          LAC (FAKECA
02536   040033          DAC CALOC               /SET UP CA
02537   400453          XCT DSCOPE              /NOP OR HALT
02540   707304          MTGO                    /GO
02541   707331          MTCR 1B                 /CONTROL SHD NOT BE RDY
02542   740001          CMA                     /CMA SHD BE XCT
02543   703302          CAF                     /POWER CLR AGAIN
02544   400453          XCT DSCOPE              /NOP OR HALT
02545   740200          SZA                     /AC = 0 IS MTCR SKIP
02546   100445          JMS TESTOK              /DID NOT SKIP OK
02547   100350          JMS ERROR               /ERROR TYPEOUT
02550   602524          JMP TSWRIT              /FORCE SCOPE LOOP
                        .EJECT
```

```
                        /TEST DRIVE 1 TO BECOME NOT READY AFTER MTGO
                        /
02551   703302          TSDRNR  CAF
02552   207605                  LAC (44000
02553   340107                  TAD SPACEC              /FOR MAYBE 9TRK
02554   707326                  MTLC                    /LOAD WRITE COMMAND
02555   707301                  MTTR                    /WAIT DRIVE READY
02556   602555                  JMP .-1
02557   777777                  LAW -1
02560   040032                  DAC WCLOC               /-1 TO WC
02561   047701                  DAC FAKECA+1
02562   207574                  LAC (FAKECA
02563   040033                  DAC CALOC               /SETUP CA
02564   400453                  XCT DSCOPE              /NOP OR HLT
02565   707314                  MTLO 14                 /TAPE GO
02566   740000                  NOP                     /WAIT
02567   707301                  MTTR                    /DRIVE SHD NOT BE READY
02570   740001                  CMA                     /SHD BE XCT NO SKIP
02571   703302                  CAF                     /PWR CLR AGAIN
02572   400453                  XCT DSCOPE              /NOP OR HALT
02573   740200                  SZA                     /AC SHD = 777777
02574   100445                  JMS TESTOK              /OK
02575   100350                  JMS ERROR               /TYPEOUT
02576   602551                  JMP TSDRNR              /FORCE SCOPE LOOP MTTR
                        /
                        /NOW TEST 1 DATA BREAK MADE IMMEDIATELY
                        /AFTER MTGO
                        /
02577   703302          TSWRDB  CAF                     /POWER CLR
02600   207605                  LAC (44000
02601   340107                  TAD SPACEC              /IN CASE 9TRK
02602   707326                  MTLC                    /LOAD WRITE COMMAND
02603   707301                  MTTR                    /WAIT DRIVE READY
02604   602603                  JMP .-1
02605   777777                  LAW -1
02606   040032                  DAC WCLOC               /SET WC = -1
02607   047701                  DAC FAKECA+1
02610   207574                  LAC (FAKECA
02611   040033                  DAC CALOC               /SET UP CA
02612   400453                  XCT DSCOPE              /NOP OR HLT
02613   707304                  MTGO                    /GO SHD 1 TO DF
02614   740000                  NOP                     /WAIT FOR
02615   740000                  NOP                     /DATA BREAK TO SYNC
02616   740000                  NOP
02617   703302                  CAF                     /PWR CLR
02620   200032                  LAC WCLOC               /GET WORD COUNT
02621   400453                  XCT DSCOPE              /NOP OR HALT
02622   741200                  SNA                     /WC SHD HAVE GONE TO 0
02623   100445                  JMS TESTOK              /OK
02624   100350                  JMS ERROR               /ERROR TYPEOUT
02625   602577                  JMP TSWRDB              /FORCE SCOPE LOOP
02626   622424                  JMP* CDECOD
                        /
                                .EJECT
```

```
                                  /TC59 INSTRUCTION TEST TAPE 3
                                  /TAPE MOTION TESTS
                                  /WRITE PARITY TEST
                                  /READ LATERAL PARITY TEST
                                  /
                                  /TAPE MOTION AND FURTHER COMMAND DECODING
                                  /TEST MOTION FWD AND BKWARD
                                  /
02627     602627                  TAPE40    JMP .
02630     207501                            LAC TSTX06
02631     040101                            DAC REGIS
02632     777774                            LAW -4
02633     040110                            DAC PASCTR
02634     140102                            DZM BITMSK
02635     750004                            LAS
02636     507603                            AND (40
02637     740200                            SZA
02640     207604                            LAC (300
02641     040107                            DAC SPACFC
                                  /FIRST TEST WRITE MOTION FWD FROM BOT
02642     207570                            LAC (4000
02643     103011                            JMS MOTFWD
                                  /TEST BACKSPACE INTO BOT MOTION
02644     207576                            LAC (7000
02645     103051                            JMS MOTBKW
                                  /TEST READ MOTION FWD
02646     207571                            LAC (2000
02647     103011                            JMS MOTFWD
                                  /AND BACKSPACE AGAIN INTO BOT
02650     207576                            LAC (7000
02651     103051                            JMS MOTBKW
                                  /SPACE FORWARD FROM BOT
02652     207575                            LAC (6000
02653     103011                            JMS MOTFWD
                                  /AND BACKSPACE
02654     207576                            LAC (7000
02655     103051                            JMS MOTBKW
                                  /AND READ COMPARE SHD GO FWD
02656     207572                            LAC (3000
02657     103011                            JMS MOTFWD
                                  /AND BACKSPACE INTO BOT AGAIN
02660     207576                            LAC (7000
02661     103051                            JMS MOTBKW
                                  /WRITE END OF FILE TO GO FWD
02662     207626                            LAC (5000
02663     103011                            JMS MOTFWD
02664     207576                            LAC (7000
02665     103051                            JMS MOTBKW
                                  /
                                            .EJECT
```

```
                        /TEST REWIND OPERATION
                        /FIRST MOVE TAPE FWD FROM LOAD POINT
                        /SEE COMMENTS AT REWEND
02666   207575  NOTREW  LAC (6 00
02667   340107          TAD SPACEC
02670   707321          MTCR                    /WAIT CONTROL RDY
02671   602670          JMP .-1
02672   707326          MTLC                    /LOAD SPACE COMMAND
02673   707301          MTTR
02674   602673          JMP .-1                 /WAIT DRVRDY
02675   707304          MTGO                    /START FWD
02676   707352          MTRS
02677   507602          AND (1 10003            /WAIT FOR
02700   740202          SZA                     /BOT TO GO AWAY
02701   602676          JMP .-3
02702   703302          CAF                     /PWR CLR STOP TAPE
02703   707301          MTTR
02704   602703          JMP .-1                 /WAIT DRVRDY AGAIN
02705   207566          LAC (1 00
02706   707326          MTLC                    /LOAD REWIND COMMAND
02707   040100          DAC GODATA
02710   140710          DZM 10
                        /TEST ALL STATUS ASPECTS OF REWIND
                        /FIRST TEST REW STATUS AND NOT EF ATGO
02711   400453          XCT DSCOPE
02712   707304          MTGO
02713   707352          MTRS
02714   741100          SPA
02715   603001          JMP REWEND
                        /TAPE REWINDING STATUS SHD=1
02716   707352          MTRS                    /RD STAT
02717   507607          AND (2 00000            /MASK REW
02720   740200          SZA                     /SHD=1
02721   602724          JMP .+3                 /OK
02722   207610          LAC (1                  /ERR 1
02723   603001          JMP REWEND              /REW STATUS=0
                        /TAPE SHOULD EVENT GET BACK TO BOT
02724   707352          MTRS
02725   507602          AND (1 00000
02726   740200          SZA
02727   602734          JMP .+5                 /OK
02730   602724          JMP .-4                 /NO
02731   207611          LAC (2                  /ERROR 2 TAPE NOT BACK TO BOT
02732   603001          JMP REWEND
                        /
                        .EJECT
```

```
                                /GOT STATUS SHOULD GO AWAY AGAIN TAPE KEEPS GOING
02733   140010                  DZM 10
02734   707352                  MTKS
02735   507602                  AND (1^0000             /MASK BOT BIT
02736   740240                  SNA                     /IT SHD EVENTUALLY GO TO 0
02737   602744                  JMP .+5                 /OK
02740   440010                  ISZ 10                  /WAITED LONG ENOUGH
02741   602734                  JMP .-5                 /NO
02742   207612                  LAC (3                  /ERROR 3 BOT DID NOT
02743   603001                  JMP REWEND              /GO AWAY AGAIN
                                /TAPE REWINDING STATUS SHOULD STILL=1
02744   707352                  MTKS                    /GET STATUS
02745   507607                  AND (2^0000             /MASK REW
02746   740200                  SZA                     /IT SHD STILL=1
02747   602752                  JMP .+3                 /OK
02750   207613                  LAC (4                  /ERR 4 BOT CLRD
02751   603001                  JMP REWEND              /REWINDING STATUS
02752   140010                  DZM 10
02753   707352                  MTKS                    /TAPE SHOULD COME
02754   507602                  AND (1^0000             /FWD TO BOT
02755   740200                  SZA                     /BOT ON A 1 YET
02756   602763                  JMP .+5                 /YES
02757   440010                  ISZ 10                  /WAITED LONG ENOUGH
02760   602753                  JMP .-5                 /NO
02761   207614                  LAC (5                  /ERROR 5 TAPE DID NOT
02762   603001                  JMP REWEND              /COME FWD TO BOT
                                /
                                .EJECT
```

```
                        /ONCE AT BOT MOTION SHD STOP AND DRIVE BECOME READY
02763   140010          DZM 10
02764   707301          MTTR                    /DRV READY
02765   741000          SKP                     /NO COUNT
02766   602774          JMP .+6                 /DRV IS RDY
02767   440010          ISZ 10                  /TIMED OUT
02770   602764          JMP .-4                 /NO
02771   703302          CAF                     /PWR CLR
02772   207615          LAC (6                  /ERR 6 DRIVE NOT READY
02773   603001          JMP REWEND              /AT 2ND BOT (END)
                        /WHEN DRIVE RECOVERS READY MTF SHD=1
02774   707352          MTFS                    /GET STATUS
02775   507565          AND (100                /MASK MTF
02776   750200          SZA!CLA                 /IT SHD = 1
02777   603001          JMP REWEND              /OK
03000   207616          LAC (7                  /ERROR 7 MTF NOT = 1
                        /AC  AT THIS POINT INDICATES ERROR TYPE
                        /AC = 1 IS REWINDING STATUS NOT INITIALLY SET
                        /AC = 2 IS BOT NOT RCHD BKWRD WITHIN LIMIT
                        /AC = 3 IS BOT NEVER WENT AWAY BKWDS
                        /AC = 4 IS BOT BKWDS CLRD REWINDING STATUS
                        /AC = 5 TAPE TOOK TO LONG END TO BOT AGAIN
                        /AC = 6 DRV TOOK TO LONG TO BECOME RDY AT BOT
                        /AC = 7 MTF DID NOT GO TO A 1 AT TUR
03001   400453  REWEND  XCT DSCOPE               /NOP OR HALT
03002   741200          SNA                     /ALL TESTS OK
03003   100445          JMS TESTOK              /YES
03004   100350          JMS ERROR
03005   602666          JMP MOTREW
03006   440110          ISZ PASCTR              /RPT WHOLE TEST
03007   602634          JMP TAPEMO+5            /4 TIMES
03010   622627          JMP* TAPEMO
                        /
                        .EJECT
```

```
                                   /TEST MOTION FORWARD COMMANDS AC = COMMAND
    03011     603011               MOTFWD   JMP .
    03012     340147                        TAD SPACEC        /IN CASE 9 TRK DRV
    03013     040100                        DAC GODATA
    03014     200100                        LAC GODATA        /GET COMMAND
    03015     707321                        MTCR
    03016     603015                        JMP .-1           /WAIT CUREADY
    03017     707326                        MTLC              /LOAD
    03020     707301                        MTTR              /WAIT DRV READY
    03021     603020                        JMP .-1
    03022     763021                        LAW .-1
    03023     040032                        DAC WCLOC         /SET WC
    03024     207574                        LAC (FAKECA
    03025     040033                        DAC CALOC         /SET CA
    03026     140010                        DZM 10            /CLR COUNTER (TIMER)
    03027     200100                        LAC GODATA
    03030     400453                        XCT DSCOPE        /NOP OR HALT
    03031     707304                        MTGO              /START OPERATION
    03032     707352                        MTRS              /GET STAUS
    03033     741100                        SPA               /EF SHD = 0
    03034     603042                        JMP .+6           /EF = 1 TYPE STATUS
    03035     507602                        AND (100000       /MASK BOT
    03036     741200                        SNA               /DID IT GO TO 0 YET
    03037     603042                        JMP .+3           /YES
    03040     440010                        ISZ 10            /TIMED OUT
    03041     603032                        JMP .-7           /NO GET STATUS AGAIN
    03042     703302                        CAF               /PWR CLR
    03043     400453                        XCT DSCOPE        /NOP OR HALT
    03044     741200                        SNA               /BOT GO AWAY
    03045     100445                        JMS TESTOK        /YES
    03046     100350                        JMS ERROR         /NO TYPE BOT = 1 OR EF = 1
    03047     603014                        JMP MOTFWD+3      /SCOPE LOOP
    03050     623011                        JMP* MOTFWD       /EXIT MOTION FWD
                                   /
                                            .EJECT
```

```
                        /TEST SPACE REVERSE INTO BOT
03051   603051  MOTBKW  JMP .
03052   340107          TAD SPACEC          /IN CASE 9 TRACK
03053   040100          DAC GDDATA
03054   240100          LAC GDDATA
03055   707321          MTCR                /WAIT CORDY
03056   603056          JMP .-1
03057   707326          MTEC                /LOAD
03060   707301          MTTR                /WAIT DRV RDY
03061   603060          JMP .-1
03062   777777          LAC -1
03063   040032          DAC WCLOC           /SET WC
03064   207574          LAC (FAKECA
03065   040033          DAC CALOC           /SET CA
03066   140710          DZM 10              /CLR TIMER
03067   200100          LAC GDDATA
03070   400453          XCT DSCOPE          /NOP OR HLT
03071   707304          MTGO                /GO
03072   707352          MTRS                /GET STATUS
03073   741100          SPA                 /EF SHD = 0
03074   603104          JMP .+10            /BUT = 1
03075   707352          MTRS                /GET STATUS AGAIN
03076   740001          CMA                 /BIT 2 SHD EVENT = BOT = 1 = 0 CMA
03077   507602          AND (1*0000         /MASK BOT
03100   741200          SNA                 /BOT STILL = 0
03101   603104          JMP .+3             /NO = 1 AT BOT (CMA MADE IT 0)
03102   440010          ISZ 10              /TIMED OUT
03103   603075          JMP .-6             /NO
03104   703302          CAF                 /PWR CLR
03105   400453          XCT DSCOPE
03106   741200          SNA                 /GET TO BOT OK
03107   100445          JMS TESTOK          /YES
03110   100350          JMS ERROR           /ERROR TYPE
03111   603054          JMP MOTBKW+3        /FORCE SCOPE
03112   623051          JMP* MOTBKW         /EXIT ROUND
                /
                        .EJECT
```

```
                        /TC59 WRITE PARITY TEST EVEN PARITY
                        /WRITES 1 CHARACTER RECORDS 01 TO 77
                        /IF DRIVE 0 IS 9 TRACK 001 TO 377
                        /WRITE ODD PARITY GOES 00 TO 77 OR 000 TO 377
03113   603113  WRTPAR  JMP .
03114   207513          LAC TSTX10
03115   040101          DAC REGIS
03116   750004          LAS
03117   507603          AND (40                 /MASK BIT 16
03120   740200          SZA                     /DRV0-7 OR 9 TRK
03121   207604          LAC (340                /9 TRK
03122   040107          DAC SPACFC              /OR AC = 0 IS 7 TRK
03123   740200          SZA
03124   207617          LAC (377                /9 TRK LAST CHAR
03125   741200          SNA
03126   207620          LAC (77                 /7 TRK LAST CHAR
03127   040010          DAC 10
03130   140102          DZM BITMSK              /NOT A BIT TEST
03131   140100          DZM GDDATA
03132   440100          ISZ GDDATA              /+1 DATA CHAR ODD
03133   103275          JMS WRTONE              /WRITE IT
03134   200100          LAC GDDATA
03135   540010          SAD 10                  /DONE TO LAST CHAR
03136   741000          SKP                     /YES
03137   603132          JMP .-5
                        /NOW DO WRITE PARITY ODD
03140   140100          DZM GDDATA              /START FROM 00
03141   200107          LAC SPACFC
03142   347600          TAD (400000             /SET PARITY TO ODD
03143   040107          DAC SPACFC
03144   103275          JMS WRTONE              /WRITE CURRENT CHAR
03145   200100          LAC GDDATA
03146   540010          SAD 10                  /DONE TO LAST CHAR
03147   623113          JMP* WRTPAR             /YES
03150   440100          ISZ GDDATA              /+1 CHAR TO WRITE
03151   603144          JMP .-5                 /DO NEXT
                        /
                        .EJECT
```

```
                        /PARITY ERROR TEST
                        /WRITE ALL CHARACTERS AT EVEN READ AT ODD
                        /WRITE ALL CHARACTER AT ODD READ AT EVEN
03152   603152  TESTPE  JMP .
03153   207524          LAC TSTX11
03154   040131          DAC SECIS           /6 IS FOR PE PARITY ERROR
03155   140142          DZM BITMSK          /NOT A BIT TEST
03156   750004          LAS
03157   507623          AND (4
03160   740200          SZA                 /DRV 7 OR 9
03161   207624          LAC (3700           /9
03162   040107          DAC SPACEC
03163   740200          SZA                 /7 OR 9
03164   207621          LAC (177777         /9
03165   741200          SNA
03166   777777          LAW -1              /7 TRACK
03167   040010          DAC 10
03170   547621          SAD (177777
03171   207622          LAC (4001           /9 TRK INCREMENTER
03172   543166          SAD .-4
03173   207623          LAC (1001           /7 TRK INCREMENTER
03174   040014          DAC 14
03175   140100          DZM GDDATA          /EVEN STARTS WITH 001
03176   200100  PEVNLP  LAC GDDATA          /LAST WORD
03177   340014          TAD 14              /+010101 OR 4001
03200   040100          DAC GDDATA
03201   103275          JMS WRTONE          /WRITE RECORD
03202   103225          JMS READPP          /BACK AND READ FOR PE
03203   200100          LAC GDDATA
03204   540010          SAD 10              /AT LAST RECORD
03205   741000          SKP                 /YES
03206   603176          JMP PEVNLP          /GO BACK DO NEXT WORD
03207   140100          DZM GDDATA          /START WITH 0
03210   200107          LAC SPACEC
03211   347600          TAD (43000          /CHNG TO WRITE ODD
03212   040107          DAC SPACEC
03213   603217          JMP .+4             /START WRITE 0000
03214   200100  PODDLP  LAC GDDATA          /LAST CHAR
03215   340014          TAD 14              /+01001 OR 4001-9 TRK
03216   040100          DAC GDDATA
03217   103275          JMS WRTONE          /WRITE AT ODD
03220   103225          JMS READPP          /READ AT EVEN XPECT PAR
03221   200100          LAC GDDATA
03222   540010          SAD 10              /DONE TO END
03223   623152          JMP* TESTPE         /YES EXIT TEST
03224   603214          JMP PODDLP          /DO NEXT CHAR
                        /
                        .EJECT
```

```
                        /ANY TIME DURING HALT OR HIGH SPEED SCOPE LOOP
                        /IF WRITE IS SUSPECTED RESTART AT SWTOP+1 NEXT PASS
                        /BACKSPACE, READ THE BLOCK OPPOSITE PARITY EXPECT FL
03225   603225  READEP JMP .
03226   707321          MTTR
03227   603226          JMP .-1                 /WAIT DRV READY
03230   207576          LAC (7700
03231   340107          TAD SPACEC              /IN CASE 9 TRK DRV
03232   707326          MTLC                    /BACKSPACE COMMAND
03233   707301          MTTR
03234   603233          JMP .-1
03235   777777          LAW -1
03236   040032          DAC WCLOC               /1 RECORD
03237   707304          MTGO                    /GO
03240   740000          NOP
03241   707301          MTTR                    /WAIT DRV READY
03242   603241          JMP .-1
03243   200107          LAC SPACEC              /GET PAR AND DEN
03244   247600          XOR (44000              /COMP READ PARITY
03245   347571          TAD (2200               /+ READ COMMAND
03246   707326          MTLC
03247   760000          LAW
03250   040032          DAC WCLOC               /1 WORD
03251   207574          LAC (FAKECA
03252   040033          DAC CALOC               /SET UP CA
03253   140011          DZM 11                  /CLR WAIT DONE COUNT
03254   400453          XCT DSCOPE              /NOP OR HALT
03255   707304          MTGO                    /GO
03256   707352          MTRS                    /GO STATUS
03257   707301          MTTR
03260   741000          SKP                     /WAIT DRV READY
03261   603266          JMP .+5
03262   440011          ISZ 11
03263   603256          JMP .-5
03264   703302          CAF
03265   750000          CLA
03266   400453          XCT DSCOPE
03267   507624          AND (4201000            /STATUS SHD = EF PE ANY MTF
03270   547624          SAD (4201000            /STATUS OK
03271   100445          JMS TESTOK              /YES
03272   100350          JMS ERROR               /ERR TYPE
03273   603226          JMP READEP+1            /FORCE SCOPE
03274   623225          JMP* READEP             /EXIT READ PARITY EXPECTED
                        /
                        .EJECT
```

```
                        /WRITE A 1 WORD DATA PATTERN
                        /WORD IS IN GODATA AND AC AT FIRST HLT
03275   603275  WRTONE  JMP .
03276   777775          LAW -3
03277   040012          DAC 12              /TRY 3 TIMES
03300   707321          MTCR
03301   603300          JMP .-1             /WAIT COREADY
03302   207576          LAC (4400           /WRITE
03303   340107          TAD SPACEC          /+ DENSITY IF 9 TRK
03304   707326          MTLC                /LOAD COMMAND
03305   707301          MTTR                /WAIT DRV RDY
03306   603305          JMP .-1
03307   207574          LAC (FAKECA
03310   040033          DAC CALOC           /SET UP
03311   777777          LAW -1              /CA AND WC
03312   040032          DAC WCLOC           /FOR 1 WORD
03313   140011          DZM 11
03314   200100          LAC GODATA          /GET WORD
03315   047701          DAC FAKECA+1        /TO WRITE BUFFER
03316   400453          XCT DSCOPE          /NOP OR HLT
03317   707304          MTGO                /START WRITE
03320   707352          MTRS                /RD STATUS
03321   707301          MTTR                /WAIT DRV RDY
03322   741000          SKP
03323   603330          JMP .+5             /DRV RDY TEST STATUS
03324   440011          ISZ 11              /WAITED LONG ENOUGH
03325   603320          JMP .-5             /NO
03326   703302          CAF                 /CLEAR ALL
03327   777777          LAW -1              /SET AC = -1
03330   400453          XCT DSCOPE          /NOP OR HLT
03331   740100          SMA                 /EF = 1
03332   603336          JMP .+4             /NO EF
03333   040013          DAC 13              /SAVE STAT
03334   507625          AND (2000           /MASK
03335   741200          SNA                 /PAR ERR
03336   603345          JMP .+7             /NO
03337   440012          ISZ 12              /ERROR 3 TIMES
03340   603300          JMP WRTONE+3        /NO TRY AGAIN
03341   777777          LAW -1
03342   040012          DAC 12              /SET TO SKP EVRY ERROR
03343   200013          LAC 13              /GET STATUS FOR TYPEOUT
03344   741000          SKP
03345   100445          JMS TESTOK
03346   100350          JMS ERROR           /TYPEOUT 3 CONSECUTIVE ERRORS
03347   603300          JMP WRTONE+3        /SCOPE LOOP EVERY RECORD
03350   623275          JMP* WRTONE         /EXIT WRITE COMPLETE

                        /
                        .EJECT
```

```
                        /COMBINED FUNCTIONS TEST, START WITH WRITE EOF
                        /THEN PROCEED WITH WRITE EOF BACKSPACE
03351   003351  TESEWS  JMP .
03352   750004          LAS
03353   507603          AND (4
03354   740200          SZA                     /NINE TRACK DRIVE
03355   207604          LAC (6 0                /YES
03356   040107          DAC SPACFC              /SAVE DENSITY BITS
03357   207506          LAC TSTX07
03360   040101          DAC REGIS               /CODE FOR TF TAPE FUNCTION
03361   207626          LAC (4101Ø0             /EOF AND MTF EXPECTED
                        /FIRST TEST WRITE EOF BY ITSELF FROM BOT
03362   040100          DAC GDDATA              /EOF STATUS EXPECTED
03363   104062  TWEOF   JMS BAKBOT             /BACKSPACE FORCED TO BOT
03364   207627          LAC (45000              /GET WEOF COMMAND
03365   340107          TAD SPACFC              /+ DENSITY BITS
03366   707326          MTLC                    /LOAD IT
03367   777777          LAW -1
03370   040032          DAC WCLOC               /SET UP WC
03371   207574          LAC (FAKFCA             /AND CA TO
03372   040033          DAC CALOC               /TEST FOR NO
03373   140010          DEM 10                  /DATA BREAK
03374   140011          DEM 11                  /CLR TIME CTR
03375   400453          XCT DSCOPE              /NOP OR HLT
03376   707304          MTGO                    /START DRIVE
03377   707352          MTRS                    /RD STATUS
03400   741100          SPA                     /EF=1
03401   603410          JMP .+7                 /YES PWR CLR
03402   707301          MTTR                    /DRV RDY YET
03403   741000          SKP                     /NO TIME
03404   603412          JMP .+6                 /DRV RDY CHK STATUS
03405   440010          ISZ 10                  /WAITED LONG ENOUGH
03406   603402          JMP .-4                 /NO
03407   777777          LAW -1                  /AC=777777 TIMER OF LOW
03410   703302          CAF                     /PWR CLR
03411   603426          JMP WEOFND              /TYPE OUT
03412   707352          MTRS
03413   540100          SAD GDDATA              /CORRECT STATUS
03414   741000          SKP                     /YES
03415   603426          JMP WEOFND              /INCORRECT STATUS
03416   200032          LAC WCLOC               /GET WC
03417   547573          SAD (LAW -1)            /WAS DATA BREAK MADE
03420   603423          JMP .+3                 /NO TEST OK
03421   207610          LAC (1                  /AC=1 IS WEOF
03422   603426          JMP WEOFND              /MADE DATA BREAK
03423   777777          LAW -1
03424   040011          DAC 11
03425   707352          MTRS
03426   400453  WEOFND  XCT DSCOPE              /GET STATUS AGAIN
03427   440011          ISZ 11                  /NOP OR HLT
03430   741000          SKP                     /SKP IS TEST OK
03431   100445          JMS TESTOK              /NO ERROR
03432   100350          JMS ERROR               /TYPE OUT
03433   603363          JMP TWEOF               /FORCE SCOPE LOOP
                        .EJECT
```

```
                                /WRITE END OF FILE IS APPARENTLY CORRECT
                                /NOW TEST WRITE EOF BACKSPACE
                                /AC = 1 AT 2ND HALT IS WCLOC INCORRECT
03434   104062  RKEOF   JMS BAKBOT          /FORCE TAPE BKWD TO BOT
03435   104125          JMS WRTEOF          /WRITE A NEW EOF
03436   140010          DZM 10              /CLR TIMER
03437   140032          DZM WCLOC           /0 TO WC LOC
03440   207574          LAC (FAKFCA
03441   040033          DAC CALOC           /SET UP CA
03442   207576          LAC (7200           /BKSPACE
03443   340107          TAD SPACFC          /+ TENSITY
03444   140011          DZM 11              /CLR ERROR INDICATOR
03445   400453          XCT DSCOPE          /NOP OR HALT
03446   707326          MTLC                /LOAD SPACE
03447   707304          MTGO                /GO
03450   707352          MTRS                /RD STATUS
03451   741100          SPA                 /EF=1 IS NO SKP
03452   603461          JMP .+7             /STATUS ERRO CAF
03453   707301          MTTR                /DRIVE RDY
03454   741000          SKP                 /NO TIME
03455   603463          JMP .+6             /DRV RDY CHK STATUS
03456   440010          ISZ 10
03457   603453          JMP .-4
03460   777777          LAW -1              /SET TIMER RUN OUT
03461   703302          CAF                 /PWR CLR STOP ALL
03462   603476          JMP REOFND          /GO TO END LOOP
03463   707352          MTRS
03464   540100          SAD GOODATA         /STATUS=EOF AND EF
03465   741000          SKP                 /YES
03466   603476          JMP REOFND          /STATUS ERROR
03467   207610          LAC (1              /WC SHD HAVE+1
03470   540032          SAD WCLOC           /DID IT
03471   741000          SKP                 /YES
03472   603476          JMP REOFND          /NO WC NOT=1
03473   777777          LAW -1
03474   040011          DAC 11
03475   707352          MTRS                /SET TEST OK
03476   400453  REOFND  XCT DSCOPE                  /NOP OR HALT
03477   440011          ISZ 11              /TEST OK
03500   741000          SKP                 /NO ERROR
03501   100445          JMS TESTOK          /SKP NEXT 2 FRST PASS
03502   100350          JMS ERROR           /ERR TYPE
03503   603434          JMP RKEOF           /FORCE SCOPE LOOP
                        .EJECT
```

```
03504   207575          LAC (0 0F
03505   040012          DAC 12                  /FIRST PASS IS SPACE
                /EOF MUST BE WRITTEN CORRECTLY OFF HOT
                /NOW DO A SPACE REWD FROM BOT EXPECT EOF
                /WRITE EOF WAS OK AND BACKSPACE WAS OK TO EOF
                /2ND PASS IS READ /SHD STILL GET /ALL IMPOT
03506   104062  SPEOF   JMS BAKBOT              /FORCE BKWD TO BOT
03507   200012          LAC 12                  /READ COMMAND
03510   340107          TAD SPACFC              /+DENSITY
03511   707326          MTLC                    /LOAD IT
03512   140032          DZM WCLOC               /CLR WC
03513   140010          DZM 10                  /TIMER
03514   140011          DZM 11                  /AND TEST OK INDICAGOR
03515   207574          LAC (FAKECA
03516   040033          DAC CALOC               /SET CA
03517   400453          XCT DSCOPE              /NOP OR HALT
03520   707304          MTGO                    /GET STATUS
03521   707352          MTRS
03522   741100          SPA                     /NOT SKP IF EF=1
03523   603532          JMP .+7                 /ERROR PWR CLR
03524   707301          MTTR                    /DRV RDY YET
03525   741000          SKP                     /NO
03526   603534          JMP .+6                 /DRV RDY CHK STATUS
03527   440010          ISZ 10                  /TIMED OUT
03530   603524          JMP .-4                 /NO
03531   777777          LAW -1                  /AC=777777 TIME O FLOW
03532   703302          CAF                     /PWR CLR
03533   603547          JMP SEOFND              /GO TO END OF TEST
03534   707352          MTRS
03535   500100          AND GDDATA              /MSK OF RL
03536   540100          SAD GDDATA              /GET END OF FILE
03537   741000          SKP                     /YES
03540   603547          JMP SEOFND              /NO TYPE ERR STATUS
03541   207610          LAC (1
03542   540032          SAD WCLOC               /DID WC +1
03543   741000          SKP                     /YES
03544   603547          JMP SEOFND              /AC=1 IS WC ERROR
03545   777777          LAW -1
03546   040011          DAC 11                  /SET ALL TESTS OK
03547   400453  SEOFND  XCT DSCOPE              /NOP OR HALT
03550   440011          ISZ 11                  /TESTS OK
03551   741000          SKP                     /NO ERR TYPE
03552   100445          JMS TESTOK              /SKP NEXT 2 PASS1
03553   100350          JMS ERROR               /ERR TYPE
03554   603506          JMP SPEOF               /FORCE SCOPE LOOP
03555   200012          LAC 12
03556   547571          SAD (2000
03557   207572          LAC (3400               /LAST PASS IS RD COMP
03560   547575          SAD (6000
03561   207571          LAC (2400               /SECOND PASS IS READ DATA
03562   540012          SAD 12
03563   603566          JMP .+3
03564   040012          DAC 12
03565   603506          JMP SPEOF
                        .EJECT
```

```
03566   207565          LAC (177
03567   040130          DAC GODATA
                /NOW TEST WRITE A 1 WORD RECORD
                /FROM BOT TESTS WC AND MOTION
                /ALSO TESTS FOR MTF=1
03570   104462  W1WREC  JMS PWRBOT          /BACKSPACE FORCED TO BOT
03571   777777          LAW -1
03572   040032          DAC WCLOC           /SET WC=-1
03573   047701          DAC FAKECA+1                /AND WORD WRITTEN 777777
03574   040011          DAC 11
03575   207605          LAC (44000          /WRITE ODD PARITY
03576   340107          TAD SPACEC          /IN CASE 9 TRK
03577   707326          MTLC                /LOAD COMMAND
03600   140010          DZM 10              /CLR FOR TIMING
03601   207574          LAC (FAKECA
03602   040033          DAC CALOC           /SET UP CA
03603   400453          XCT DSCOPE          /NOP OR HALT
03604   707304          MTGO                /START WRITE
03605   707352          MTRS                /READ STATUS
03606   741100          SPA                 /SHD NOT HAVE EF
03607   603622          JMP .+13            /POWER CLEAR
03610   200032          LAC WCLOC /1 WORD SHOULD BE OUT
03611   740200          SZA
03612   603622          JMP .+10            /NO DATA BRK PWR CLR
03613   707352          MTRS                /GET STATUS
03614   707301          MTTR                /DRV RDY YET
03615   741000          SKP                 /NO COUNT TIME OUT
03616   603626          JMP .+10            /DRV RDY CHECK STATUS
03617   440010          ISZ 10              /TIMED OUT
03620   603610          JMP .-10            /NO GET STATUS AGAIN
03621   777777          LAW -1              /ERR AC=777777
03622   741000          SKP                 /IS TIME OUT
03623   207610          LAC (1              /ERR AC=1 IS WC WENT PAST0
03624   703302          CAF                 /PWR CLR PANIC HLT
03625   603635          JMP WR1WND          /TYPE ERROR
03626   740001          CMA
03627   507565          AND (100
03630   740200          SZA
03631   603635          JMP WR1WND          /ERR AC=100 IS MTF=0
03632   707352          MTRS                /GET STATUS AGIN
03633   740100          SMA                 /EF=1
03634   140011          DZM 11              /CLR INDICATE TEST OK
03635   400453  WR1WND  XCT DSCOPE          /NOP OR HLT
03636   440011          ISZ 11              /TEST OK ALL CASES
03637   100445          JMS TESTOK          /YES SKP NXT 2 FRST PASS
03640   100350          JMS ERROR /ERROR TYPE
03641   603570          JMP W1WREC          /FORCE SCOPE LOOP
                /
                        .EJECT
```

```
                                /NOW WRITE A TWO WORD RECORD FROM BOT
                                /TEST TO MAKE SURE WC GOES TO AND STOPS AT Ø
 Ø3642    104Ø62    WR2WRD   JMS RAKBOT          /FORCE BKWD TO BOT
 Ø3643    777776             LAW -2
 Ø3644    Ø4ØØ32             DAC WCLOC           /2 WORDS
 Ø3645    777777             LAW -1
 Ø3646    Ø477Ø1             DAC FAKECA+1        /777777
 Ø3647    Ø477Ø2             DAC FAKECA+2        /AND 777777
 Ø365Ø    Ø4ØØ11             DAC 11              /SET ERR IN TEST INDICATOR
 Ø3651    2Ø763Ø             LAC (44ØØ           /WRITE + EN1
 Ø3652    34Ø1Ø7             TAD SPACEC          /+ DENSITY BITS
 Ø3653    7Ø7326             MTLC                /LOAD COMMAND
 Ø3654    2Ø7574             LAC (FAKECA
 Ø3655    Ø4ØØ33             DAC CALOC           /SET UP CA
 Ø3656    14ØØ1Ø             DZM 1Ø              /CLR TIMER
 Ø3657    4ØØ453             XCT DSCOPE
 Ø366Ø    7Ø73Ø4             MTGO                /GO
 Ø3661    7Ø7352             MTRS                /GET STATUS
 Ø3662    7411ØØ             SPA                 /EF SHD=Ø
 Ø3663    6Ø3713             JMP WR2CLR          /BUT DOESN'T
 Ø3664    7Ø7352             MTRS                /RD STATUS
 Ø3665    7Ø73Ø1             MTTR                /DRV RDY
 Ø3666    741ØØØ             SKP                 /NO TIME
 Ø3667    6Ø3715             JMP WR2CLR+2        /ERR 2ND WORD NOT OUTPUT
 Ø367Ø    75ØØØØ             CLA
 Ø3671    54ØØ32             SAD WCLOC           /WC=Ø YET 2ND OUT
 Ø3672    6Ø3677             JMP .+5             /YES
 Ø3673    44ØØ1Ø             ISZ 1Ø              /TIME OUT
 Ø3674    6Ø3664             JMP .-1Ø            /NOT YET
 Ø3675    777777             LAW -1
 Ø3676    6Ø3713             JMP WR2CLR          /AC=777777 NOT WORD 2 TIME OUT
 Ø3677    7Ø7352             MTRS                /GET STATUS
 Ø37ØØ    7Ø73Ø1             MTTR                /DRV RDY YET
 Ø37Ø1    741ØØØ             SKP                 /NO
 Ø37Ø2    6Ø3715             JMP WR2CLR+2        /YES TEST OK STAT
 Ø37Ø3    2ØØØ32             LAC WCLOC
 Ø37Ø4    7412ØØ             SNA                 /WC STOP AT Ø
 Ø37Ø5    6Ø371Ø             JMP .+3             /YES
 Ø37Ø6    2Ø761Ø             LAC (1
 Ø37Ø7    6Ø3713             JMP WR2CLR          /WC DIS NOT OFLOW AC=1
 Ø371Ø    44ØØ1Ø             ISZ 1Ø              /TIME OUT YET
 Ø3711    6Ø3677             JMP .-12            /NO
 Ø3712    777776             LAW -2              /AC=777776 2ND LOOP TIMED OUT
 Ø3713    7Ø33Ø2    WR2CLR   CAF                 /PWR CLR
 Ø3714    6Ø3725             JMP WR2WND          /END OF TEST
 Ø3715    Ø4ØØ1Ø             DAC 1Ø              /SAVE STATUS
 Ø3716    74ØØØ1             CMA                 /MAKE MTF COMPLEMENT
 Ø3717    5Ø7565             AND (1ØØ            /IF 11=1 MTF=Ø
 Ø372Ø    74Ø2ØØ             SZA                 /WAS MTF SET
 Ø3721    6Ø3725             JMP WR2WND          /AC=1ØØ IF MTF NOT=1
 Ø3722    2ØØØ1Ø             LAC 1Ø
 Ø3723    74Ø1ØØ             SMA                 /EF SHD NOT=1
 Ø3724    14ØØ11             DZM 11              /ALL TESTS OK
                             .EJECT
```

```
03725   400453  WR2WRD  XCT DSCOPE          /NOP OR HLT AC=ERRCODE
03726   440011          ISZ 11              /ALL TESTS OK NO SKP
03727   100445          JMS TESTOK          /ALL OK
03730   100350          JMS ERROR           /ERR TYPE
03731   603642          JMP WR2WRD          /FORCE SCOPE LOOP
03732   207624          LAC (420100
03733   040100          DAC GOODATA
                /NOW TEST BACKSPACE OVER A 2 WORD RECORD
                /MODE IS START STOP LOOP INCLUDES WRITE
                /AND BACKSPACE COMMANDS LETS TAPE GO
                /BKWD UNTIL BOT=1
03734   104062  BKOVR2  JMS BAKBOT          /FORCE TAPE BKWD TO BOT
03735   105607          JMS WRT2WD          /WRITE A 2 WORD RECORD
03736   777777          LAW -1
03737   040012          DAC 12              /SET TEST OK INDICATOR
03740   140010          DZM 10
03741   140032          DZM WCLOC           /CLR WC SHD END UP=1
03742   207574          LAC (FAKECA
03743   040033          DAC CALOC           /SET UP CA
03744   207576          LAC (7400           /SPACE REVERSE
03745   340107          TAD SPACEC          /+ DENSITY
03746   400453          XCT DSCOPE          /NOP OR HALT
03747   707326          MTLC                /LOAD COMMAND
03750   707304          MTGO                /GO
03751   707352          MTRS                /GET STATUS
03752   707301          MTTR                /DRV RDY YET
03753   741000          SKP                 /NO
03754   603762          JMP .+6             /TIMED OUT
03755   440010          ISZ 10              /TIMED OUT
03756   603751          JMP .-5             /NO
03757   777777          LAW -1              /AC=77777 IS TIME OFLOW
03760   703302          CAF                 /PWR CLR
03761   603766          JMP .+5             /GET TO END OF TEST
03762   040011          DAC 11
03763   740001          CMA                 /MAKE STATUS -
03764   507607          AND (240000         /MASK BOT SHD NOW=0 IN AC
03765   740200          SZA                 /IF AC=00000 BOT DOES NOT=1
03766   603772          JMP .+4             /ERROR NOT AT BOT
03767   207610          LAC (1              /GET A +1
03770   540032          SAD WCLOC           /WC SHD BET 1
03771   741000          SKP                 /OK
03772   603775          JMP .+3             /AC=1 IS WC FAILED
03773   200011          LAC 11              /GET STATUS
03774   140012          DZM 12              /INDICATE ALL TESTS OK
03775   400453          XCT DSCOPE          /NOP OR HALT
03776   440011          ISZ 11              /ALL TEST OK
03777   100445          JMS TESTOK          /YES SKP NEXT ?
04000   100350          JMS ERROR           /ERROR IN BKSPACE TO BOT
04001   603734          JMP BKOVR2          /FORCE SCOPE LOOP
                        .EJECT
```

```
                        /NOW WRITE 2 - 2 WORD RECORDS
                        /BACKSPACE WITH MC INITIAL=-2
                        /TAPE SHOULD STOP BEFORE BOT
04002   207565          LAC (140
04003   040100          DAC GODATA
04004   104062  RK2REC  JMS RAKBOT          /FORCE TAPE RKV TO BOT
04005   105607          JMS WRT2WD          /WRITE A 2 WORD RECORD
04006   105607          JMS WRT2WD              /WRITE A 2ND RECORD
04007   777776          LAW -2
04010   040032          DAC WCLOC           /SET WC=-2
04011   777777          LAW -1
04012   040011          DAC 11              /SET 777777 TO TESTOK
04013   207574          LAC (FAKECA         /SET UP CA
04014   140010          DZM 10              /CLR TIMER
04015   040033          DAC CALOC
04016   207576          LAC (7400           /GET BKSPACE
04017   340107          TAD SPACEC          /+ DENSITY
04020   400453          XCT DSCOPE          /NOP OR HALT
04021   707326          MTLC                /LOAD COMMAND
04022   707304          MTGO                /START REVERSE
04023   707352          MTRS                /GET STATUS
04024   707301          MTTR                /DRV RDY
04025   741000          SKP                 /NO
04026   604034          JMP .+6             /RDY CHK STATUS
04027   440010          ISZ 10              /TIMED OUT
04030   604023          JMP .-5             /NO
04031   777777          LAW -1              /AC=777777 IS TIMER
04032   703302          CAF                 /PWR CLR
04033   604052          JMP RK2END              /GET TO END OF TEST
04034   040012          DAC 12              /SV STATUS
04035   740001          CMA                 /IF MTF=1 MAKE BIT AC=0
04036   507565          AND (140            /MASK MTF BIT
04037   740200          SZA                 /0=MTR=1
04040   604052          JMP RK2END              /ERR AC=100 IS MTF=0
04041   540032          SAD WCLOC           /DID WC INDICATE 2
04042   741000          SKP
04043   604052          JMP RK2END          /ERR WC NOT=2
04044   200012          LAC 12              /GET STATUS
                                            /MAKE BOT=1=0
04045   507602          AND (100000         /MASK BOT
04046   740200          SZA                 /DOES BOT=1
04047   604052          JMP RK2END              /NO AC=100000 IF BOT=1
04050   200012          LAC 12              /GET STATUS
04051   140011          DZM 11              /CLR FOR TESTOK
04052   400453  RK2END  XCT DSCOPE          /NOP OR HLT
04053   440011          ISZ 11              /TEST OK
04054   100445          JMS TESTOK          /YES
04055   100350          JMS ERROR           /ERROR TYPE
04056   604004          JMP RK2REC          /FORCE SCOPE LOOP
04057   104062          JMS RAKBOT
04060   623351          JMP* TESFNS
                        .EJECT
```

```
                        /FORCE TAPE BACKWARDS TO BOT
                        /IF 3 BACKSPACES DON'T MAKE IT REWIND
04061   000000          %
04062   604062  BAKBOT  JMP .
04063   777774          LAC -4
04064   044061          DAC BAKBOT-1            /TO COUNT 3 BAKSP ATTEMS
04065   703302          CAF                     /PWR CLR
04066   707301          MTTR
04067   604066          JMP .-1                 /WAIT DRV RDY
04070   707352          MTRS                    /GET STATUS
04071   507602          AND (140000
04072   740200          SZA                     /BOT=1
04073   624062          JMP* BAKBOT             /YES EXIT
04074   444061          ISZ BAKBOT-1            /DONE 3 BACKSP
04075   604107          JMP BAKBAK              /NO DO 1 MORE
04076   207566          LAC (1700               /GET REWIND
04077   707326          MTLC                    /LOAD COMMAND
04100   707304          MTGO                    /GO
04101   740000          NOP
04102   707301          MTTR                    /DRV RDY
04103   604102          JMP .-1                 /NO WAIT
04104   777777          LAC -1
04105   044061          DAC BAKBOT-1
04106   604065          JMP BAKBOT+3            /SEE IF BOT=1
04107   140032  BAKBAK  DZM WCLOC               /CLR SO ONLY STOP OF EOF
04110   207574          LAC (FAKECA
04111   040033          DAC CALOC
04112   207576          LAC (7700               /SPC REV
04113   340107          TAD SPACEC              /+ DEN
04114   707326          MTLC                    /LOAD
04115   707304          MTGO                    /AND GO
04116   140017          DZM 17
04117   707301          MTTR                    /WAIT DRV RDY
04120   741000          SKP                     /NOT YET
04121   604065          JMP BAKBOT+3            /SEE IF BOT=1
04122   440017          ISZ 17                  /TIMED OUT
04123   604117          JMP .-4                 /NO WAIT
04124   604065          JMP BAKBOT+3            /PWR CLR TRY AGAIN
                        /BLINDLY WRITE AN EOF MARK
                        /NO ERROR CHECKS
04125   604125  WRTEOF  JMP .
04126   703302          CAF
04127   707301          MTTR
04130   604127          JMP .-1
04131   207606          LAC (5400
04132   340107          TAD SPACEC
04133   707326          MTLC
04134   707304          MTGO
04135   740000          NOP
04136   707301          MTTR
04137   604136          JMP .-1
04140   624125          JMP* WRTEOF
                        .EJECT
```

```
                        /TC59 INSTRUCTION TEST TAPE 4
                        /TC59 API STATIC TEST
                        /USES1 SELECT ERROR INTERRUPT TO TEST
                        /API STATUSES IN THE TC59 AND PDP9
                        /
04141   604141  APITST  JMP .
04142   207756          LAC (37
04143   040010          DAC 10                  /STORE LAW .
04144   760037          LAW 37                  /INSTRUCTIONS
04145   347610          TAD (1                  /IN ALL OF THE
04146   060010          DAC* 10                 /API ADDRESSES
04147   547631          SAD (LAW 77)            /40 TO 77
04150   741000          SKP
04151   604145          JMP .-4
04152   750004          LAS                     /GET SWS
04153   507602          AND (140000             /MASK API SELECT
04154   740200          SZA                     /API EXIST
04155   604174          JMP APIXST              /YES
04156   204161          LAC .+3                 /TYPEOUT
04157   100455          JMS TYPET               /API NOT TESTED
04160   624141          JMP* APITST
04161   004162          .+1
04162   202032          .ASCII  ' API NOT TESTED'<177>
04163   044500
04164   472372
04165   420250
04166   426472
04167   442610
04170   774200
04171   000000
04172   224173  LACI0   LAC* .+1                /USED BY TESTS TO STALL
04173   007632          (0)
04174   207525  APIXST  LAC TSTX12
04175   040101          DAC REGIS               /AC FOR API
04176   140102          DZM BITMSK              /NOT A BIT TEST
04177   760000          LAW 0
04200   040000          DAC 0
                        /
                        /IO POWR CLR API SHOULD NOT BREAK
04201   140100          DZM GODATA              /INDICATE NO BREAK EXPECTED
04202   703302  APITS1  CAF
04203   207564          LAC (400000             /API ON WITH ISZ AND 0 = 1
04204   400453          XCT DSCOPE
04205   705504          ISA                     /ENABLE API
04206   404172          XCT LACI0               /STALL
04207   703302          CAF                     /CLR
04210   400453          XCT DSCOPE
04211   741200          SNA                     /DID API BREAK
04212   100445          JMS TESTOK              /NO OK
04213   100350          JMS ERROR               /ERROR TYPE
04214   604202          JMP APITS1              /SCOPE LOOP
                        .EJECT
```

```
                        /API TEST 2 TAPE SHOULD NOT API WITH
                        /THE MTF AND EF = 0
04215   703302  APITS2  CAF                     /PWR CLR
04216   207561          LAC (4700               /SET MAGTAPE ENI
04217   707326          MTLC                    /LOAD IT
04220   207564          LAC (400000             /TO ENABLE API
04221   400453          XCT DSCOPE              /NOP OR HLT
04222   705504          ISA                     /API ON
04223   404172          XCT LACI0               /STALL
04224   703302          CAF                     /PWR CLR
04225   400453          XCT DSCOPE              /NOP OR HLT
04226   741200          SNA                     /DID API BREAK
04227   100445          JMS TESTOK              /NO OK
04230   100350          JMS ERROR               /ERROR TYPE
04231   604215          JMP APITS2              /FORCE SCOPE
                        /WITH SELECT ERROR ON A 1 AND ENI ON
                        /A 0 THE MAGTAPE SHOULD NOT API BREAK
                        /
04232   703302  APITS3  CAF                     /CLR ALL
04233   707304          MTGO                    /SET SELECT ERROR
04234   207564          LAC (400000                     /GET API ENA BIT
04235   400453          XCT DSCOPE              /NOP OR HLT
04236   705504          ISA                     /API ON
04237   404172          XCT LACI0               /STALL
04240   703302          CAF                     /PWR CLR
04241   400453          XCT DSCOPE              /NOP OR HLT
04242   741200          SNA                     /API BRK IN ERR
04243   100445          JMS TESTOK              /NO
04244   100350          JMS ERROR               /TYPE
04245   604232          JMP APITS3              /SCOPE
04246   760045          LAW APILOC
                        /WITH SELECT ERROR = 1 AND ENI = 1
                        /AND API ON THE MAGTAPE SHOULD BREAK TO APILOC
04247   040100          DAC GDDATA              /INDICATE CORRECT LAW
04250   703302  APITS4  CAF                     /PWR CLR
04251   207561          LAC (4700
04252   707326          MTLC                    /SET TAPE ENI
04253   707304          MTGO                    /SET EF
04254   207564          LAC (400000             /API ENABLE BIT
04255   400453          XCT DSCOPE              /NOP OR HLT
04256   705504          ISA                     /ENABLE API
04257   404172          XCT LACI0               /STALL
04260   703302          CAF                     /PWR CLR ALL
04261   400453          XCT DSCOPE              /NOP OR HLT
04262   540100          SAD GDDATA              /BREAK TO CORERECT LAW
04263   100445          JMS TESTOK              /YES
04264   100350          JMS ERROR               /TYPE WRONG AC
04265   604250          JMP APITS4              /FORCE SCOPE
                        /
                        .EJECT
```

```
                        /THE MAGTAPE EF SHOULD BREAK
                        /IN PRIORITY OVER PROGRAM REQUESTS
                        /
042266  703302  APITS5  CAF
042267  207561          LAC (4000
042270  707326          MTLC                    /MT ENI = 1
042271  707304          MTGO                    /EF = 1
042272  207633          LAC (4007400            /EN API AND SET PRO REQUEST
042273  400453          XCT DSCOPE              /NOP OR HLT
042274  705504          ISA                     /SET API AND ALL PROG REQ
042275  404172          XCT LACIØ               /STALL
042276  703302          CAF                     /PWR CLR
042277  400453          XCT DSCOPE                      /AC SHD = LAW APILOC
043000  540100          SAD GODATA              /BREAK TO MAGTAPE
043001  100445          JMS TESTOK              /YES
043002  100350          JMS ERROR               /ERR TYPE AC
043003  604266          JMP APITS5              /FORCE SCOPE
                        /
                        /WITH PLØ ACTIVE MAGTAPE EF SHD NOT BRK
043004  140100          DZM GODATA              /INDICATE NO BREAK
043005  703302  APITS6  CAF
043006  207561          LAC (4000
043007  707326          MTLC                    /MAKE TAPE ENI = 1
043010  707304          MTGO                    /SET EF
043011  207634          LAC (4002004            /API ENABLE PLØ ACTIVE BITS
043012  400453          XCT DSCOPE              /NOP OR HALT
043013  705504          ISA                     /API ON PLØ ACTIVE
043014  404172  LACXCT   XCT LACIØ              /STALL SHØ NOT BREAK
043015  703302          CAF                     /PWR CLR
043016  400453          XCT DSCOPE              /NOP OR HALT
043017  741200          SNA                     /BREAK OCCUR IS ERR
043020  100445          JMS TESTOK              /NO BREAK OK
043021  100350          JMS ERROR               /ERR TYPE
043022  604305          JMP APITS6              /FORCE SCOPE
                        /
                        .EJECT
```

```
04323   760045          LAC APILOC
                        /DEBREAK FROM PLX WITH EF = 1 SHD
                        /ALLOW API BREAK
04324   040130          DAC GDDATA          /INDICATE MT LAW
04325   703302  APITS7  CAF
04326   207561          LAC (400
04327   707326          MTLC                /MT ENI
04330   707304          MTGO                /SET EF = 1
04331   207634          LAC (400200         /API ENABLE PLX ACTIVE
04332   705504          ISA                 /ENABLE SET ACTIVE
04333   400453          XCT DSCOPE          /NOP OR HALT
04334   703304          DBK                 /CLR PLX ACTIVE
04335   404314          XCT LACXCT          /STALL MAGTAPE SHD API
04336   703302          CAF                 /PWR CLR
04337   400453          XCT DSCOPE          /NOP OR HALT
04340   540100          SAD GDDATA          /CORRECT LAW
04341   100445          JMS TESTOK          /YES
04342   100350          JMS ERROR           /ERR TYPE
04343   604325          JMP APITS7          /FORCE SCOPE
                        /
                        /API BREAK FOLLOWED BY MTAF AND BY DEBREAK
                        /SHOULD NOT ALLOW A 2ND BREAK EF WILL = 0
04344   140100          DZM GDDATA
04345   703302  APITS8  CAF                 /PWR CLR
04346   207561          LAC (400            /SET MT ENI
04347   707326          MTLC
04350   707304          MTGO                /CAUSE ILL FUNC AND SE
04351   207600          LAC (400000
04352   705504          ISA                 /ENABLE API
04353   404172          XCT LACI0           /WAIT FOR BREAK
04354   207561          LAC (400            /TO REENABLE MT ENI
04355   400453          XCT DSCOPE          /NOP OR HLT
04356   707326          MTLC                /CLR EF ENABLE ENI
04357   703304          DBK                 /DEBREAK FROM MT
04360   404314          XCT LACXCT          /STALL
04361   703302          CAF                 /PWR CLR
04362   400453          XCT DSCOPE          /NOP OR HALT
04363   741200          SNA                 /DID API BREAK IN ERR
04364   100445          JMS TESTOK          /NO
04365   100350          JMS ERROR           /TYPE
04366   604345          JMP APITS8          /FORCE SCOPE
                        /
                        .EJECT
```

```
04367   140100          DAC GODATA
                /THE CAL INSTRUCTION SHOULD CLEAR OUT
                /API BREAK SYNCHRONIZATION PWR CLR IS AT 21
                /
04370   204345  APITS9  LAC APITS8          /GET CAF
04371   040021          DAC 21
04372   204314          LAC LACXCT          /TO STALL
04373   040022          DAC 22
04374   207635          LAC (JMP* 20        /TO GET BACK
04375   040023          DAC 23
04376   703302          CAF                 /PWR CLR
04377   207561          LAC (4000           /TAPE ENI
04400   707326          MTLC
04401   707304          MTGO                /SET ILL FUNC AND EF
04402   207564          LAC (400000         /API ENI BIT
04403   400453          XCT DSCOPE          /NOP OR HALT
04404   705504          ISA                 /ENABLE API
04405   750000          CLA                 /GIVE 1 TO SYNC FOR REQUEST
04406   000000          CAL
04407   400453          XCT DSCOPE          /NOP OR HALT
04410   741200          SNA                 /DID API BREAK AFTER CAF
04411   100445          JMS TESTOK          /NO
04412   100350          JMS ERROR           /TYPE
04413   604370          JMP APITS9          /FORCE SCOPE LOOP
04414   760045          LAW APILOC
                /API SHOULD BE ALLOWED TO BREAK WITHIN
                /4 CYCLES AFTER A CAL INSTRUCTION AND NOT BEFORE
04415   040100          DAC GODATA          /BRK SHD OCCUR
04416   204314  APITSA  LAC LACXCT
04417   040021          DAC 21              /TO STALL AT 21
04420   204345          LAC APITS8
04421   040022          DAC 22              /TO PWR CLR
04422   207635          LAC (JMP* 20)       /TO GET BACK
04423   040023          DAC 23
04424   703302          CAF
04425   207561          LAC (4000
04426   707326          MTLC                /MT ENI
04427   707304          MTGO                /SET TAPE EF
04430   207564          LAC (400000         /API ENI BIT
04431   400453          XCT DSCOPE          /NOP OR HALT
04432   705504          ISA                 /ENABLE API
04433   777777          LAW -1              /1 TO SYNC GET API REQ
04434   000000          CAL                 /CAL XCT API BRK JMP I 20
04435   400453          XCT DSCOPE          /NOP OR HALT
04436   540100          SAD GODATA          /DID API BRK AFTER XCT
04437   100445          JMS TESTOK          /YES OK
04440   100350          JMS ERROR           /API BROKE TWX CAL AND XCT
04441   604416          JMP APITSA          /FORCE SCOPE LOOP
                /
                .EJECT
```

```
                        /A DATA BREAK OCCURING SHOULD NOT ALLOW
                        /API TO BREAK UNTIL AT LEAST 1 INSTRUCTION IS XCT
                        /
04442   140100  APITSB  DZM GOODATA          /EXPECT NO BREAK
04443   777777          LAW -1
04444   040032          DAC WCLOC           /SET WC
04445   207574          LAC (FAKECA
04446   040033          DAC CALOC           /AND CA FOR BREAK
04447   703302          CAF                 /PWR CLR
04450   207561          LAC (400            /TAPE ENI
04451   707326          MILC                /NOW = 1
04452   207564          LAC (400000
04453   705504          ISA                 /API ENABLE = -1
04454   400453          XCT DSCOPE          /NOP OR HLT
04455   707401          SDF                 /SET DATA FLAG
04456   707304          MTGO                /SET TAPE FF 1 IO SYNC BRK REQ
04457   404314          XCT LACXCT          /STALL THEN DATA BREAK
04460   703302          CAF                 /PWR CLR SHD NOT HAVE API
04461   400453          XCT DSCOPE          /NOP OR HALT
04462   741200          SNA                 /API IN ERROR
04463   100445          JMS TESTOK          /NO
04464   100350          JMS ERROR           /TYPEOUT
04465   604442          JMP APITSB          /FORCE SCOPE
                        /
                                .EJECT
```

```
                        /ONCE PROGRAM INTERRUPT HAS SYNCHRONIZED API BREAKS
                        /SHOULD NOT OCCUR UNTIL AFTER ADDRESS 1 HAS BEEN XCT
                        /
04466   760045  APITSC  LAW APILOC
04467   040102          DAC GDDATA
04470   204314          LAC LACXCT
04471   040001          DAC 1                   /TO CLEAR AC AT ADDRESS 1
04472   207636          LAC (JMP* .)            /TO GET BACK
04473   040002          DAC 2
04474   140000          DZM 0                   /TO PROVE PIC OCCURS
04475   700002          IOF
04476   703302          CAF                     /CLR ALL
04477   760377          LAW 377
04500   700406          TLS                     /SET PRNTER FLAG
04501   700401          TSF
04502   604501          JMP .-1                 /WAIT FOR IT
04503   207561          LAC (440
04504   707326          MTLC                    /MAGTAPE INT ENABLE
04505   207564          LAC (400000
04506   705504          ISA                     /ENABLE API
04507   400453          XCT DSCOPE              /NOP OR HALT AND CLL
04510   700342          ION                     /ENABLE PIC
04511   707304          MTGO                    /CAUSE MAGTAPE EF
04512   404314          XCT LACXCT              /PIE SYNCHS AT FIRST IO SYNC
04513   400453          XCT DSCOPE              /SHD PIC AND API BEFORE HERE
04514   700002          IOF
04515   703302          CAF
04516   540100          SAD GDDATA              /DID API OCCUR
04517   741000          SKP                     /YES
04520   604526          JMP .+6                 /API EARLY OR NOT AT ALL
04521   207637          LAC (.-6                /(0) SHD = LAST XCT DSCOPE
04522   040100          DAC GDDATA              /INDICATE SO FOR TYPEOUT
04523   200000          LAC 0                   /GET (0)
04524   540100          SAD GDDATA              /DID PIC OCCUR
04525   100445          JMS TESTOK              /YES BOTH PIC THEN API OK
04526   100350          JMS ERROR               /ERROR TYPE
04527   604466          JMP APITSC              /FORCE SCOPE LOOP
04530   760000          LAW 0
04531   040000          DAC 0
                        /
                        .EJECT
```

```
                        /API ON FOLLOWED BY API OFF SHD NOT ALLOW API
                        /
04532   140100  APITSD  DZM GOODATA             /NO BRK EXPECTED
04533   703302          CAF                     /PWR CLR
04534   207561          LAC (4^0
04535   707326          MTLC                    /MT ENI = 1
04536   707304          MTGO                    /SET EF
04537   207564          LAC (4^000001           /GET API ENI BIT
04540   400453          XCT DSCOPE              /NOP OR HALT
04541   705504          ISA                     /TURN API ON
04542   740000          NOP                     /ALLOW 1 TO SYNC
04543   705514          ISA 10                  /API OFF
04544   404314          XCT LACXCT              /STALL
04545   703302          CAF                     /PWR CLR
04546   400453          XCT DSCOPE              /NOP OR HALT
04547   741200          SNA                     /DID API BRK IN ERR
04550   100445          JMS TESTOK              /NO
04551   100350          JMS ERROR               /TYPEOUT
04552   604532          JMP APITSD              /FORCE SCOPE LOOP
                        /
                        /DEBREAK FROM A HIGHER LEVEL
                        /FOLLOWED BY API OFF SHD NOT ALLOW API BREAK
                        /
04553   703302  APITSE  CAF
04554   207634          LAC (4^0200             /ENABLE API SET PL0 ACTV
04555   705504          ISA
04556   207561          LAC (4^0
04557   707326          MTLC                    /MT ENI
04560   707304          MTGO                    /SET TAPE EF = 1
04561   400453          XCT DSCOPE              /NOP OR HALT
04562   703304          DBK                     /CLR PL0 ACTIVE
04563   740000          NOP                     /WAIT 1 IO SYNC
04564   705514          ISA 10                  /TURN API OFF
04565   404314          XCT LACXCT              /STALL
04566   400453          XCT DSCOPE              /NOP OR HALT
04567   703302          CAF                     /PWR CLR
04570   741200          SNA                     /DID API BRK IN ERR
04571   100445          JMS TESTOK              /NO
04572   100350          JMS ERROR               /TYPEOUT
04573   604553          JMP APITSE              /FORCE SCOPE LOOP
                        /
                        .EJECT
```

```
                        /BREAK FOLLOWED BY API OFF SHOULD
                        /NOT CAUSE THE MAGTAPE INTERRUPT TO BE LOST
                        /
04574   703302          APITSF  CAF                     /PWR CLR
04575   760045                  LAW APILOC
04576   040100                  DAC GDDATA              /INDICATE BRK EXPEC
04577   207634                  LAC (470204
04600   705504                  ISA                     /API ON PLS ACTIVE
04601   207561                  LAC (4 0
04602   707326                  MTLC                    /TAPE ENI
04603   707304                  MTGO                    /SET TAPE EF
04604   400453                  XCT DSCOPE              /NOP OR HALT
04605   703304                  DBK                     /CLR PLS
04606   740000                  NOP                     /GIVE 1 IO SYNC
04607   705514                  ISA 10                  /API OFF
04610   207564                  LAC (4 0F00             /GET API ENI BIT
04611   705504                  ISA                     /ENABLE API AGAIN
04612   404314                  XCT LACXCT              /STALL SHO THEN API
04613   703302                  CAF                     /PWR CLR
04614   400453                  XCT DSCOPE              /NOP OR HALT
04615   540100                  SAD GDDATA              /MAGTAPE API OK
04616   100445                  JMS TESTOK              /YES
04617   100350                  JMS ERROR               /TYPEOUT
04620   604574                  JMP APITSF              /FORCE SCOPE LOOP
                        /
                        /API ON FOLLOWED BY API OFF SHOULD NOT
                        /CAUSE THE API BREAK TO BE LOST
04621   703302          APITSG  CAF                     /PWR CLR
04622   207561                  LAC (440
04623   707326                  MTLC                    /MAGTAPE ENI
04624   707304                  MTGO                    /SET EF
04625   207564                  LAC (440000             /GET API ENI BIT
04626   400453                  XCT DSCOPE              /NOP OR HALT
04627   705504                  ISA                     /ENABLE API
04630   740000                  NOP                     /WAIT 1 IO SYNC
04631   705514                  ISA 10                  /API OFF
04632   207564                  LAC (470000             /GET ENI AGAIN
04633   705504                  ISA                     /API ON AGAIN
04634   404172                  XCT LACI0               /STALL SHO THEN API
04635   703302                  CAF                     /PWR CLR
04636   400453                  XCT DSCOPE              /NOP OR HALT
04637   540100                  SAD GDDATA              /MAGTAPE API OK
04640   100445                  JMS TESTOK              /YES
04641   100350                  JMS ERROR               /TYPEOUT
04642   604621                  JMP APITSG              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
                                /RAISINGTO PL0 AFTER API HAS STARTED
                                /TO SYNC SHOULD NOT ALLOW API BREAK
04643   140100                  DZM GDDATA              /NO API EXPECTED
04644   703302          APITSH  CAF                     /PWR CLR
04645   207561                  LAC (4^0
04646   707326                  MTLC                    /MAGTAPE ENI = 1
04647   207564                  LAC (4^0000
04650   705504                  ISA                     /ENABLE API
04651   207634                  LAC (4^02^0             /FOR API ENI AND PL0 ACTIVE
04652   400453                  XCT DSCOPE              /NOP OR HALT
04653   707304                  MTGO                    /CAUSE TAPE EF TO = 1
04654   740000                  NOP                     /1 IO SYNC FOR RQUEST (TC59)
04655   740000                  NOP                     /1 MORE FOR PROCESSOR
04656   705504                  ISA                     /RAISE TO PL0
04657   404314                  XCT LACXCT              /STALL
04660   703302                  CAF                     /PWR CLR
04661   400453                  XCT DSCOPE              /AC SHD STILL = 0
04662   741200                  SNA                     /DID API BREAK IN ERR
04663   100445                  JMS TESTOK              /OK
04664   100350                  JMS ERROR               /TYPEOUT
04665   604644                  JMP APITSH              /FORCE SCOPE LOOP
                                /
                                /RAISING TO PL0 AFTER API HAS STARTED
                                /TO SYNCHRONIZE SHOULD NOT CAUSE MT API TO BE LOAST
                                /
04666   703302          APITSI  CAF
04667   760045                  LAW APILOC
04670   040100                  DAC GDDATA              /INDICATE BREAK EXPECTED
04671   207561                  LAC (4^0
04672   707326                  MTLC                    /MAGTAPE ENI
04673   207564                  LAC (4^0000
04674   705504                  ISA                     /API ON
04675   207634                  LAC (4^02^0             /API ENI AND PL0 ACTV
04676   400453                  XCT DSCOPE              /NOP OR HALT
04677   707304                  MTGO                    /SET TAPE EF
04700   740000                  NOP                     /SYNC 1
04701   740000                  NOP                     /SYNC 2
04702   705504                  ISA                     /RAISE TO PL0
04703   703304                  DBK                     /DEBRAKE FROM PL0
04704   404314                  xCT LACxCT              /STALL
04705   703302                  CAF                     /PWR CLR
04706   400453                  XCT DSCOPE              /NOP OR HALT
04707   540100                  SAD GDDATA              /MAGTAPE API OK
04710   100445                  JMS TESTOK              /YES
04711   100350                  JMS ERROR               /TYEPOUT
04712   604666                  JMP APITSI              /FORCE SCOPE LOOP
                                /
                                .EJECT
```

```
                        /DETERMINE MAGTAPE PRIORITY LEVEL WITH SPI
                        /
04713   703302          /PIPLT  CAF                 /PWR CLR
04714   207561                  LAC (4^0
04715   707326                  MTC                 /TAPE ENI
04716   707304                  MTGO                /SET ERR FLAG
04717   207564                  LAC (4^0004
04720   705504                  ISZ                 /API ON
04721   140100                  DZM GDDATA          /CLR PL NUMBER
04722   404172                  XCT LACI0           /STALL
04723   207640                  LAC (2^0            /FOR PL0 ACTIVE
04724   400453                  XCT DSCOPE          /FIND PL ACTIVE
04725   705501                  SPI                 /THIS PL ACTIVE
04726   777777                  LAW -1              /YES SKP IS IN ACTIVE
04727   400453                  XCT DSCOPE          /NOP OR HALT
04730   741100                  SPA                 /WAS IT ACTIVE
04731   604737                  JMP .+6             /YES
04732   440100                  ISZ GDDATA          /NO +1 PL LEVEL
04733   744020                  RCR                 /POSITION BIT OVER
04734   740200                  SZA                 /DONE ALL 8 LEVELS
04735   604725                  JMP .-10            /NO
04736   741000                  SKP                 /ERR SPI SKIPPED ALL 0
04737   100445                  JMS TESTOK          /OK FOUND A LEVEL
04740   100350                  JMS ERROR           /ERROR TYPE
04741   604713                  JMP APIPLT          /SCOPE LOOP
04742   703302                  CAF                 /PWR CLR
04743   200455                  LAC TYPET /TYPED PL
04744   507641                  AND (17777          /ALREADY
04745   547642                  SAD (.+4  /IF TYPET=.+4
04746   624141                  JMP* APITST         /TYPED ALREADY
04747   204754                  LAC APITEX          /SEE TEXT
04750   100455                  JMS TYPET
04751   200100                  LAC GDDATA          /GET LEVEL SPI DID NOT SKIP
04752   100567                  JMS TY10CT          /TYPE IT
04753   624141                  JMP* APITST         /EXIT APITEST
                        /
04754   004755          APITEX  .+1
04755   202330                  .ASCII      ' MAGTAPE IS ON PL'<177>
04756   143650
04757   406410
04760   520222
04761   515011
04762   747100
04763   502317
04764   700000
                        /
                                .EJECT
```

```
                        /TC59 INSTRUCTION TEST TAPE 5
                        /EXTENDED MEMORY DATA BREAKS
                        /PROGRAM TESTS DATA BREAKS TO AND FROM ALL BANKS
                        /WITH THE PROGRAM RUNNING IN ALL BANKS
                        /ACTUAL TEST IS RELOCATED TO BANK BEING TESTED
04765   604765  EXTBRK  JMP .
04766   207643          LAC (NOP)
04767   045036          DAC XTBNK2
04770   045045          DAC XTBNK3
04771   145055          DZM PROBNK              /START PROG BNK 0
04772   205055          LAC PROBNK              /GET PROG BNK
04773   347644          TAD (XBRKTS             /+STRT ADRS TEST
04774   045056  XTBNKS  DAC PROBNK+1            /TO GET THERE
04775   707702          EEM                     /ENABLE XTND
04776   125056          JMS* PROBNK+1           /EXECUTE TESTS
04777   750004          LAS                     /GET SWS AGAIN
05000   707704          LEM
05001   507645          AND (7000
05002   545055          SAD PROBNK              /DONE ALL BANKS
05003   624765          JMP* EXTBRK             /YES EXIT TEST
05004   207646          LAC (XBRKTS-1
05005   707702          FEM
05006   040010          DAC 10                  /TO GET BNK0 PROGRAM
05007   345055          TAD PROBNK              /+LAST BNK TESTED
05010   040013          DAC 13
05011   347567          TAD (10000              /+1 BANK
05012   040011          DAC 11                  /TO STORE NEW PROGRAM
05013   507645          AND (7000
05014   045055          DAC PROBNK              /SAVE BNK BITS
05015   777627          XPROCT                  /ADDRESS COUNT
05016   040012          DAC 12
05017   220010  XTBNK1  LAC* 10                 /GET INSTR
05020   045054          DAC XTBKS1
05021   205055          LAC PROBNK
05022   742010          RTL
05023   742010          RTL
05024   742010          RTL
05025   205054          LAC XTBKS1
05026   740400          SNL
05027   605035          JMP .+6
05030   507647          AND (700000)
05031   547647          SAD (700000)
05032   751000          CLA!SKP
05033   207567          LAC (10000)
05034   245054          XOR XTBKS1
05035   060011          DAC* 11                 /TO NEXT BANK
05036   160013  XTBNK2  DZM* 13
05037   440012          ISZ 12                  /DONE ALL
05040   605017          JMP XTBNK1              /NO
05041   777763          XPROC1
05042   040012          DAC 12                  /MOVE THIS PORTION OF TEST
05043   220010          LAC* 10                 /WITHOUT BIT 5 COMPLEMENTED
05044   060011          DAC* 11
                        .EJECT
```

```
05045   160013          XTBNK3  DZM* 13
05046   440012                  ISZ 12
05047   605047                  JMP .-2
05050   207650                  LAC (D-M* 13)
05051   045036                  DAC XTBNK2
05052   045045                  DAC XTBNK3
05053   604772                  JMP XTBNKS-2            /EXECUTE TESTS
05054   000000          XTBKS1  0
05055   000000          PROBNK  0
05056   000000                  0
                        /FIRST TEST DATA OUTPUT BY BREAK INPUT IS BY RDB
05057   605057          XBRKTS  JMP .
05060   145230                  DZM BRKBNK              /FIRST TEST BANK 0
05061   205230                  LAC BRKBNK              /CURRENT BREAK BANK
05062   345231                  TAD CAFAKE              /+ADDRESS FOR CA
05063   065233                  DAC* XGDATA             /FOR TYPEOUTS TO IND BNK
05064   045234                  DAC XDWORD              /POINTS TO BREAK ADDRESS
                        /TEST BREAK OUTPUT EXT MEM BIT=1
05065   205235          XBRTS1  LAC XWRCOM              /GET WRITE COMMAND
05066   707326                  MTLC
05067   777777                  LAW -1
05070   065234                  DAC* XDWORD             /SET OUTPUT WORD TO 1'S
05071   065236                  DAC* XWCLOC             /WC=-1
05072   345234                  TAD XDWORD              /GET ADR-1
05073   065232                  DAC* XCALOC             /FOR CA
05074   225237                  LAC* XOSCOP             /NOP OR HALT
05075   045077                  DAC .+2
05076   045103                  DAC .+5
05077   740000                  NOP
05100   707401                  SDF                     /SET DATA FLAG
05101   205240                  LAC XRDCOM              /GET READ COMMAND BRK
05102   707324                  LCM                     /CHNG TO RD
05103   740000                  NOP                     /NOP OR HLT DB SHD=777777
05104   707412                  RDB                     /READ DATA BUFFER
05105   545067                  SAD XBRTS1+2            /GET ALL ONES
05106   125241                  JMS* XTESOK             /YES
05107   125242                  JMS* XERROR             /ERROR BROKE TO WRNG BNK
05110   605065                  JMP XBRTS1              /FORCE SCOPE LOOP
                                .EJECT
```

```
                        /TEST BREAK OUTPUT EXTENDED MEM ENABLE=0
                        /EXTENDED MEMORY TEST 2
05111   205235  XBRTS2  LAC XWRCOM
05112   707326          MTLC                    /LOAD WRITE
05113   777777          LAW -1
05114   065236          DAC* XWCLOC             /SET WC=-1
05115   065234          DAC* XDWORD             /AND WORD TO OUTPUT
05116   345234          TAD XDWORD              /ADRS-1
05117   065232          DAC* XCALOC             /FOR CA
05120   225237          LAC* XDSCOPE            /GET SCOPE LP NOP OR HLT
05121   045124          DAC .+3                 /FOR XCT
05122   045130          DAC XBRT2N              /FOR END LP XCT
05123   707704          LEM                     /DISABLE EXT MEM
05124   740000          NOP                     /NOP OR HALT
05125   707401          SDF                     /SET DATA FLAG
05126   205240          LAC XRDCOM              /GET READ COMMAND
05127   707324          LCM                     /LOAD IT
05130   740000  XBRT2N  NOP                     /NOP OR HALT
05131   707412          RDR                     /READ DATA BUFFER
05132   707702          EEM                     /XTND ENABLE=1
05133   545113          SAD XBRTS2+2            /GET 777777
05134   125241          JMS* XTESOK             /YES OK
05135   125242          JMS* XERROR             /ERR TYPE
05136   605111          JMP XBRTS2              /FORCE SCOPE
                        /
                        /EXTENDED MEMORY TEST 3
                        /CHECK DATA INPUT TO CORRECT BANK WITH ENABLE=1
05137   205235  XBRTS3  LAC XWRCOM              /GET WRITE COMMAND
05140   707326          MTLC                    /LOAD IT
05141   777777          LAW -1
05142   707404          LDR                     /SET DATA BUFFER=777777
05143   065236          DAC* XWCLOC             /WC=-1
05144   165234          DZM* XDWORD             /CLR 1 WORD BUFFER
05145   345234          TAD XDWORD              /ADRS-1
05146   065232          DAC* XCALOC             /FOR CA
05147   225237          LAC* XDSCOP
05150   045161          DAC .+11
05151   045154          DAC .+3
05152   205240          LAC XRDCOM
05153   707324          LCM                     /CHNG TO READ
05154   740000          NOP                     /NOP OR HALT
05155   707401          SDF                     /+1 TO DATA FLAG
05156   740000          NOP                     /WAIT
05157   740000          NOP
05160   225234          LAC* XDWORD             /GET WORD INPUT
05161   740000          NOP                     /NOP OR HALT
05162   545141          SAD XBRTS3+2            /WORD IN=777777
05163   125241          JMS* XTESOK             /YES
05164   125242          JMS* XERROR             /ERROR BROKE TO WRNG BNK
05165   605137          JMP XBRTS3              /FORCE SCOPE LOOP
                        .EJECT
```

```
                                  /EXTENDED MEMORY TEST 4
                                  /CHECK DATA INPUT WITH EXT MEM ENABLE=0
05166       205235                XBRTS4     LAC XWRCOM
05167       707326                           MTLC                    /LOAD WRITE
05170       777777                           LAW -1
05171       707404                           LDB                     /DATA BUFFER=777777
05172       065236                           DAC* XWCLOC             /WC=-1
05173       165234                           DZM* XDWORD             /CLR 1 WORD BUFFER
05174       345234                           TAD XDWORD              /ADRS-1
05175       065232                           DAC* XCALOC             /FOR CA
05176       225237                           LAC* XDSCOP             /GET SCOPE LP NOP OR HLT
05177       045212                           DAC .+13
05200       045204                           DAC .+4                 /FOR XCT
05201       205240                           LAC XRDCOM              /GET RD COMMAND
05202       707324                           LCM
05203       707704                           LEM                     /DISABLE XTEND
05204       740000                           NOP                     /NOP OR HALT
05205       707401                           SDF                     /+1 TO DATA FLAG
05206       740000                           NOP                     /STALL
05207       740000                           NOP
05210       707702                           EEM                     /XTND ENABLE=1
05211       225234                           LAC* XDWORD             /GET WORD INPUT
05212       740000                           NOP                     /NOP OR HALT
05213       545170                           SAD XBRTS4+2            /777777 INPUT
05214       125241                           JMS* XTESOK             /YES OK
05215       125242                           JMS* XERROR             /ERR TYPE INPUT FAILED
05216       605166                           JMP XBRTS4              /FORCE SCOPE LOOP
05217       750004                           LAS                     /GET SWS
05220       505243                           AND XBRK6               /MASK MEM BITS
05221       545230                           SAD BRKBNK              /DONE ALL
05222       625057                           JMP* XBRKTS             /YES EXIT THIS BNK
05223       205230                           LAC BRKBNK
05224       345244                           TAD XBRK6+1             /+1 MEM BNK
05225       045230                           DAC BRKBNK              /FOR NEXT PASS
05226       165234                           DZM* XDWORD             /CLR LAST INPUT
05227       605061                           JMP XBRKTS+2            /TEST NEXT BANK
            777627                XPROCT=XBRKTS-.
05230       000000                BRKBNK     0                       /HOLDS BREAK BANK
05231       007701                CAFAKE     FAKECA+1   /FOR CA+BRKBNK
05232       000033                XCALOC     CALOC                   /TO SET UP CA
05233       000100                XGDATA     GODATA                  /TO LOAD GO DATA
05234       000000                XDWORD     0                       /SAVE BREAK ADDRESS
05235       004000                XWRCOM     4000                    /WRITE FUNCTION
05236       000032                XWCLOC     WCLOC                   /TO GET TO WC
05237       000453                XDSCOP     DSCOPE                  /TO GET NOP OR HLT
05240       002000                XRDCOM     2000                    /READ COMMAND
05241       000445                XTESOK     TESTOK                  /TO GET TO TEST OK
05242       000350                XERROR     ERROR                   /TO GET TO ERROR
05243       070000                XBRK6      70000                   /MASK BANK BITS
05244       010000                           10000                   /TO INCR BANK
            777763                XPROC1=BRKBNK-.                    /FOR PROG MOVE CONSTANT
                                  /
                                             .EJECT
```

```
                        /ERROR STATUS TESTS OTHER THAN PARITY
                        /ILLEGAL FUNCTION NOP HAS ALREADY BEEN TESTED
05245   605245          ERREON  JMP .
05246   104762                  JMS RAKBOT          /FORCE BKWD TO BOT
05247   207532                  LAC TSTX13
05250   340101                  DAC REGIS           /FIRST SERIES TEST ILLEGAL
05251   750004                  LAS
05252   507603                  AND (4
05253   740200                  SZA
05254   207604                  LAC (300
05255   040107                  DAC SPACEC          /INCASE 9 TRACK DRV
                        /ERROR FLAG TEST / REWIND AT BOT IS ILLEGAL
05256   703302          EFTS01  CAF                 /PWR CLR
05257   707301                  MTTR                /WAITDRIVE RDY
05260   605257                  JMP .-1
05261   207566                  LAC (1400           /REWIND ON 0
05262   707326                  MTLC                /LOAD COMMAND
05263   040100                  DAC GOOATA
05264   400453                  XCT DSCOPE          /NOP OR HALT
05265   707304                  MTGO                /SHD SET ILLEGAL
05266   707352                  MTRS                /GET STATUS
05267   703302                  CAF                 /PWR CLR AGN
05270   400453                  XCT DSCOPE          /NOP OR HLT
05271   547651                  SAD (540000         /STATUS OK
05272   100445                  JMS TESTOK          /YES
05273   100350                  JMS ERROR           /ERR TYPE
05274   605256                  JMP EFTS01          /FORCE SCOPE
                        /ERROR FLAG TEST 2 BACKSPACE AT BOT ILLEGAL
05275   703302          EFTS02  CAF                 /PWR CLR
05276   707301                  MTTR
05277   605276                  JMP .-1             /WAIT RDY
05300   207576                  LAC (7400           /GET BKSPA
05301   340107                  TAD SPACEC          /+ DENSITY IN CASE 9 TRK
05302   707326                  MTLC                /LOAD
05303   400453                  XCT DSCOPE          /NOP OR HALT
05304   707304                  MTGO                /SHD SET ILLEGAL
05305   707352                  MTRS                /GET STATUS
05306   703302                  CAF                 /STOP EVERYTHING
05307   400453                  XCT DSCOPE          /NOP OR HLT
05310   547651                  SAD (540000         /STATUS OK
05311   100445                  JMS TESTOK          /YES
05312   100350                  JMS ERROR           /ERR TYPE
05313   605275                  JMP EFTS02          /FORCE SCOPE LOOP
                                .EJECT
```

```
                        /EF TEST 3 MTGO WITH TAPE NOT RDY IS ILLEGAL
05314   703302          EFTS03  CAF
05315   707301                  MTTR                    /WAIT RDY AG
05316   605315                  JMP .-1
05317   207571                  LAC (4000               /WRIT COMP
05320   340107                  TAD SPACFC              /+ DENSITY & TRK
05321   707326                  MTLC                    /LOAD
05322   040100                  DAC GODATA              /INDICATE WRITE TESTED
05323   400453                  XCT DSCOPE              /NOP OR HLT
05324   707304                  MTGO                    /START TAPE
05325   740000                  NOP                     /STALL
05326   703302                  CAF                     /PWR CLR
05327   707326                  MTLC                    /LOAD WRITE AGN
05330   707304                  MTGO                    /SHD SET ILLEGAL
05331   707352                  MTRS                    /GET STATUS
05332   703302                  CAF                     /CLR AGAIN
05333   400453                  XCT DSCOPE              /NOP OR HALT AC=STATUS
05334   547651                  SAD (540000             /OK
05335   100445                  JMS TESTOK              /YES TEST PASSED
05336   100350                  JMS ERROR               /ERR TYPE
05337   605314                  JMP EFTS03              /FORCE SCOPE LOOP
                        /
                        /EF TEST 4 MTLC WITH CONTROL BUSY IS IF
                        /
05340   703302          EFTS04  CAF                     /WAIT DRV RDY
05341   707301                  MTTR
05342   605341                  JMP .-1
05343   207571                  LAC (2000               /READ
05344   340107                  TAD SPACFC              /+ DENSITY FOR 9 TRK
05345   707326                  MTLC                    /LOAD COMMAND
05346   040100                  DAC GODATA
05347   400453                  XCT DSCOPE              /NOP OR HALT
05350   707304                  MTGO                    /START
05351   707326                  MTLC                    /TRY TO RELOAD
05352   707352                  MTRS                    /GET STATUS
05353   703302                  CAF                     /PWR CLR
05354   400453                  XCT DSCOPE              /NOP OR HLT
05355   547651                  SAD (540000             /ILLEGAL SHD=1
05356   100445                  JMS TESTOK              /OK
05357   100350                  JMS ERROR               /ERROR TYPE
05360   605340                  JMP EFTS04              /FORCE SCOPE
                        /
                                .EJECT
```

```
                        /TEST BAD TAPE STATUS FF TEST 5
                        /WRITE A RECORD AT EVEN PARITY WITH DATA MISSING
                        /9 TRACT DONE IN CORE DUMP MODE
05361   707301  EFTS=5  MTTR
05362   605361          JMP .-1                 /WAIT RDY
05363   777777          LAW -1                  /GENERATE ONE
05364   047701          DAC FAKECA+1                    /SET 3 WORDS
05365   047702          DAC FAKECA+2                    /OF ALL 1S
05366   047704          DAC FAKECA+4
05367   147703          DZM FAKECA+3
05370   200107          LAC SPACFC                      /SET
05371   740200          SZA                     /CO
05372   347625          TAD (230000             /MODE
05373   347570          TAD (4100               /IF 9 TRK
05374   707326          MTLC                    /LD COMD
05375   777774          LAW -4
05376   040032          DAC WCLOC               /FOR 4 WORDS 3RD=1.00000
05377   207574          LAC (FAKECA
05400   040033          DAC CALOC               /SET UP CA
05401   400453          XCT DSCOPE              /NOP OR HLT
05402   707304          MTGO                    /START TAPE
05403   707352          MTRS                    /GET STATUS
05404   707301          MTTR                    /WAIT DRV RDY
05405   605403          JMP .-2                 /KEEP GETTING STATUS
05406   400453          XCT DSCOPE              /NOP OR HLT
05407   507652          AND (430300
05410   547652          SAD (430300             /SHD HAVE BAT TAPE=1
05411   100445          JMS TESTOK              /OK
05412   100350          JMS ERROR               /ERR TYPE
05413   605361          JMP EFTS05              /FORCE SCOPE LOOP
                /
                        .EJECT
```

```
05414   207564                  LAC (4 0200
05415   040100                  DAC GOODATA
                        /ERROR FLAG TEST 06 READ COMPARE ERROR
                        /TEST 7 IS ALSO READ COMP ERROR
                        /6 TESTS BIT ON TAPE=1 MEM=0
                        /7 TESTS BIT ON TAPE=0 MEM=1
                        /9 TRACK USES CORE DUMP MODE BOTH AT ODD PARITY
05416   040102                  DAC BITMSK
05417   200107                  LAC SPACEC              /FORCE CORE DMP 9 TRACK
05420   740200                  SZA
05421   347625                  TAD (20000
05422   347600                  TAD (40000              /FORCE ODD PARITY
05423   040107                  DAC SPACEC
05424   104062                  JMS RAKBOT              /STARTS FROM BOT
05425   103275                  JMS WRTONE
05426   104062          EFTS06  JMS RAKBOT
05427   207572                  LAC (3400               /READ COMPARE
05430   340107                  TAD SPACEC              /+ DENSITY AND CD
05431   707326                  MTLC                    /LOAD COMP
05432   777777                  LAW -1
05433   040032                  DAC WCLOC               /1 WORD
05434   207574                  LAC (FAKECA             /ON TAPE BIT=1
05435   040033                  DAC CALOC               /COMPARE AGAINST
05436   147701                  DZM FAKECA+1                    /A 0 IN MEMORY
05437   400453                  XCT DSCOPE              /NOP OR HALT
05440   707304                  MTGO                    /START TAPE
05441   707301                  MTTR                    /KEEP GETTING STATUS
05442   605441                  JMP .-1
05443   707352                  MTFS
05444   400453                  XCT DSCOPE              /NOP OR HLT
05445   547653                  SAD (4002100            /ERR STATUS OK
05446   100445                  JMS TESTOK              /YES
05447   100350                  JMS ERROR               /TYPE OUT
05450   605426                  JMP EFTS06              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
                                /EF TEST / READ COMPARE ERR TAPE BIT=Ø MEM=1
Ø5451    14Ø1ØØ                         DZM GDDATA          /WRITE ZEROS
Ø5452    1Ø4Ø62                         JMS RAKBOT          /FROM BOT
Ø5453    1Ø3275                         JMS WRTONE          /A 1 WORD RECORD
Ø5454    1Ø4Ø62                 EFTSØ7  JMS RAKBOT          /FORCE TO BOT
Ø5455    2Ø7572                         LAC (3ØØ            /READ COMPARE
Ø5456    344107                         TAD SPACEC          /+ OTHER COMP BITS
Ø5457    7Ø7326                         MTLC                /LOAD IT
Ø546Ø    777777                         LAW -1              /1 WORD
Ø5461    Ø4ØØ32                         DAC WCLOC
Ø5462    2Ø7574                         LAC (FAKECA         /BIT ON TAPE=Ø
Ø5463    Ø4ØØ33                         DAC CALOC           /BIT IN MEM=1
Ø5464    2ØØ1Ø2                         LAC BITMSK          /SHD GET RD COMP ERR
Ø5465    Ø477Ø1                         DAC FAKECA+1
Ø5466    4ØØ453                         XCT DSCOPE          /NOP OR HALT
Ø5467    7Ø73Ø4                         MTGO                /START
Ø547Ø    7Ø73Ø1                         MTTR
Ø5471    6Ø547Ø                         JMP .-1
Ø5472    7Ø7352                         MTRS
Ø5473    4ØØ453                         XCT DSCOPE          /NOP OR HALT
Ø5474    547653                         SAD (4Ø21ØØ         /SHD HAVE RD CMP ERR
Ø5475    1ØØ445                         JMS TESTOK          /OK
Ø5476    1ØØ35Ø                         JMS ERROR           /ERR TYPE
Ø5477    6Ø5454                         JMP EFTSØ7          /FORCE SCOPE LOOP
Ø55ØØ    2ØØ1Ø2                         LAC BITMSK
Ø55Ø1    744Ø2Ø                         RCR                 /POSITION FOR NEXT BIT
Ø55Ø2    Ø4Ø1Ø2                         DAC BITMSK
Ø55Ø3    Ø4Ø1ØØ                         DAC GDDATA
Ø55Ø4    74Ø2ØØ                         SZA                 /DONE ALL 18 BITS
Ø55Ø5    6Ø5424                         JMP EFTSØ6-2        /NO START AT BOT WRITE NEXT
Ø55Ø6    2ØØ1Ø7                         LAC SPACEC
Ø55Ø7    5Ø76Ø4                         AND (3ØØ            /SAVE DENSITY 9 TRK
Ø551Ø    Ø4Ø1Ø7                         DAC SPACEC
                                /
                                        .EJECT
```

```
05511   207654          LAC (4^11^0
                /EF TEST 8 RECORD LENGTH INCORRECT STATUS
                /RECORD WRITTEN SHORTER THAN WC AT READ
05512   040100          DAC GDDATA
05513   104062          JMS BAKBOT          /FROM BOT
05514   105607          JMS WRT2WD                  /WRITE A TWO WRD RECORD
05515   104062  EFTS08  JMS BAKBOT          /READ 2 WORDS
05516   777775          LAW -3
05517   040032          DAC WCLOC           /WITH WC=-3
05520   207655          LAC (FAKECA-1
05521   040033          DAC CALOC           /FOR CA
05522   207571          LAC (2^00           /READ
05523   340107          TAD SPACFC          /+ DENSITY
05524   707326          MTLC                /LOAD IT
05525   400453          XCT DSCOPE          /NOP OR HLT
05526   707304          MTGO                /GO
05527   707301          MTTR                /DRV RDY
05530   605527          JMP .-1
05531   707352          MTRS
05532   400453          XCT DSCOPE          /NOP OR HLT AC=STATUS
05533   540100          SAD GDDATA          /GET RECORD LNTH ERROR
05534   100445          JMS TESTOK          /YES
05535   100350          JMS ERROR           /ERR TYPE
05536   605515          JMP EFTS08          /FORCE SCOPE
                /
                /EF TEST 9 RECORD LENGTH INCORRECT
                /WC IS SHORTER THAN RECORD WRITTEN
                /A TWO WORD RECORD IS ALRDY ON TAPE
05537   104062  EFTS09  JMS BAKBOT          /STRT FROM BOT
05540   777777          LAW -1              /READ 2 WORDS
05541   040032          DAC WCLOC           /WITH WC=-1
05542   207655          LAC (FAKECA-1       /SHD GET RECORD LENGTH
05543   040033          DAC CALOC
05544   207571          LAC (2^00           /READ
05545   340107          TAD SPACFC          /+ DENSITY
05546   707326          MTLC                /LOAD IT
05547   400453          XCT DSCOPE          /NOP OR HLT
05550   707304          MTGO                /GO
05551   707301          MTTR                /WAIT RDY
05552   605551          JMP .-1
05553   707352          MTRS
05554   400453          XCT DSCOPE          /WORD COUNT SHD=0
05555   340032          TAD WCLOC
05556   540100          SAD GDDATA          /STATUS + WC OK
05557   100445          JMS TESTOK          /YES
05560   100350          JMS ERROR           /ERROR TYPE
05561   605537          JMP EFTS09          /FORCE SCOPE
05562   104062          JMS BAKBOT
                /
                .EJECT
```

```
                        /ERROR FLAG TEST 10
                        /READ COMPARE ERROR SHOULD STOP
                        /DATA OUT PUT TRANSFERS
                        /TWO WORD RECORD IS ON TAPE
                        /BOTH WORDS ARE 777777
                        /WC LOCATION SHOULD STOP AT +1
05563   104062  EFTS10  JMS RAKBOT                      /FORCE RKWD TO BT
05564   147731          DZM FAKECA+1                    /CLR COMPARE
05565   207574          LAC (FAKECA
05566   040033          DAC CALOC           /SET UP CA
05567   140032          DZM WCLOC           /WC INIT = 0
05570   207572          LAC (3400           /RDC FUNCTION
05571   340107          TAD SPACEC                      /+ PARITY DENSITY
05572   707326          MTLC                            /LOAD COMMAND
05573   400453          XCT DSCOPE                      /NOP OR HALT
05574   707304          MTGO                            /START TAPE
05575   707301          MTTR                            /WAIT TILL DONE
05576   605575          JMP .-1
05577   707352          MTDS
05600   400453          XCT DSCOPE                      /NOP OR HLT
05601   200032          LAC WCLOC           /GET WC
05602   547610          SAD (1                          /SHD HAVE STOPPED AT 1
05603   100445          JMS TESTOK                      /OK RDC ERR STORS DATA
05604   100350          JMS ERROR           /ERR TYPE
05605   605563          JMP EFTS10                      /FORCE SCOPE LOOP
05606   625245          JMP* ERRFUN
                        /
                        .EJECT
```

```
                                /BLINDLY WRITE A TWO WORD RECORD
                                /BOTH WORDS = 777777
05607   605607                  WRT2WD  JMP .
05610   707321                          MTCR
05611   605611                          JMP .-1                 /WAIT CONTROL RDY
05612   750000                          CLA
05613   707301                          MTTR                    /WAIT DRV RDY
05614   605613                          JMP .-1
05615   777776                          LAW -2
05616   040032                          DAC WCLOC /SET WC = -2
05617   777777                          LAW -1
05620   047700                          DAC FAKECA              /2 WORDS
05621   047701                          DAC FAKECA+1            /ALL ONES
05622   207655                          LAC (FAKECA-1
05623   040033                          DAC CALOC /SET CA
05624   207570                          LAC (4000 /WRITE COMMAND
05625   340107                          TAD SPACEC              /+ DENSITY ETC
05626   707326                          MTLC                    /LOAD COMMAND
05627   707304                          MTGO                    /GO
05630   740000                          NOP
05631   707301                          MTTR                    /WAIT DONE
05632   605631                          JMP .-1
05633   625607                          JMP* WRT2WD             /EXIT
                                /CRC GENERATION TEST 9 TRACK DRV ONLY
                                /PROGRAM WRITE TWO IDENTICAL CHARACTERS
                                /AT ODD PARITY CRC AND  LPCC SHD BE=
05634   605634                  CRCTES  JMP .
05635   750004                          LAS
05636   507603                          AND (44                 /GET SWS
05637   740200                          SZA                     /9 TRACK DRIVE
05640   605655                          JMP TESCRC              /YES TEST CRC GEN
05641   205644                          LAC .+3
05642   100455                          JMS TYPET /TYPE CRC NOT TESTED
05643   625634                          JMP* CRCTES
05644   005645                          .+1
05645   202072                          .ASCII <40>'CRC NOT TESTED'<177>
05646   241500
05647   472372
05650   420250
05651   426472
05652   442610
05653   774000
05654   000000

                                .EJECT
```

```
05655   140130          TESCRC  DZM GODATA
05656   207537                  LAC TSIX14
05657   040101                  DAC REGIS /CR FOR CRC
05660   207656                  LAC (44300
05661   040107                  DAC SPACEC              /+ODD PARITY 800 BPI
05662   140102                  DZM BITMSK
05663   105741          TERCRC  JMS CRCPAR              /GENERATE PARITY
05664   045734                  DAC CRXOR1              /FIRST CRC GENERATED
05665   105762                  JMS CRCROT              /ROTATE AND COMPLEMENT
05666   045735                  DAC CRROT1              /SAVE ROT AND COMP
05667   245733                  XOR CHARPW              /NEXT CRC XOR
05670   045736                  DAC CRXOR2              /SAVE RESULT
05671   105762                  JMS CRCROT              /ROTATE 1 MORE
05672   045737                  DAC CRROT2              /SAVE
05673   247657                  XOR (553400             /COMP ALL BUT CR 4 AND 6
05674   507660                  AND (177400
05675   045740                  DAC CRCWRT              /CRC EXPECTED
                        /WRITE A TWO CHARACTER RECORD
                        /BOTH CHAR ASE=LPCC BEFORE CRC WILL=0
                        /THEN CRC IS WRITTEN AND LPCC WILL=CPC
                        /WHEN WRITE IS COMPLETE DATA BUFFER WILL
                        /BE THE INCLUSIVE OR OF THE CRC AND LPCC
                        /EXAMINE CRXOR1 TO CRROT2 CRCWRT
                        /START FROM NEW CRC
05676   207620          CWRITE  LAC (GODATA-1           /GET ADDRS
05677   040033                  DAC CALOC /SET UP DATA BRKS
05700   777777                  LAW -1
05701   040032                  DAC WCLOC /1 WORD
05702   207661                  LAC (44300
05703   707321                  MTCR
05704   605703                  JMP .-1                 /WAIT CUREADY
05705   707326                  MTLC                    /LOAD COMMAND
05706   707301                  MTTR                    /WAIT DRV RDY
05707   605706                  JMP .-1
05710   400453                  XCT DSCOPE              /NOP OR HALT
05711   707304                  MTGO
05712   740000                  NOP
                                .EJECT
```

```
                                /THIS SEQUENCE WILL NOT WORK UNLESS CRC=LPCC
05713   707301                  WTTR
05714   605713                  JMP .-1                 /WAIT WRITE DONE
05715   207571                  LAC (2000
05716   707324                  LCM                     /CHNG COMD TO RD
05717   400453                  XCT DSCOPE              /HLT OR CHI=CRC
05720   707412                  RDP                     /READ CRC SE LAST NOTE
05721   545740                  SAD CRCWRT              /READ BACK OK
05722   100445                  JMS TESTOK              /YES
05723   100350                  JMS ERROR /ERR TYPE
05724   605676                  JMP CWRITE              /FORCE WRITE SCOPE
05725   200100                  LAC GDDATA              /LAST WORD WRIT
05726   547621                  SAD (177777
05727   606002                  JMP CORDMP              /DO CORE DUMP MODE TEST
05730   347622                  TAD (401
05731   040100                  DAC GDDATA
05732   605663                  JMP NEWCRC
                                /TO SAVE EACH STEP OF CRC GENERATION
05733   000000          CHARPW  0
05734   000000          CRXOR1  0
05735   000000          CRROT1  0
05736   000000          CRXOR2  0
05737   000000          CRROT2  0
05740   000000          CRCWRT  0
                                .EJECT
```

```
05741   605741          CRCPAR  JMP .
05742   200100                  LAC GUDATA
05743   507660                  AND (177400
05744   140010                  DZM     10
05745   744010                  RCL
05746   741400                  SZL
05747   440010                  ISZ 10
05750   740200                  SZA
05751   605745                  JMP .-4
05752   200010                  LAC 10
05753   742020                  RTR
05754   507564                  AND (400000
05755   340100                  TAD GUDATA
05756   247564                  XOR (400000
05757   507662                  AND (577400
05760   045733                  DAC CHARPW
05761   625741                  JMP* CRCPAR
05762   605762          CRCROT  JMP .
05763   040010                  DAC 10
05764   507561                  AND (400
05765   740200                  SZA
05766   207564                  LAC (400000
05767   040011                  DAC 11
05770   200010                  LAC 10
05771   740020                  RAR
05772   507607                  AND (200000
05773   340010                  TAD 10
05774   740020                  RAR
05775   507660                  AND (177400
05776   340011                  TAD 11
05777   741100                  SPA
06000   247663                  XOR (340000
06001   625762                  JMP* CRCROT
                                .EJECT
```

```
06002   206177   COMDMP   LAC COMTEX
06003   040101            DAC REGIS
                 /FIRST TEST OF CORE DUMP IS EOF WRITTEN
06004   207626            LAC (410100
06005   040100            DAC GDDATA         /INDICATE EOF EXPECTED
06006   207664   COMT00   LAC (25300         /WRT EOF CORE DMP
06007   703302            CAF                /PWR CLR
06010   707301            MTTR
06011   606010            JMP .-1            /WAIT RDY
06012   707326            MTLC               /LOAD COMAND
06013   140010            DZM 10
06014   400453            XCT DSCOPE         /NOP OR HLT
06015   707304            MTGO               /START WRT EOF
06016   707301            MTTR               /WAIT TO RDY
06017   741000            SKP                /NOT YET
06020   606025            JMP .+5
06021   440010            ISZ 10             /TIMED OUT
06022   606016            JMP .-4            /NO
06023   703312            CAF 10             /PWR CLR
06024   741000            SKP
06025   707352            MTRS
06026   400453            XCT DSCOPE         /AC SHOULD=EOF STAT
06027   540100            SAD GDDATA         /DOES IT
06030   100445            JMS TESTOK         /YES
06031   100350            JMS ERROR
06032   106006            JMS COMT00         /FORCE SCOPE
                          .EJECT
```

```
06033   207604              LAC (3Ø
06034   040107              DAC SPACEC
                  /2ND TEST OF CORE DUMP MODE
                  /9 TRACK EOF SHOULD NOT BE RECOGNIZED
                  /IF REVERSE DIRECTION CORE DMP MODE OR VICE VERSA
06035   2076[illegible]     CONT01    LAC (10000
06036   04010[illegible]            DAC GODATA                         /INDICATE NOT EXPECTED
06037   104062              JMS RAKBOT
06040   104125              JMS WRTEOF                         /WRITE THE EOF
06041   140032              DZM WCLOC           /CLR WC
06042   207574              LAC (FAKECA
06043   040033              DAC CALOC           /AND CA IN CASE
06044   207665              LAC (27000                         /BK UP CORE DMP
06045   240107              XOR SPACEC                         /COMP DENSITY AND MYRE CO
06046   400453              XCT DSCOPE
06047   707326              MTLC                               /LOAD COMAND
06050   707304              MTGO                               /GO
06051   707341              MTSF                               /WAIT DONE
06052   606051              JMP .-1
06053   7073[illegible]     MTRS                               /GET STATUS
06054   400453              XCT DSCOPE                         /AC=STATUS
06055   5001[illegible]     AND GODATA
06056   740200              SZA                                /BOT SHD=1
06057   100445              JMS TESTOK                         /OK
06060   100352              JMS ERROR           /ERR EOF RECOGNIZED
06061   606035              JMP CONT01                         /BY OTHER MODE
06062   200107              LAC SPACEC
06063   247625              XOR (20000                         /COMP CORE DMP BIT
06064   040107              DAC SPACEC                         /RESTORE
06065   507625              AND (20000
06066   740200              SZA                                /DONE BOTH CASES ALRDY
06067   606035              JMP CONT01                         /NO
                            .EJECT
```

```
                                /A2 WORD CORE DUMP RECORD SHOULD BE A 3 WORD
                                /9 TRACK RECORD
06070   777777  COMT02  LAC -1
06071   047700          DAC FAKECA                      /2 WORDS WRT
06072   047701          DAC FAKECA+1                    /ARE ALL ONES
06073   104762          JMS RAKBOT                      /START FROM BOT
06074   777776          LAC -2
06075   040032          DAC WCLOC               /SET WC
06076   207655          LAC (FAKECA-1                   /AND CA
06077   040033          DAC CALOC
06100   207666          LAC (64300                      /WRT ODD CORE DMP
06101   707326          MTLC                            /LOAD COMND
06102   400453          XCT DSCOPE                      /NOP OR HLT
06103   707304          MTGO                            /START OP
06104   740000          NOP
06105   707301          MTTR                            /WAIT DRV RDY
06106   606105          JMP .-1
06107   104062          JMS RAKBOT                      /GO BACK TO BOT
06110   140032          DZM WCLOC               /CLR WC
06111   207674          LAC (FAKECA
06112   040033          DAC CALOC               /SET UP CA
06113   207667          LAC (42300
06114   707326          MTLC                            /LOAD READ COMND
06115   707304          MTGO                            /START OP
06116   740000          NOP
06117   707301          MTTR                            /WAIT DRV RDY
06120   606117          JMP .-1
06121   200032          LAC WCLOC               /GET WC
06122   400453          XCT DSCOPE                      /NOP OR HLT
06123   547612          SAD (3                          /AC SHD INDICATE 3 WORDS
06124   100445          JMS TESTOK                      /OK
06125   100350          JMS ERROR               /ERR TYPE
06126   606070          JMP COMT02                      /FORCE SCOPE
06127   140107          DZM SPACFC                      /CLR FOR DENSITY
                        .EJECT
```

```
                                /DENSITY ERROR SELECT TEST
06130     207571                  LAC (2000
06131     040100                  DAC GUDATA                          /START WITH READ
06132     200100      DNET01      LAC GUDATA
06133     507572                  AND (7000             /MASK COMP
06134     340107                  TAD SPACEC                          /+ DENSITY
06135     040100                  DAC GUDATA                          /FOR TYPE OUT
06136     707326                  MTLC                                /LOAD COMP
06137     707301                  MTTR
06140     606137                  JMP .-1
06141     400453                  XCT DSCOPE
06142     707304                  MTGO                                /SHD SET ILLEGAL
06143     707352                  MTRS                                /GET STAT
06144     740100                  SMA                                 /EF=1
06145     703312                  CAF 10                /NO STOP EVERYTHING
06146     400453                  XCT DSCOPE                          /AC SHD = ILL FYNC
06147     547601                  SAD (440000                         /DID IT
06150     100445                  JMS TESTOK                          /YES
06151     100350                  JMS ERROR             /ERR TYPE
06152     606132                  JMP DNET01
06153     200107                  LAC SPACEC                          /FORCE SCOPE
06154     347565                  TAD (100
06155     040107                  DAC SPACEC                          /+( DENSITY
06156     547640                  SAD (200              /DONE 00 01
06157     741000                  SKP                                 /YES
06160     606132                  JMP DNET01                          /DO NEXT DENSITY
06161     140107                  DZM SPACEC                          /CLR DEN
06162     200100                  LAC GUDATA
06163     507576                  AND (7000
06164     347566                  TAD (1000             /+1 COMAND
06165     547567                  SAD (10000                          /DONE RD TO SPACES
06166     625634                  JMP* CRCTES                         /YES EXIT TEST
06167     606131                  JMP DNET01-1                        /DO NEXT COMAND
06170     006171      COMTEX      .+1
06171     416372                  .ASCII 'CORDMP    '<177>
06172     242232
06173     501004
06174     020376

                      /TC59 INSTRUCTION TEST TAPE 6
                      /MANUAL INTERVENTION TESTS
                      /REQUIRE THAT AC SW 10 IS A 1 OR NOT EXECUTED
                      /
06175     606175      MANTST      JMP .
06176     104062                  JMS RAKBOT
06177     750004                  LAS
06200     507642                  AND (200
06201     740200                  SZA                   /MANUAL TESTS SELECTED
06202     606227                  JMP INVEEN            /YES
06203     206206                  LAC .+3
06204     100455                  JMS TYPET             /TYPE NOT EXE
06205     626175                  JMP* MANTST           /EXIT
06206     006207                  .+1
06207     202330                  .ASCII ' MANUAL INTERVENTION TESTS NOT MADE '<177>
06210     147252
06211     406304
```

```
06212   044634
06213   522132
06214   253212
06215   472511
06216   147634
06217   202510
06220   551654
06221   515011
06222   647650
06223   202330
06224   142212
06225   203760
06226   000000

                        /
                        /
06227   140102  INVEEN  DZM BITMSK
06230   140100          DZM GUDATA          /CLR DRV NUMBER
06231   206514          LAC INVTEX
06232   100455          JMS TYPET           /TYPE DIRECTIONS
06233   106505          JMS WATKFY          /WAIT SET UP
06234   207544          LAC TSTX15
                        /POWER CLEAR SETS TO DRIVE 0
                        /MTTR SHOULD SKIP
06235   040131          DAC REGIS
06236   703302  USTS0   CAF                 /PWR CLR
06237   400453          XCT OSCOPE          /NOP OR HLT
06240   707311          MTTR 1              /DRV 0 SHOBERDY
06241   740001          CMA                 /NOT RDY
06242   400453          XCT OSCOPE          /NOP OR HLT
06243   741200          SNA                 /TEST OK 0 RDY
06244   100445          JMS TESTOK          /YES
06245   100350          JMS ERROR           /DRV 0 NOT RDY
06246   606236          JMP USTS00          /TEST IT AGAIN
                        /
                        .EJECT
```

```
                        /MTTR SHOULD SKIP UNIT SELECTED
Ø6247   2ØØ1Ø          USTSØ1   LAC GODATA
Ø625Ø   7Ø7326                  MTLC                /LOAD UNIT NUMBER
Ø6251   4ØØ453                  XCT DSCOPE          /NOP OR HLT
Ø6252   7Ø7311                  MTTR 1Ø             /IS IT RDY
Ø6253   74ØØØ1                  CMA                 /NO
Ø6254   4ØØ453                  XCT DSCOPE          /NOP OR HLT
Ø6255   7412ØØ                  SNA                 /AC=Ø IS RDY
Ø6256   1ØØ445                  JMS TESTOK          /OK
Ø6257   1ØØ35Ø                  JMS ERROR           /MTTR DID NOT SKIP
Ø626Ø   6Ø6247                  JMP USTSØ1          /SCOPE
                        /
                        /MTTR SHOULD NOT SKIP FOR ALL OTHER UNITS
Ø6261   14ØØ1Ø                  DZM 1Ø
Ø6262   2ØØØ1Ø         USTSØ2   LAC 1Ø              /GET NEXT NOT SELECTED
Ø6263   54Ø1ØØ                  SAD GODATA          /SAME AS RDY
Ø6264   6Ø6276                  JMP UST2ND          /YES
Ø6265   7Ø7326                  MTLC                /LOAD DRV NUM
Ø6266   4ØØ453                  XCT DSCOPE          /NOP OR HLT
Ø6267   7Ø7311                  MTTR 1Ø             /SHD NOT SKIP
Ø627Ø   74ØØØ1                  CMA                 /OK
Ø6271   4ØØ453                  XCT DSCOPE          /NOP OR HLT
Ø6272   74Ø2ØØ                  SZA                 /SKIP IN ERROR
Ø6273   1ØØ445                  JMS TESTOK          /NO DID NOT SKIP
Ø6274   1ØØ35Ø                  JMS ERROR           /ERR TYPE
Ø6275   6Ø6262                  JMP USTSØ2          /FORCE SCOPE
                        /
Ø6276   2ØØØ1Ø         UST2ND   LAC 1Ø              /+1 DRV SELECT
Ø6277   3476Ø2                  TAD (1ØØØØØ
Ø63ØØ   Ø4ØØ1Ø                  DAC 1Ø
Ø63Ø1   74Ø2ØØ                  SZA                 /DONE ALL
Ø63Ø2   6Ø6262                  JMP USTSØ2          /NO
                        /
                        /BOT  STATUS SHOULD READ BACK A1
Ø63Ø3   2ØØ1ØØ         USTSØ3   LAC GODATA
Ø63Ø4   7Ø7326                  MTLC                /LOAD SELECT
Ø63Ø5   4ØØ453                  XCT DSCOPE
Ø63Ø6   7Ø7352                  MTRS                /GET STATUS
Ø63Ø7   4ØØ453                  XCT DSCOPE          /HALT OR NOP
Ø631Ø   5476Ø2                  SAD (1ØØØØØ         /DOES BOT=1
Ø6311   1ØØ445                  JMS TESTOK          /YES SKP NEXT2
Ø6312   1ØØ35Ø                  JMS ERROR           /ERR TYPE
Ø6313   6Ø63Ø3                  JMP USTSØ3          /FORCE SCOPE
                        /
                                .EJECT
```

```
                        / FOR THE DRIVE NUMBERS NOT SELECTED
                        /BOT SHOULD NOT READ BACK A 1
06314   140010                  DZM 10                  /DRV #
06315   200010          USTS04  LAC 10                  /GET NXT NON SEL
06316   540100                  SAD GDDATA              /THIS UNIT ON LINE
06317   606330                  JMP UST4ND              /YES
06320   707326                  MTLC                    /LOAD DRV NOT SELECTED
06321   400453                  XCT DSCOPE              /NOP OR HLT
06322   707352                  MTRS                    /GET STATUS
06323   400453                  XCT DSCOPE              /NOP OR HLT
06324   741200                  SNA                     /ANY STATUS
06325   100445                  JMS TESTOK              /NO TRULY OFF LINE
06326   100350                  JMS ERROR               /ERR TYPE
06327   606315                  JMP USTS04              /FORCE SCOPE
06330   200010          UST4ND  LAC 10
06331   347602                  TAD (100000
06332   040010                  DAC 10
06333   740200                  SZA
06334   606315                  JMP USTS04
06335   200100                  LAC GDDATA              /LOAD SELECTED DRV NUM
06336   707326                  MTLC
06337   760207                  LAW 207
06340   100471                  JMS TY1ASC               /RING BELL
06341   707352                  MTRS                    /GET STATUS
06342   741200                  SNA                     /BOT GO AWAY
06343   606347                  JMP .+4                 /YES
06344   707301                  MTTR                    /DRV STILL RDY
06345   606347                  JMP .+2                 /NO
06346   606341                  JMP .-5
06347   200100                  LAC GDDATA              /+1 DRV NUMBER
06350   347602                  TAD (100000
06351   040100                  DAC GDDATA
06352   741200                  SNA                     /DONE # TO >
06353   606362                  JMP OFFLIN-2            /TEST OFF LINE POSITION
06354   707326                  MTLC
06355   707352                  MTRS
06356   707301                  MTTR                    /WAIT TILL NEW IS RDY
06357   740200                  SZA
06360   606247                  JMP USTS01              /TRY NXT SELECT
06361   606355                  JMP .-4
                        /
                                .EJECT
```

```
06362   777 00                LAW -1400
06363   040010                DAC 10                    /RPT NXT TEST  1K TIMES
                      /BOT SHD=0 AND MTTF SHOULD NOT SKIP
                      /WITH SWITCH IN OFF LINE SELECT NUMBER
06364   200100        OFFLIN  LAC GUDATA                /GET DRV NUMBER
06365   707326                MTLC                      /LOAD
06366   400453                XCT DSCOPE                /NOP OR HLT
06367   707352                MTRS                      /GET STATUS
06370   707301                MTTR                      /AND TST DRV NOT RY
06371   741000                SKP
06372   740001                CMA
06373   400453                XCT DSCOPE                /NOP OR HLT
06374   741200                SNA                       /DRV TRULY OFF
06375   100445                JMS TESTOK                /YES
06376   100350                JMS ERROR                 /ERR TYPE
06377   606364                JMP OFFLIN                /FORCE SCOPE
06400   200100                LAC GUDATA
06401   347602                TAD (100000               /+1 DRV SELECT
06402   040100                DAC GUDATA
06403   740200                SZL                       /DONE 0 TO 7
06404   606364                JMP OFFLIN                /NO
06405   440010                ISZ 10                    /0 TO 7
06406   606364                JMP OFFLIN                /NOT 1K OCTAL YET
06407   760207                LAW 207
06410   100471                JMS TY1ASC                /RING
06411   206627                LAC SELTX2
06412   100455                JMS TYPET
06413   106505                JMS WATKEY                /WAIT KBD
                      /WITH DRIVE 0 IN LOCAL MTTR SHD NOT SKP BOT=0
06414   703302        OFFLN2  CAF
06415   400453                XCT DSCOPE
06416   707352                MTRS                      /GET STATUS
06417   707301                MTTR                      /SHD NOT BE RDY
06420   741000                SKP                       /OK
06421   740001                CMA                       /AC=777777
06422   400453                XCT DSCOPE                /NOP OR HLT
06423   741200                SNA                       /DRV OFF IN LOCAL
06424   100445                JMS TESTOK                /YES
06425   100350                JMS ERROR                 /TYPE OUT
06426   606414                JMP OFFLN2                /FORCE SCOPE
                      /
                              .EJECT
```

```
06427   226642          LAC SELTX3
06430   100455          JMS TYPET
06431   106505          JMS WATKEY
                /WITH NO VACUME IN LOOP DRV SHD NOT BE RDY
06432   703302  OFFLN3  CAF
06433   400453          XCT DSCOPE
06434   707311          MTTR 1                  /DRV RDY
06435   741000          SKP                     /NO
06436   740001          CMA
06437   400453          XCT DSCOPE              /NOP OR HLT
06440   741200          SNA                     /LOOP VAC LOST OK
06441   100445          JMS TESTOK              /YES NO VAC TEST OK
06442   100350          JMS ERROR               /ERR TYPE
06443   606432          JMP OFFLN3              /FORCE SCOPE
06444   207570          LAC (4400
06445   040100          DAC GDDATA
06446   206671          LAC SELTX4
06447   100455          JMS TYPET
06450   106505          JMS WATKEY
                /
                        .EJECT
```

```
                              /WRITE COMMAND SHD SET ILLEGAL
                              /ALONG WITH WRITE END OF FILE
Ø6451    75ØØØ4               WRTILL    LAS
Ø6452    5Ø76Ø3                         AND (4Ø
Ø6453    7402ØØ                         SZA                 /9TRACK DRIVE
Ø6454    2Ø76Ø4                         LAC (3ØØ            /YES USE 8ØØ BPI
Ø6455    34Ø1ØØ                         TAD GDDATA          /+ WRITE OR WRITE EOF
Ø6456    7Ø7326                         MTLC                /LOAD COMMAND
Ø6457    7Ø73Ø1                         MTTR
Ø6460    6Ø6457                         JMP .-1             /WAIT DRV RDY
Ø6461    4ØØ453                         XCT DSCOPE          /NOP OR HLT
Ø6462    7Ø73Ø4                         MTGO                /SHD SET ILLEGAL
Ø6463    7Ø7352                         MTRS                /GET STATUS
Ø6464    74Ø1ØØ                         SMA                 /EF=1
Ø6465    7Ø33Ø2                         CAF                 /NO PWR CLR
Ø6466    4ØØ453                         XCT DSCOPE          /NOP OR HLT
Ø6467    547651                         SAD (54ØØØØ         /EF ROT AND ILLEGAL
Ø6470    1ØØ445                         JMS TESTCK          /YES
Ø6471    1ØØ35Ø                         JMS ERROR           /NO SELECT ERR
Ø6472    6Ø6451                         JMP WRTILL          /FORCE ILLEGAL SCOPE
Ø6473    2Ø76Ø6                         LAC (5ØØØ
Ø6474    54Ø1ØØ                         SAD GDDATA          /DONE WRITE EOF
Ø6475    6Ø65ØØ                         JMP .+3             /YES
Ø6476    Ø4Ø1ØØ                         DAC GDDATA          /TEST ILLEG FUNCTION
Ø6477    6Ø6451                         JMP WRTILL          /WRITE END OF FILE
Ø6500    2Ø6722                         LAC SELTX5
Ø6501    1ØØ455                         JMS TYPET           /TYPE END OF TEST MESS
Ø6502    1Ø65Ø5                         JMS WATKEY          /WAIT KEY
Ø6503    7Ø33Ø2                         CAF                 /PWR CLR
Ø6504    626175                         JMP* MANTST         /EXIT TEST
Ø6505    6Ø65Ø5               WATKEY    JMP .
Ø6506    2Ø6747                         LAC TANYTX
Ø6507    1ØØ455                         JMS TYPET
Ø6510    7ØØ3Ø1                         KSF
Ø6511    6Ø651Ø                         JMP .-1
Ø6512    7ØØ312                         KRB
Ø6513    6265Ø5                         JMP* WATKEY
                              /
                                        .EJECT
```

```
Ø6514    ØØ6515         INVTEX .+1
Ø6515    Ø64252                .ASCII <15><12>'PUT DRIVE # ONLY - ON LIN
Ø6516    Ø52657
Ø6517    2Ø2112
Ø652Ø    244654
Ø6521    4252Ø6
Ø6522    Ø2Ø236
Ø6523    472313
Ø6524    12Ø132
Ø6525    2Ø2371
Ø6526    62Ø23Ø
Ø6527    44634Ø
Ø653Ø    ØØØØØØ
Ø6531    425ØØ5                .ASCII 'E - WRITE ENABLED'
Ø6532    52Ø256
Ø6533    512232
Ø6534    4425ØØ
Ø6535    42635Ø
Ø6536    14123Ø
Ø6537    4261ØØ
Ø654Ø    ØØØØØØ
Ø6541    Ø6425Ø                .ASCII <15><12>'AT EACH PELL '
Ø6542    1521ØØ
Ø6543    42623Ø
Ø6544    3441ØØ
Ø6545    412131
Ø6546    4461ØØ
Ø6547    41621Ø                .ASCII 'CHANGE TO THE NEXT NUMBER'
Ø655Ø    147216
Ø6551    425Ø12
Ø6552    4475ØØ
Ø6553    52221Ø
Ø6554    52Ø234
Ø6555    426612
Ø6556    42Ø234
Ø6557    52633Ø
Ø656Ø    242644
Ø6561    Ø64252                .ASCII <15><12>'THE DRIVE MAY BE SWITCHED TO LOCAL'
Ø6562    444212
Ø6563    2Ø2112
Ø6564    244654
Ø6565    425Ø11
Ø6566    54Ø662
Ø6567    2Ø2Ø5Ø
Ø657Ø    52Ø246
Ø6571    536232
Ø6572    44162Ø
Ø6573    4261Ø4
Ø6574    Ø52236
Ø6575    2Ø2311
Ø6576    7416Ø2
Ø6577    46ØØØØ
Ø66ØØ    ØØØØØØ
Ø66Ø1    2Ø2Ø5Ø                .ASCII ' BETWEEN NUMBERS'
Ø66Ø2    552256
```

```
Ø0603     426131
Ø0604     620234
Ø0605     52633Ø
Ø0606     242644
Ø0607     514ØØØ
Ø0610     ØØØ'Ø
Ø0611     064246
Ø0612     Ø26542
Ø0613     265445
Ø0614     531532
Ø0615     321326
Ø0616     526554
Ø0617     265565
Ø0620     547614
Ø0621     431Ø11
Ø0622     444634
Ø0623     425ØØ5
Ø0624     52Ø14Ø
Ø0625     774ØØØ
Ø0626     ØØØ'ØØ
```

```
.ASCII <15><12>'Ø-1-2-3-4-5-6-7-OFF LINE - Ø'<177>
```

```
.EJECT
```

```
06627   006630   SELTX2 .+1
06630   064252          .ASCII <15><12>'PUT DRIVE # IN LOCAL'<177>
06631   052650
06632   202112
06633   244654
06634   425006
06635   020222
06636   471011
06637   447606
06640   406317
06641   700000
06642   006643   SELTX3 .+1
06643   064252          .ASCII <15><12>'PUT DRIVE ON LINE '<15><12>
06644   052650
06645   202112
06646   244654
06647   425011
06650   747100
06651   462231
06652   642500
06653   064240
06654   000000
06655   536232          .ASCII 'WITH NO VACUUM IN LOOP BOXES'<177>
06656   444100
06657   472364
06660   053202
06661   416532
06662   546500
06663   446344
06664   046236
06665   476404
06666   041236
06667   542132
06670   377400
06671   006672   SELTX4 .+1
06672   064252          .ASCII <15><12>'REMOVE WRITE PERMISS RI
06673   242632
06674   476550
06675   520256
06676   512232
06677   442500
06700   502132
06701   246622
06702   516464
06703   051222
06704   472161          .ASCII 'NG'<15><12>'INSTALL TAPE POWER UP'
06705   505222
06706   472472
06707   440630
06710   461012
06711   440640
06712   425012
06713   047656
06714   426444
06715   052640
```

```
     06716     202371                          .ASCII ' ON LINE '<177>
     06717     620230
     06720     446350
     06721     520376
     06722     006723           SELTX5 .+1
     06723     064252                          .ASCII <15><12>'REPLACE WRITE PERMISS '<15>
     06724     242640
     06725     462030
     06726     342500
     06727     536451
     06730     152212
     06731     202410
     06732     551232
     06733     446472
     06734     320032
     06735     052412                          .ASCII <12>'PUT DRIVE 0 ON LINE '<177>
     06736     552100
     06737     422451
     06740     153212
     06741     201404
     06742     047634
     06743     202311
     06744     147212
     06745     203760
     06746     000000
     06747     006750           TANYTX .+1
     06750     064252                          .ASCII <15><12>'TYPE ANY KEY WHEN READY '<177>
     06751     454640
     06752     425010
     06753     147262
     06754     202270
     06755     554500
     06756     536210
     06757     547100
     06760     512130
     06761     142262
     06762     203760
     06763     000000
                                /
                                               .EJECT
```

```
                        /TEST ALL COMBINATIONS DATA OUTPUT
                        /FROM EVERY MEMORY BANK AVAILABLE
06764   606764  BRKDAT  JMP .
06765   145055          DZM PROBNK              /STRT WITH BNK 0
06766   140010          DZM 10                  /START WORD=0
06767   205055          LAC PROBNK              /BANK
06770   347574          TAD (FAKECA             /+ BRK ADDRS
06771   040100          DAC GODATA              /FOR TYPE OUTS
                        /TEST ALL COMB DATA IN AND OUT EVERY BANK
                        /FIRST HLT AC SHD=DATA BUFFER (OUTPUT) 2ND AC SHD=FIRST(INPUT)
06772   703302  BRKLP   CAF                     /PWR CLR
06773   207570          LAC (4000
06774   707326          MTLC                    /LOAD OUTPUT COMP
06775   707702          EEM                     /SET EXTND MODE
06776   777777          LAC -1
06777   340100          TAD GODATA              /ADRS BRK-1
07000   040033          DAC CALOC               /FOR DATA BRKS
07001   140032          DZM WCLOC               /0 WC FOR CONSISTENT
07002   200010          LAC 10                  /GET CURRENT DATA WD
07003   060100          DAC* GODATA             /GET OUTPUT
07004   707401          SDF                     /+1 TO DATA FLAG
07005   740000          NOP                     /STALL WAIT
07006   740000          NOP                     /FOR DATA BREAK
07007   400453          XCT DSCOPE              /AC SHD=DATA BUFFER
07010   207571          LAC (2400
07011   707324          LCM                     /CHNG TO INPUT
07012   707401          SDF                     /+1 TO DATA FLAG
07013   740000          NOP                     /STALL
07014   740000          NOP
07015   220033          LAC* CALOC              /GET WORD INPUT
07016   400453          XCT DSCOPE              /AC SHD=LAST AC AT XCT
07017   540010          SAD 10                  /INPUT =CURRENT DATA
07020   741000          SKP                     /YES
07021   607024          JMP .+3                 /ERROR OUT OR IN
07022   560100          SAD* GODATA             /OUTPUT WORD CHNGD
07023   100445          JMS TESTOK              /NO ERROR
07024   100350          JMS ERROR               /ERR TYPE
07025   606772          JMP BRKLP               /FORCE SCOPE COOP
07026   440010          ISZ 10
07027   606772          JMP BRKLP
07030   707704          LEM
07031   750004          LAS
07032   507645          AND (7000
07033   545055          SAD PROBNK
07034   626764          JMP* BRKDAT
07035   205055          LAC PROBNK
07036   347567          TAD (1000
07037   045055          DAC PROBNK
07040   606766          JMP BRKDAT+2
                        /
                        .EJECT
```

```
                        /TC59 INSTRUCTION TEST TAPE 7
                        /CHANGE DIRECTION AND CONTINUE MODE TEST
07041   607041  CHNGDC  JMP .
07042   207551          LAC TSTX16
07043   040101          DAC REGIS /FOR TEXT
07044   750004          LAS
07045   507603          AND (40
07046   740200          SZA
07047   207604          LAC (300  /9 TRK DRV
07050   040107          DAC SPACEC
                        /FIRST TEST WRITE EOF TO WRITE EOF CMODE
07051   104062  WEOFCM  JMS RAKBOT                      /START FROM BOT
07052   140010          DZM 10                          /CLR
07053   207606          LAC (5000
07054   340107          TAD SPACEC
07055   707326          MTLC                    /LOAD WRT EOF
07056   400453          XCT DSCOPE              /NOP OR HLT
07057   707304          MTGO
07060   707341          MTSF
07061   607060          JMP .-1                 /WAIT FIRST DONE
07062   707322          MTAF                    /CLR FLGS
07063   707304          MTGO                    /GO AGAIN
07064   707301          MTTR                    /DRV RDY YET
07065   741000          SKP                     /NO
07066   607074          JMP .+6                 /DRV RDY CHK STAT
07067   440010          ISZ 10
07070   607064          JMP .-4
07071   767070          LAW .-1
07072   703302          CAF
07073   741000          SKP
07074   707352          MTRS
07075   400453          XCT DSCOPE              /NOP OR HLT
07076   547626          SAD (410100             /AC=EOF STAT
07077   100445          JMS TESTOK              /YES
07100   100350          JMS ERROR /ERR TYPE
07101   607051          JMP WEOFCM              /FORCE SCOPE
                        /
                        .EJECT
```

```
                        /2ND TEST OF CONTINUE MODE
                        /THERE ARE 2 END OF FILES ON TAPE AFTER BOT
                        /DO READ FOLLOWED BY READ AND SPACE BY SPACE
07102   207571          LAC (2000
07103   040103          DAC GODATA              /DO READ FIRST
07104   104762  CMOT2   JMS .SAKBUT             /START FROM BOT
07105   200142          LAC GODATA              /COMND
07106   340107          TAD SPACEC              /+ DENSITY
07107   707326          MTLC
07110   777777          LAW -1
07111   040032          DAC WCLOC
07112   207574          LAC (FAKECA
07113   040033          DAC CALOC
07114   400453          XCT DSCOPE              /NOP OR HLT
07115   707304          MTGO                    /START
07116   707341          MTSF
07117   607116          JMP .-1                 /WAIT FIRST EOF
07120   707322          MTAF                    /CLR FLGS
07121   707304          MTGO                    /GO AGAIN
07122   140110          DZM 10
07123   707301          MTTR                    /DRV RDY
07124   741000          SKP                     /NO
07125   607133          JMP .+6
07126   440110          ISZ 10                  /TIME
07127   607123          JMP .-4
07130   777777          LAW -1
07131   703302          CAF
07132   741000          SKP
07133   707352          MTRS
07134   400453          XCT DSCOPE              /AC=777777 TIMR OUT
07135   507626          AND (410100
07136   547626          SAD (410100             /GET TO EOF
07137   100445          JMS TESTOK              /YES
07140   100350          JMS ERROR
07141   607104          JMP CMOT02
07142   207575          LAC (6400
07143   540100          SAD GODATA
07144   741000          SKP
07145   607103          JMP CMOT02-1            /NOW  DO SPACE
                        /
                        .EJECT
```

```
                                /THIRD TEST OF CONTINUE MODE
                                /WRITE TO WRITE ON FIRST PASS
                                /2ND PASS IS READ TO WRITE
07146   777777                  LAW -1
07147   047700                  DAC FAKECA
07150   047701                  DAC FAKECA+1            /2WRDS 77777
07151   207570                  LAC (4300
07152   040100                  DAC GODATA              /START WRITE
07153   100462          CMOT3   JMS FAKBOT              /FROM BOT
07154   200100                  LAC GODATA              /GET COMND
07155   340107                  TAD SPACEC              /+ DENSITY
07156   707326                  MTLC
07157   777777                  LAW -1
07160   040032                  DAC WCLOC /SET WC
07161   207655                  LAC (FAKECA-1
07162   040033                  DAC CALOC /AND CA
07163   400453                  XCT DSCOPE              /NOP OR HLT
07164   707304                  MTGO                    /GO FIRST
07165   707341                  MISF
07166   607165                  JMP .-1                 /WAIT DONE
07167   777777                  LAW -1
07170   040011                  DAC 11
07171   207570                  LAC (4700
07172   707324                  LCM                     /CHNG TO WRITE
07173   707322                  MTAF                    /CLR FLGS
07174   707304                  MTGO                    /GO AGAIN
07175   200032                  LAC WCLOC
07176   740200                  SZA                     /WC SHD NOT +1YET
07177   607222                  JMP CMT3ND-2            /ERROR
07200   140010                  DZM 10                  /CLR TIMER
07201   200032                  LAC WCLOC
07202   740200                  SZA                     /WC SHD +1
07203   607207                  JMP .+4                 /WHEN
07204   440010                  ISZ 10                  /ALPHA GOES TO1
07205   607201                  JMP .-4
07206   607222                  JMP CMT3ND-2
07207   777777                  LAW -1
07210   040032                  DAC WCLOC /SET UP WC
07211   207655                  LAC (FAKECA-1
07212   040033                  DAC CALOC /AND CA
07213   707352                  MTRS
07214   707301                  MTTR                    /DRV RDY
07215   741000                  SKP                     /NOT YET
07216   607224                  JMP CMT3ND              /CHECK POSITION
07217   440010                  ISZ 10
07220   607213                  JMP .-5
07221   777776                  LAW -2
07222   140011                  DZM 11                  /TST FAILED
07223   703302                  CAF                     /PWR CLR
07224   400453          CMT3ND  XCT DSCOPE
07225   440011                  ISZ 11                  /TESTS PASS
07226   741000                  SKP                     /NO
07227   100445                  JMS TESTOK
07230   100350                  JMS ERROR /ERR TYPE
                                .EJECT
```

```
07231   607153                  JMP CMOT03          /FORCE SCOPE
07232   207571                  LAC (2700
07233   540140                  SAD GODATA
07234   741000                  SKP
07235   607152                  JMP CMOT03-1
                        /CONTINUOUS MODE TEST 4
                        /READ TO WRITE END OF FILE
                        /2ND PASS SPACE TO WRITE EOF
07236   207571                  LAC (2700
07237   040100                  DAC GODATA
07240   104062          CMOT04  JMS RAKBOT          /START FROM BOT
07241   200100                  LAC GODATA                  /GET COMD
07242   340107                  TAD SPACEC          /+DENSITY
07243   707326                  MTLC
07244   777777                  LAW -1
07245   040032                  DAC WCLOC /SET WC
07246   207577                  LAC (FAKECA+1
07247   040033                  DAC CALOC /AND CA FOR RD
07250   400453                  XCT DSCOPE          /NOP OR HLT
07251   707304                  MTGO                /START UP
07252   707341                  MTSF
07253   607252                  JMP .-1             /WAIT DONE
07254   207606                  LAC (5700
07255   707324                  LCM                 /CHNG TO WRT EOF
07256   707322                  MTAF                /CLR FLGS
07257   707304                  MTGO                /GO AGAIN
07260   140010                  DZM 10              /CLR CTR
07261   707301                  MTTR                /DRV RDY YET
07262   741000                  SKP                 /NO
07263   607270                  JMP .+5             /CHECK STATUS
07264   440010                  ISZ 10
07265   607261                  JMP .-4
07266   703302                  CAF
07267   741000                  SKP
07270   707352                  MTRS
07271   400453                  XCT DSCOPE
07272   547626                  SAD (410100
07273   100445                  JMS TESTOK
07274   100350                  JMS ERROR
07275   607240                  JMP CMOT04
07276   104062                  JMS RAKBOT
07277   105607                  JMS WRT2WD
07300   105607                  JMS WRT2WD
07301   207575                  LAC (6100
07302   540100                  SAD GODATA
07303   741000                  SKP
07304   607237                  JMP CMOT04-1
                        .EJECT
```

```
                                 /FIRST OF CHANGE DIRECTION TESTS
                                 /SPACE FORWARD TO SPACE REVERSE
07305     100462                         JMS RAKBOT          /START FROM BOT
07306     105647                         JMS WRT2WD          /WRT A 2WD RECORD
07307     104120                         JMS WRTEOF          /AND THEN END OF FILE
07310     100462                 CDIT01  JMS RAKBOT          /START FROM BOT
07311     207575                         LAC (6000 /SPACE
07312     340107                         TAD SPACEC          /+ DENSITY
07313     707326                         MTLC                /LOAD IT
07314     777777                         LAW -1
07315     040032                         DAC WCLOC /SET WC
07316     400453                         XCT DSCOPE          /NOP OR HLT
07317     707304                         MTGO                /START SPACE
07320     707341                         MTSF                /WAIT DONE
07321     607320                         JMP .-1
07322     207576                         LAC (7000
07323     707324                         LCM                 /CHNG TO BKWD
07324     707322                         MTAF                /CLR FLGS
07325     707304                         MTGO                /GO
07326     140010                         DZM 10
07327     707321                         MTCR                /WAIT CURDY
07330     607333                         JMP .+3             /NOT RDY TIME
07331     707352                         MTRS
07332     607336                         JMP .+4             /CHK POSITION
07333     440010                         ISZ 10
07334     607327                         JMP .-5
07335     703312                         CAF 10              /PWR CLR
07336     400453                         XCT DSCOPE          /NOP OR HLT
07337     507602                         AND (100000         /MASK BOT
07340     740200                         SZA                 /BOT SHD=1
07341     100445                         JMS TESTOK          /OK
07342     100350                         JMS ERROR /ERROR TYPE
07343     607310                         JMP CDIT01          /FORCE SCOPE
                                 /
                                         .EJECT
```

```
                                /2ND CHANGE DIRECTIO  TEST
                                /SPACE REVERSE TO WRITE END OF FILE
 07344    104062                CDIT02      JMP HAKBCT              /START FROM BOT
 07345    105607                            JMS WRT2WD
 07346    207576                            LAC (7000 /SPACE REV
 07347    340107                            TAD SPACEC              /+ DENSITY
 07350    707326                            MTLC
 07351    777777                            LAW -1
 07352    040032                            DAC WCLOC / PECRD BAK
 07353    400453                            XCT DSCOPE              /NOP OR HLT
 07354    707304                            MTGO                    /START REVRS
 07355    707341                            MTSF
 07356    607355                            JMP .-1                 /WAIT BAK DONE
 07357    207606                            LAC (5000 /
 07360    707324                            LCM                     /CHNG TO WRT EOF
 07361    707322                            MTAF                    /CLR FLGS
 07362    707304                            MTGO                    /GO
 07363    140010                            DZM 10
 07364    707321                            MTCR                    /WAIT CONTROL RDY
 07365    741000                            SKP
 07366    607372                            JMP .+4
 07367    440010                            ISZ 10
 07370    607364                            JMP .-4                 /NOT TIMED OUT
 07371    703302                            CAF
 07372    707352                            MTRS                    /GET STATUS
 07373    400453                            XCT DSCOPE              /NOP OR HLT
 07374    507670                            AND (737777)            /MASK OUT ILLEGAL BIT
 07375    547626                            SAD (410100             /EOF WRITTEN
 07376    100445                            JMS TESTOK              /YES
 07377    100350                            JMS ERROR /ERR TYPE
 07400    607344                            JMP CDIT02              /END CHNG DIR TST
 07401    627041                            JMP* CHNGDC
                                /
                                            .EJECT
```

```
                                /ERROR HEADER TEXT
                                /TEST ADRS (AC) (WC) (CA) COMD STAT
07402   007403                  ERRHTX      .+1
07403   064244                          .ASCII <15><12>' TEST     ADRS        '
07404   052212
07405   516504
07406   020100
07407   202030
07410   451246
07411   241004
07412   020100
07413   201004                          .ASCII '          (AC)        ('
07414   020100
07415   201005
07416   040606
07417   245004
07420   020100
07421   201005
07422   000000
07423   536065                          .ASCII 'WC)     (CA)     COMD'
07424   120100
07425   201005
07426   041602
07427   245004
07430   020102
07431   416371
07432   542000
07433   201004                          .ASCII '     STAT    CADATA'<15><12><177>
07434   020246
07435   522032
07436   420100
07437   202070
07440   142202
07441   522021
07442   505376
07443   007444          TSTX40 .+1
07444   522471                  .ASCII 'TSIOTS    '<177>
07445   147650
07446   515004
07447   020376
07450   007451          TSTX41 .+1
07451   416330                  .ASCII 'CMDATS    '<177>
07452   440650
07453   515004
07454   020376
07455   007456          TSTX42 .+1
07456   422050                  .ASCII 'DBDATS    '<177>
07457   440650
07460   515004
07461   020376
07462   007463          TSTX43 .+1
07463   422071                  .ASCII 'DCHCTS    '<177>
07464   041650
07465   515004
07466   020376
```

```
07467     007470          TSTX 4 .+1
07470     446372                  .ASCII 'IOTES2    '<177>
07471     442646
07472     311004
07473     020376
07474     007475          TSTX 5 .+1
07475     416112                  .ASCII 'CDFCOD    '<177>
07476     541636
07477     421004
07500     020376
07501     007502          TSTX 6 .+1
07502     522032                  .ASCII 'TAPEMO    '<177>
07503     042632
07504     475004
07505     020376
                          /
                                  .EJECT
```

```
07506       007507             TSTX07 .+1
07507       522132                       .ASCII 'TESFNS    '<177>
07510       343034
07511       515004
07512       020776
07513       007514             TSTX10 .+1
07514       536452                       .ASCII 'WRTPAR    '<177>
07515       450202
07516       511004
07517       020376
07520       007521             TSTX11 .+1
07521       522132                       .ASCII 'TESTPE    '<177>
07522       352240
07523       425004
07524       020376
07525       007526             TSTX12 .+1
07526       406411                       .ASCII 'APITST    '<177>
07527       152246
07530       521004
07531       020376
07532       007533             TSTX13 .+1
07533       426452                       .ASCII 'ERRFUN    '<177>
07534       243252
07535       471004
07536       020376
07537       007540             TSTX14 .+1
07540       416450                       .ASCII 'CRCTES    '<177>
07541       352212
07542       515004
07543       020376
07544       007545             TSTX15 .+1
07545       466031                       .ASCII 'MANTST    '<177>
07546       652246
07547       521004
07550       020376
07551       007552             TSTX16 .+1
07552       416211                       .ASCII 'CHNGDC    '<177>
07553       643610
07554       415004
07555       020376
                                         .EJECT
```

```
                        /TC5+ INSTRUCTION TEST LAST TAPE
                        /ERROR RESTORE
                        /ERROR TYPE OUT
                        /SCOPE LOOP AND POWER DOWN REQUEST
                        /TEST OK
                        /TYPE OUT ROUTINES
                        /
                        /ERROR RESTORE ROUTINE
                        /USED INITIALLY AND ON POWER DOWN SW
00324                           .LOC TESTEX+10
00324   600324          RESTOR  JMP .
00325   207671                  LAC (NOP!CLL            /GET NOP INST
00326   040453                  DAC DSCOPE              /TO DELETE DC SCOPING
00327   207672                  LAC (ISZ TESTOK)        /GET ISZ
00330   040446                  DAC TESTOK+1            /SO THAT TEST OK SUBR
00331   040447                  DAC TESTOK+2            /WILL EXIT +2
00332   777777                  LAW -1
00333   040104                  DAC FRSERR              /SET FIRST ERROR FLG
00334   140105                  DZM TWOERR              /CLEAR 2ND ERR PASS
00335   620324                  JMP* RESTOR             /EXIT RESTORE ROUT
                        /
                        /
                        /SET UP DC SCOPE LOOP AND TESTOK ERR EXIT
                        /
00336   600336          DCSETU  JMP .
00337   207673                  LAC (HLT!CLL            /GET HLT INSTR
00340   040453                  DAC DSCOPE              /FOR DC SCOPE LOOP
00341   207643                  LAC (NOP
00342   040446                  DAC TESTOK+1            /NOR TEST OK ISZ'S
00343   040447                  DAC TESTOK+2            /SO EXIT IS ONLY +1
00344   140104                  DZM FRSERR              /CLEAR FIRST ERR
00345   777777                  LAW -1
00346   040105                  DAC TWOERR              /INDICATE DC SCOPE SET
00347   620336                  JMP* DCSETU             /EXIT SET UP
                        /
                                .EJECT
```

```
                        /ERROR ROUTINE
                        /TYPEOUT SET UP OC IF FIRST PASS
                        /SETUP HIGH SPEED SCOPE CHECK ALL SWS 2ND PASS
                        /TEST ALL SWS IF NOT A FIRST OR 2ND PASS
00350   600350          ERROR   JMP .
00351   440104                  ISZ ERSERR              /FIRST ERR ENTRANCE
00352   600407                  JMP ERRPA2              /NO
00353   040454                  DAC ERROAC              /SAVE ERROR AC
00354   207402                  LAC ERRHTX              /TYPE ERR HDR
00355   100455                  JMS TYPET
00356   200101                  LAC REGIS /TYPE TEST TEXT
00357   100455                  JMS TYPET
00360   220350                  LAC* ERROR
00361   507641                  AND (17777
00362   100535                  JMS TYPEC /TYPE  START ADDRS
00363   200100                  LAC GOODATA
00364   100535                  JMS TYPEC /TEST CODE
00365   200454                  LAC ERROAC
00366   100535                  JMS TYPEC /AC AT ERROR
00367   200032                  LAC WCLOC
00370   100535                  JMS TYPEC /(WC)
00371   200033                  LAC CALOC
00372   100535                  JMS TYPEC /(CA)
00373   707312                  MTRC
00374   100535                  JMS TYPEC /COMD REGISTER
00375   707352                  MTMS
00376   100535                  JMS TYPEC /STATUS REGISTER
00377   220033                  LAC* CALOC
00400   100535                  JMS TYPEC /DATA LOC CA POINTS AT
00401   200350                  LAC ERROR
00402   740040                  HLT
00403   100336                  JMS DCSETU
00404   777777                  LAW -1
00405   040452                  DAC OKTEST              /SET TEST OK SW
00406   620350                  JMP* ERROR              /FORCE SCOPE LOOP
                        /
                                .EJECT
```

```
ØØ407    44Ø1Ø5    ERRE12    ISZ TWOERR       /DC SCOPE ENTRANCE
ØØ41Ø    6ØØ413              JMP .+3          /NO
ØØ411    2Ø7671              LAC (NOP!CLL
ØØ412    Ø4Ø453              DAC DSCOPE       /MAKE THE HALT A NOP
ØØ413    14Ø1Ø5              DZM TWOERR       /CLEAR 2ND ERR PASS
ØØ414    14Ø1Ø4              DZM FRSERR
ØØ415    75ØØØ4              LAS              /GET SWS
ØØ416    5Ø7571              AND (2ØØØ)       /MASK DC SCOPE SELECT
ØØ417    74Ø2ØØ              SZA              /STAY IN DC MODE
ØØ42Ø    1ØØ336              JMS DCSETU       /YES SET IT UP AG
                   /
ØØ421    44Ø452    TSPWRD    ISZ OKTEST       /TEST FAIL OR PASS
ØØ422    741ØØØ              SKP              /TEST PASSED
ØØ423    1ØØ435              JMS TSBELL       /TEST FAILED CHECK BELL SW
ØØ424    777777              LAW -1
ØØ425    Ø4Ø452              DAC OKTEST       /SET TEST FAILE SW
ØØ426    75ØØØ4              LAS              /GET SWS AG
ØØ427    5Ø7566              AND (1ØØØ)       /MASK PWR DWD SELECT
ØØ43Ø    7412ØØ              SNA              /PWR DOWN SET
ØØ431    62Ø35Ø              JMP* ERROR       /NO STAY IN SCOPE MODE
ØØ432    1ØØ324              JMS RESTOR       /RESTORE NOP AND ISZ
ØØ433    74Ø4ØØ              HLT              /WAIT
ØØ434    62Ø35Ø              JMP* ERROR       /EXIT ERROR TRY AGAIN
                   /
                             .EJECT
```

```
                        /TEST STILL IN ERROR CHECK BELL SW
00435   600435  TSBELL  JMP .
00436   750004          LAS                     /GET SWS
00437   507570          AND (4 00
00440   741240          SZA                     /RING BELL ON ERROR
00441   620435          JMP* TSBELL             /NO
00442   760207          LAC BELL                /BELL CODE
00443   100471          JMS TY1ASC              /RING BELL
00444   620435          JMP* TSBELL             /EXIT
                        /IF TEST'S ROUTINE OK THIS ROUTINE IS ENTERED
00445   600445  TESTOK  JMP .
00446   440445          ISZ TESTOK              /OR NOP IF ERROR
00447   440445          ISZ TESTOK              /OR NOP IF ERROR
00450   140452          DZM OKTEST              /CLEAR ERROR FLAG
00451   620445          JMP* TESTOK             /EXIT +1 ON ERR +3 NO ERROR
00452   000000  OKTEST  0                       /TEST PASSED FAILED SW
00453   744040  OSCOPE  NOP!CLL!HLT!CLL         /HALT IF OC SCOPE LOOP
00454   000000  ERRDAC  0                       /TO SAVE AC ON ERROR
                        /TYPE OUT ROUTINES
                        /TYPET OUTPUT 5-7 PACKED ASCII CHARACTERS
                        /
00455   600455  TYPET   JMP .
00456   040532          DAC CMDPTR
00457   777777          LAC -1
00460   040533          DAC PAIRCT
                        /
00461   100477  TYPLUP  JMS GETCHR
00462   547674          SAD (177
00463   620455          JMP* TYPET
00464   741200          SNA
00465   600461          JMP TYPLUP
00466   347640          TAD (240
00467   100471          JMS TY1ASC
00470   600461          JMP TYPLUP
                        /
                        .EJECT
```

```
                                /
                                /
                                /OUTPUT 1 ASCII CHARACTER AC = CHAR
                                /
00471   600471          TY1ASC  JMP .
00472   700426                  TLS
00473   700431                  TSF
00474   600473                  JMP .-1
00475   700402                  TCF
00476   620471                  JMP* TY1ASC
                                /
                                /
                                /UNPACK ROUTINE 5-7 ASCII
                                /
00477   600477          GETCHR  JMP .
00500   440533                  ISZ PAIRCT
00501   600513                  JMP NUCHAR
00502   220532          NUPAIR  LAC* CMDPTR
00503   040530                  DAC LFHALF
00504   440532                  ISZ CMDPTR
00505   220532                  LAC* CMDPTR
00506   040531                  DAC RTHALF
00507   440532                  ISZ CMDPTR
00510   040533                  DAC PAIRCT
00511   777773                  LAW 17773
00512   040533                  DAC PAIRCT
00513   777770          NUCHAR  LAW 17770
00514   040534                  DAC TEMPER
00515   200531          GETBCK  LAC RTHALF
00516   740010                  RAL
00517   440534                  ISZ TEMPER
00520   600523                  JMP GETMRE
00521   507674                  AND (177
00522   620477                  JMP* GETCHR
                                /
00523   040531          GETMRE  DAC RTHALF
00524   200530                  LAC LFHALF
00525   740010                  RAL
00526   040530                  DAC LFHALF
00527   600515                  JMP GETBCK
                                /
00530   000000          LFHALF  0
00531   000000          RTHALF  0
00532   000000          CMDPTR  0
00533   000000          PAIRCT  0
00534   000000          TEMPER  0
                                /
                                .EJECT
```

```
                        /
                        /TYPE CONTENTS OCTAL
                        /
                        TYPEC   JMP .
                                DAC TYPECT
                                RTL;            RTR;        RTR

                                DAC TYPECT+1
                                RTL;            RTR;        RTR

                                JMS TY2OCT
                                LAC TYPECT+1
                                JMS TY2OCT
                                LAC TYPECT
                                JMS TY2OCT
                                LAC (240
                                JMS TY1ASC
                                JMS TY1ASC
                                JMP* TYPEC
                        /
                        /TYPE 2 OCTAL CHARACTERS
                        /
                        TY2OCT  JMP .
                                DAC TYPECT+2
                                RTL;            RAR

                                JMS TY1OCT
                                LAC TYPECT+2
                                JMS TY1OCT
                                JMP* TY2OCT
                        /
                        /
                        /TYPE 1 OCTAL CHARACTER
                        /
                        TY1OCT  JMP .
                                AND (7
                                TAD (260
                                JMS TY1ASC
                        /       JMP* TY1OCT

                                .EJECT
```

```
00535   600535
00536   040647
00537   742020
00540   742020
00541   742020
00542   040650
00543   742020
00544   742020
00545   742020
00546   100557
00547   200650
00550   100557
00551   200647
00552   100557
00553   207675
00554   100471
00555   100471
00556   620535

00557   600557
00560   040651
00561   742020
00562   740020
00563   100567
00564   200651
00565   100567
00566   620557

00567   600567
00570   507616
00571   347676
00572   100471
00573   620567
```

```
                                    /
                                    /
                                    /TYPE CONTENTS DECIMAL
                                    /ENTER AC = 18
                                    /BIT UNSIGNED NUMBER
                                    /CONVERT TO 6 DECIMAL DIGITS AND OUTPUT
                                    /
                                    TYDECI     JMP .
Ø1574      6ØØ574                              DAC TYQUOT
Ø1575      Ø4Ø64Ø                              LAW -6
Ø1576      777772                              DAC TEMPER
Ø1577      Ø4Ø534                              DAC TYPECT
Ø16ØØ      Ø4Ø647                              LAC (DCHAR6
Ø16Ø1      2Ø7677                   TYDLUP     DAC TYPECT+1
Ø16Ø2      Ø4Ø65Ø                              JMS TYVERT
Ø16Ø3      1ØØ617                              DAC* TYPECT+1
Ø16Ø4      Ø6Ø65Ø                              LAW -1
Ø16Ø5      777777                              TAD TYPECT+1
Ø16Ø6      34Ø65Ø                              ISZ TEMPER
Ø16Ø7      44Ø534                              JMP TYDLUP
Ø161Ø      6ØØ6Ø2                   TYDOUT     LAC* TYPECT+1
Ø1611      22Ø65Ø                              JMS TY1ASC
Ø1612      1ØØ471                              ISZ TYPECT+1
Ø1613      44Ø65Ø                              ISZ TYPECT
Ø1614      44Ø647                              JMP TYDOUT
Ø1615      6ØØ611                              JMP* TYDECI
Ø1616      62Ø574
                                    /
                                    /CONVERT 1 DECIMAL CHARACTER TO ASCII
                                    /(TYQUOT) = 18-BIT UNSIGNED NUMBER
                                    /
                                    TYVERT     JMP .
Ø1617      6ØØ617                              LAC TYQUOT
Ø162Ø      2ØØ64Ø                              DZM TYQUOT
Ø1621      14Ø64Ø                              SMA
Ø1622      74Ø1ØØ                              JMP TVRTPL
Ø1623      6ØØ63Ø                              ISZ TYQUOT
Ø1624      44Ø64Ø                              TAD (-12
Ø1625      3477ØØ                              SPA
Ø1626      7411ØØ                              JMP .-3
Ø1627      6ØØ624                   TVRTPL     TAD (-12
Ø163Ø      3477ØØ                              SPA
Ø1631      7411ØØ                              JMP .+3
Ø1632      6ØØ635                              ISZ TYQUOT
Ø1633      44Ø64Ø                              JMP TVRTPL
Ø1634      6ØØ63Ø                              TAD (12
Ø1635      3477Ø1                              TAD (26Ø
Ø1636      347676                              JMP* TYVERT
Ø1637      62Ø617
                                    /
                                    TYQUOT     Ø
Ø164Ø      ØØØØØØ                   DCHAR1     Ø
Ø1641      ØØØØØØ                   DCHAR2     Ø
Ø1642      ØØØØØØ                   DCHAR3     Ø
Ø1643      ØØØØØØ                   DCHAR4     Ø
Ø1644      ØØØØØØ                   DCHAR5     Ø
Ø1645      ØØØØØØ                   DCHAR6     Ø
Ø1646      ØØØØØØ
```

```
00647     000[illegible]            TYPECT     0
00650     000[illegible]                       0
00651     000[illegible]                       0
                                /
          000300                               .END
07556     000[illegible]37    *LIT
07557     777761    *LIT
07560     000314    *LIT
07561     000400    *LIT
07562     777761    *LIT
07563     677777    *LIT
07564     400000    *LIT
07565     000100    *LIT
07566     001000    *LIT
07567     010000    *LIT
07570     004200    *LIT
07571     002000    *LIT
07572     003000    *LIT
07573     777777    *LIT
07574     007700    *LIT
07575     006000    *LIT
07576     007000    *LIT
07577     007701    *LIT
07600     040000    *LIT
07601     440400    *LIT
07602     100000    *LIT
07603     000040    *LIT
07604     000300    *LIT
07605     044000    *LIT
07606     005000    *LIT
07607     200000    *LIT
07610     000001    *LIT
07611     000002    *LIT
07612     000003    *LIT
07613     000004    *LIT
07614     000005    *LIT
07615     000006    *LIT
07616     000007    *LIT
07617     000377    *LIT
07620     000077    *LIT
07621     177777    *LIT
07622     000401    *LIT
07623     010101    *LIT
07624     420100    *LIT
07625     020000    *LIT
07626     410100    *LIT
07627     045000    *LIT
07630     004400    *LIT
07631     760077    *LIT
07632     000200    *LIT
07633     407400    *LIT
07634     400200    *LIT
07635     620420    *LIT
07636     620000    *LIT
07637     004513    *LIT
```

```
07640   000200   *LIT
07641   017777   *LIT
07642   004751   *LIT
07643   740040   *LIT
07644   005457   *LIT
07645   070000   *LIT
07646   005056   *LIT
07647   700100   *LIT
07650   160013   *LIT
07651   540000   *LIT
07652   400300   *LIT
07653   402100   *LIT
07654   401100   *LIT
07655   007677   *LIT
07656   040300   *LIT
07657   553400   *LIT
07660   177400   *LIT
07661   044300   *LIT
07662   577400   *LIT
07663   036000   *LIT
07664   025300   *LIT
07665   027000   *LIT
07666   064300   *LIT
07667   042300   *LIT
07670   737777   *LIT
07671   744000   *LIT
07672   440445   *LIT
07673   744040   *LIT
07674   000177   *LIT
07675   000240   *LIT
07676   000260   *LIT
07677   000646   *LIT
07700   777766   *LIT
07701   000012   *LIT
```

NO ERROR LINES