TM03/TE16

BASIC FUNCTION TESTS

MD-11-DZTEC-A

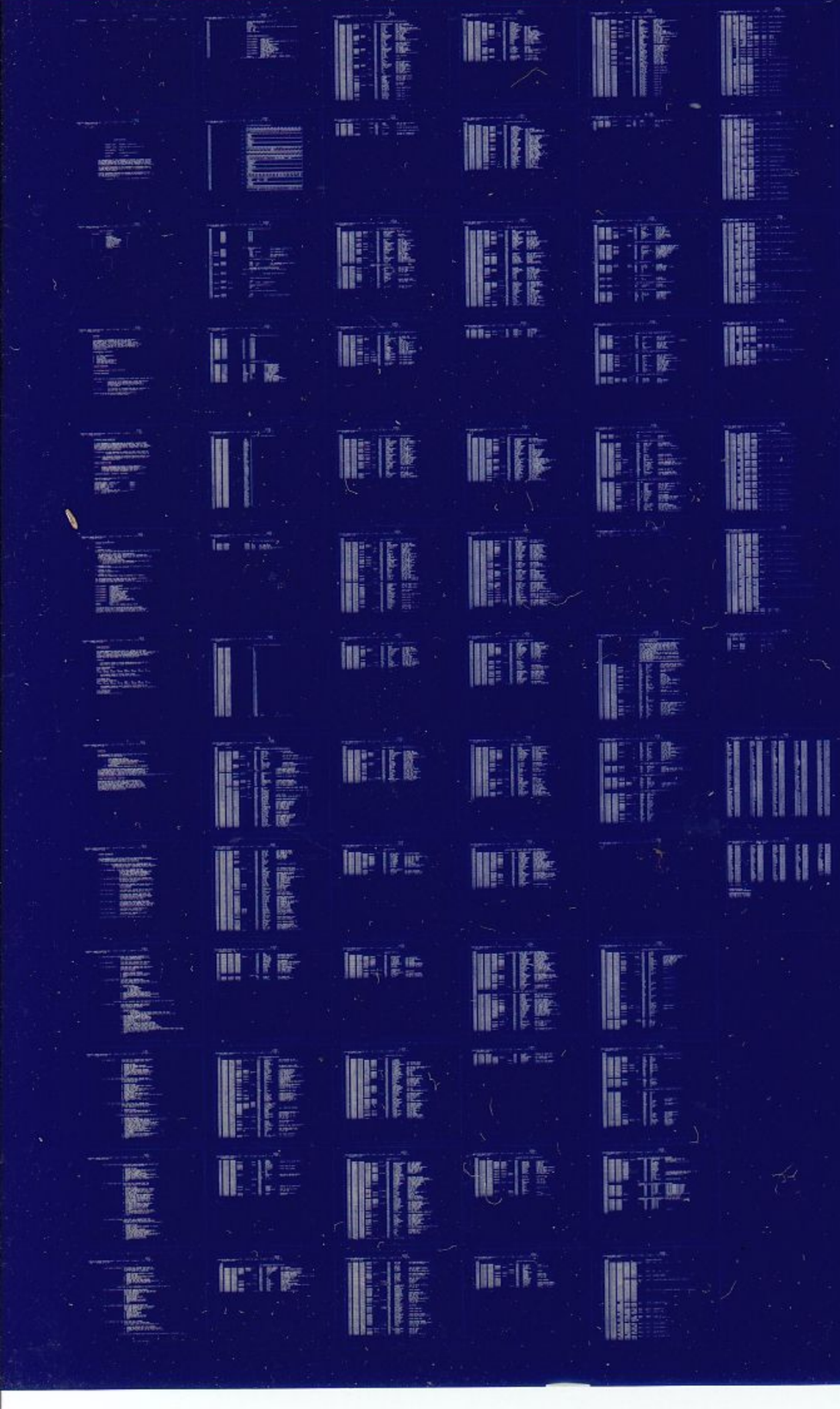
EP-DZTEC-A-DL-A

FICHE 1 OF 1

JUN 1977

digital

MADE IN USA



B01

EOF10ZR60RSE0	00010000	770526	PDP10 411	DRHDR10ZTECASE0	00010000	770526

```
.REM  %
```

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZTEC-A-D

PRODUCT TITLE: TM03/TE16 BASIC FUNCTION TEST

DATE CREATED: FEB 77

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: J. G. ADAMS

TABLE OF CONTENTS

1. ABSTRACT

THIS PROGRAM IS INTENDED TO TEST ALL OF THE BASIC FUNCTIONAL LEVEL OPERATIONS OF THE TM03/TE16 MAG TAPE SYSTEM. ALL FUNCTIONS; WRITE, READ, SPACE, ERASE, REWIND, ETC; WILL BE TESTED. IN ADDITION TO THE TM03/TE16 TESTS, THE RH WILL BE TESTED SEPARATELY IN SO FAR AS IT IS POSSIBLE TO SEPARATE THE RH FROM THE TM03/TE16 ITSELF.

2. REQUIREMENTS (HARDWARE)

A. ANY PDP11 PROCESSOR
B. 8K OF CORE
C. CONSOLE TTY
D. TM03 MAGTAPE CONTROLLER
E. MASS BUS CONTROLLER
F. TE16 MAG TAPE TRANSPORT

3. LOADING PROCEDURE

USE STANDARD BINARY LOADING PROCEDURE

4. STARTING PROCEDURE

THERE ARE TWO (2) STARTING ADDRESSES THAT MAYBE USED: 200(8) AND 210(8)

A. 200(8): STARTING AT THIS ADDRESS WILL CAUSE THE PROGRAM IDENTIFICATION TO BE PRINTED FOLLOWED BY REQUESTS FOR THE VARIOUS PARAMETERS NEEDED BY THE PROGRAM.

B. 210(8): THIS ADDRESS IS INTENDED FOR USE AS A RESTART ONLY AND WILL USE THE CURRENT PARAMETER VALUES.

**NOTE SEE ALSO SECTION 5-CONSOLE SWITCH SETTINGS
** TYPE ↑C TO RESTART PROGRAM (@200)

4.1 AUTOMATIC MODE OPERATION

IF THIS PROGRAM IS LOADED AND RUN IN AUTOMATIC (CHAIN) MODES DEFAULT RESPONSES TO OPERATOR REQUESTS ARE USED, AND ALL AVAILABLE TM03/TE16 COMBINATIONS ARE TESTED. ADDITIONALLY THE SOFTWARE SWR IS INVOKED WITH A SWITCH SETTING OF 100000 (HALT ON ERROR) IF LOADED VIA ACT11 CHAIN MODE.

**EXCEPTION: IF THIS PROGRAM IS LOADED VIA TMDP CHAIN MODE THE PROGRAM WILL NOT TEST TM03 DRIVE #0, TE16 SLAVE #0.

** NOTE: THIS PROGRAM CONTAINS AN OPERATOR ASSISTED SUBTEST. THIS SUBTEST IS NOT EXECUTED IN CHAIN MODE. TO RUN LOAD THE PROGRAM IN DUMP MODE.

4.2 SAMPLE START AT 200

NOTE: DEFAULT RESPONSES ARE SHOWN IN ANGLE BRACKETS <>,
OPERATOR RESPONSES ARE SHOWN IN PARENTHESES (), AND
LOCATIONS CONTAINING THE DEFAULT ARE SHOWN IN [].
TO INVOKE THE DEFAULT RESPONSE TYPE (CR).

PARAMETER REQUEST: <DEFAULT> (RESPONSE) [LOCATION:]

```
TM03-TE16 BASIC FUNCTIONS TEST (DZTEC-A)
TYPE ↑C TO RESTART

REGISTER START: <172440> (CR)            [REGS:]
VECTOR ADDRESS: <224> (CR)               [VECT:]
DRIVE NUMBER: <0> (CR)                   [DRVN:]
SLAVE NUMBER: <0> (CR)                   [SLVN:]
SERIAL NO: 12345
RH ONLY (NO=0,YES=1): <0> (0)            [RHOF:]
        IF THE SOFTWARE SWR IS INVOKED:
SWR = <000000> NEW  = (CR)
```

5. CONSOLE SWITCH SETTING

CONTROL:

1) CONTROL G (↑G):
SELECTS THE SOFTWARE SWR AND ALLOWS THE USER TO SELECT NEW SWITCH SETTINGS.

   THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW=
    WHERE: XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWR.
   AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE
   OF THE FOLLOWING AT THE TTY:
     A) TYPE A NEW SWITCH SETTING
     B) IF A (CR) IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH
        REGISTER CONTENTS WILL NOT BE CHANGED.

2) CONTROL A (↑A):
  ALTERNATES USAGE OF SWR FROM HARDWARE TO SOFTWARE & VICE VERSA,

3) CONTROL C (↑C):
   RESTARTS PROGRAM AT 200

4) CONTROL U (↑U):
   DELETES ALL CHARACTERS TYPED IN RESPONSE TO A REQUEST.

ALL SWITCHES EXCEPT 5-9 ARE USED AND THE NORMAL, OR DEFAULT,
RUN IS DONE WITH ALL SWITCHES SET TO ZERO (0).
ALL HARDWARE SWITCHES ARE DYNAMIC, AND MAY BE CHANGED AT ANY TIME.

SW15(100000):	1=HALT ON ERROR
	0=CONTINUE
SW14(040000):	1=LOOP ON ERROR (SCOPE: RH TESTS ONLY)
	0=CONTINUE
SW13(020000):	1=DO NOT PRINT ERRORS
	0=PRINT ALL ERRORS
SW12(010000):	1=CONTINUOUS CYCLE
	0=HALT AT END OF PASS
SW11(004000):	1=INHIBIT ITERATION
	0=DO ALL ITERATIONS PER TEST
SW10(002000):	1=HALT AT END OF CURRENT TEST
	0=CONTINUE
SW9-5:	N/A
SW4-0:	SELECT TEST NUMBER::00=ALL TESTS

THE USE OF SW0-4 IS TO ALLOW SELECTION AND CONTINUOUS
EXECUTION OF ANY TEST. THE TEST SELECTION MAY BE CHANGED AT
ANY TIME, HOWEVER IT IS ADVISABLE TO USE SW10 TO STOP THE
PROGRAM AT THE END OF THE CURRENT TEST BEFORE SELECTING A TEST.

6. ERROR PRINTOUTS

THE ERROR PRINTOUTS FOR EACH TEST WILL APPEAR IN THE SAME GENERAL FORMAT. THE FIRST LINE WILL ALWAYS SHOW THE TEST NUMBER AND ITS TITLE. THE SECOND LINE WILL BE AN EXPLANATION OF THE ERROR. THE FOLLOWING LINES WILL SHOW THE APPROPRIATE REGISTER OR ADDRESS VALUES THAT ARE APPLICABLE TO THE INDIVIDUAL TEST

EXAMPLES:

1. THIS EXAMPLE SHOWS A TYPICAL ERROR PRINTOUT FOR THE WRITE READ TEST: A WRITE CRC ERROR OCCURRED ON SLAVE 6.

```
FT13: WRITE-READ TEST
WRITE ERROR NRZ
CS1     WC      BA      FC      CS2     DS      ER      TC
144260  000000  015650  000000  000103  150600  100000  101306
```

2. THIS EXAMPLE SHOWS A TYPICAL SPACE ERROR: THE FC IS NOT ZERO AT THE END OF THE OPERATION.

```
FT14:SPACE TEST
SPACE REVERSE ERROR NRZ
CS1     WC      BA      FC      CS2     DS      ER      TC
144230  177700  017162  177740  000114  150600  001000  161700
```

3. THIS EXAMPLE SHOWS A SPACE OPERATION WHICH RESULTED IN INCORRECT POSITIONING. SHOULD BE AT RECORD 20, IS AT RECORD 22.

```
FT14: SPACE TEST
POSITION ERROR:
REVERSE ERROR EXPT:20 RCVD:22
```

7. OPERATION

THE PROCEDURES FOR OPERATING THIS PROGRAM ARE QUITE SIMPLE
AND REQUIRE ONLY A FEW STEPS:

1. LOAD ADDRESS 200 OR 210
2. SET SWITCHES FOR DESIRED TEST CYCLE
   ****REFER TO SECTION 5 FOR DYNAMIC LOADING
   OF SOFTWARE SWITCH REGISTER.***
3. PRESS START
4. ENTER APPROPRIATE RESPONES TO THE TTY REQUESTS

ALL HARDWARE SWITCHES ARE DYNAMIC AND MAY BE CHANGED AT ANY
TIME. THE NORMAL, OR DEFAULT, OPERATING SEQUENCE IS ALL
SWITCHES DOWN (ZERO). THE END OF EACH PASS IS NOTED BY A
MESSAGE STATING END OF PASS AND THE NUMBER OF THAT PASS.
*****FOR THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER REFER TO SECTION 5 ******

SINGLE TEST SELECTION: (SW0-SW4)

WHEN SW0-4 ARE SET TO ZERO (00) THE SCHEDULAR WILL
EXECUTE ALL OF THE TESTS IN SEQUENCE . IF SW0-4 IS
SET TO SOME SPECIFIC TEST NUMBER THAT PARTICULAR TEST
WILL BE EXECUTED CONTINUOUSLY. ANY TEST MAY BE SINGLE
SELECTED IN ANY ORDER; HOWEVER, THE BEST WAY TO AFFECT
THE CHANGE IS TO USE SW10 TO HALT THE CURRENT TEST, THEN
CHANGE NUMBER AND PRESS CONTINUE.

8. SUBTEST SUMMARIES

THE FOLLOWING IS A LIST OF ALL TESTS IN THEIR PROPER SEQUENCE.
A BASIC DESCRIPTION OF EACH TEST IS PROVIDED TO AID IN UNDERSTANDING
OF THE ERROR MESSAGES ASSOCIATED WITH EACH ONE.

A. RH TESTS: THE FIRST TEN (10) TESTS WILL PERFORM BASIC RH OPERATIONS AS FAR AS IS POSSIBLE WITHOUT REQUIRING THE TM03/TE16 ITSELF. (SEE RH ONLY OPTION; PAR 7)

FT1: RH ADDRESSING: THIS TEST WILL ASSURE THAT THE RH WILL RESPOND WITHOUT CAUSING A BUS TRAP TO ALL TM02 REGISTER ADDRESS IN SEQUENCE STARTING AT THE ADDRESS OF CS1 ENTERED BY THE OPERATOR.

FT2: RH REGISTER BITS READ/WRITE: THIS TEST WILL ASSURE THAT ALL BITS OF THE RH WRITE/READ REGISTERS CAN BE SET AND RESET.

FT3: RH INITIALIZE: THIS TEST WILL ASSURE THAT A RH INITIALIZE (BIT 5 OF CS2=1) WILL INDEED CLEAR THE RH ERRORS.

* FT4: SILO TEST 1: THIS TEST WILL ASSURE THAT A READ FROM AN EMPTY SILO WILL CAUSE DLT TO SET.

* FT5: SILO TEST 2: THIS TEST WILL ASSURE THAT BOTH THE IR AND OR BITS WILL CORRECTLY RESPOND TO LOADING OF THE SILO WITH ALL ZEROS AND THEN A WORD OF ALL ONES.

* FT6: SILO TEST 3: THIS TEST WILL WRITE AND THEN READ THE ENTIRE SILO TO ASSURE THAT DATA CAN BE PROPERLY FILLED AND READ. ALSO THE PROPER STATUS OF IR AND OR ARE CHECKED.

* FT7: SILO TEST 4: THIS TEST WILL ASSURE PROPER RH11 RESPONSE TO SILO OVERFLOW.

* FT10: SILO TEST 5: THIS TEST WILL ASSURE SILO RESET BY RH11 INITIALIZE.

**** NOTE: SILO TESTS (FT4-FT10) ARE FOR THE RH11 ONLY. *****

B. TM03/TE16 BASIC FUNCTIONS: THE FOLLOWING FOURTEEN (14) TESTS WILL ASSURE OPERATION OF THE MAG TAPE BASIC FUNCTIONS.

FT11: NOP TEST: THIS TEST WILL ASSURE THAT THE NOP FUNCTION EXECUTES WITH NO ERROR.

FT12: REWIND TEST: THIS TEST WILL ASSURE THAT THE REWIND FUNCTION WILL POSITION THE TAPE TO BOT WITH NO ERROR.

1. ISSUE A REWIND COMMAND
2. AWAIT PIP RESET (MOTION STOPPED)
3. ASSURE THAT NO ERROR OCCURED
4. END

FT13: WRITE/READ TEST: THIS TEST WILL ASSURE THAT THE UNIT UNDER TEST CAN WRITE AND READ IN ALL DENSITIES (FOR BOTH PE AND NRZ).

1. REWIND TO BOT
2. WRITE 100 RECORDS
   A. ALL ONES DATA
   B. 200 FRAMES
   C. 200 BPI: 000
3. CHECK FOR ERRORS ON EACH RECORD
4. READ REVERSE THEN FORWARD ALL 100 RECORDS
5. CHECK FOR ERRORS ON EACH RECORD
6. REPEAT STEPS 2 THRU 5 FOR 556,800,1600 BPI
7. END.

DATA READ IS NOT CHECKED; ONLY THE FUNCTION IS TESTED, NOT THE MEDIUM.

FT14: SPACE TEST: THIS TEST WILL ASSURE THAT PROPER POSITIONING IS MAINTAINED BY BOTH SPACE FORWARD AND REVERSE.

1. REWIND TO BOT
2. WRITE 100 RECORDS
   A. EACH RECORD IS ONE FRAME LARGER THAN THE LAST.
      THIS WILL ALLOW FOR POSITION CHECKING BY RECORD SIZE.
3. EACH RECORD IS ERROR CHECKED.
4. DATA RELATED ERRORS ARE IGNORED.
5. NOW SPACE REVERSE 77 RECORDS AND READ REVERSE 1, THE FRAME COUNT SHOULD BE 100.
   THIS IS THE SIZE OF THE FIRST RECORD.
6. NOW SPACE FORWARD 76 RECORDS AND READ FORWARD 1, THE FRAME COUNT SHOULD BE 177.
   THIS IS THE SIZE OF THE NEXT TO LAST RECORD.
7. CONTINUE THE SPACE AND READ (DECREMENTING THE RECORD COUNT EACH TIME) UNTIL ALL POSITIONS HAVE BEEN CHECKED. IF POSITION IS LOST; TEST ENDS.
8. REPEAT STEPS 1 THRU 7 FOR PE.
9. END

FT15: ERASE TEST: THIS TEST WILL ASSURE THAT THE ERASE FUNCTION WILL INDEED ERASE TAPES.

1. REWIND TO BOT
2. ISSUE 200 ERRASE COMMANDS.
3. ASSURE NO ERRORS FOR EACH COMMAND.
4. REWIND TO BOT.
5. ISSUE A REV FORWARD COMMAND.
6. THE TAPE SHOULD MOVE FORWARD UNTIL STOPPED BY OPI (APPROX 25 FT).
7. ASSURE NO ERRORS OTHER THAN OPI.
8. END

FT16: TAPE MARK WRITE/READ: THIS TEST WILL ASSURE THAT A TAPE MARK CAN BE WRITTEN AND READ IN BOTH PE AND NRZ.

1. REWIND TO BOT.
2. ISSUE A WRITE TAPE MARK COMMAND.
3. ASSURE NO ERRORS.
4. ASSURE THAT TAPE MARK STATUS IS SET IN DRIVE STATUS (BIT 2).
5. READ REVERSE.
6. ASSURE THAT TAPE MARK IS SET.
7. ASSURE THAT NO ERRORS OTHER THAN FCE OCCURED.
8. READ FORWARD.
9. REPEAT STEPS 6 AND 7
10. REPEAT STEPS 1 THRU 9 FOR PE.
11. END

FT17: TAPE MARK SPACE TEST: THIS TEST WILL ASSURE THAT SPACING WILL BE TERMINATED BY RECOGNITION OF TAPE MARK BOTH IN PE AND NRZ.

1. REWIND TO BOT.
2. WRITE THE FOLLOWING PATTERN OF TAPE MARKS AND DATA RECORDS:

TM:20 RECS:TM:40 RECS:TM:60 RECS:TM:100 RECS:TM:

3. ASSURE NO ERRORS.
4. ASSURE THAT TAPE MARK STATUS IS SET FOR TM WRITES.
5. NOW SPACE REVERSE 200 RECORDS.
6. THE SPACE OPERATION SHOULD STOP ON EACH TAPE MARK IT FINDS, THEREFOR 5 SPACE COMMANDS ARE ISSUED TO COVER THE ENTIRE PATTERN WRITTEN ON TAPE.
   BOT SHOULD NEVER BE REACHED AND THE FRAME COUNT WILL REFELCT THE NUMBER OF RECORDS BETWEEN TAPE MARKS.
7. REPEAT STEP 6 IN THE FORWARD DIRECTION.
8. ASSURE NO ERRORS OTHER THAN FCE.
9. REPEAT STEPS 1 THRU 8 FOR PE
10. END

FT20: WRITE CHECK TEST: BOTH WRITE CHECK FORWARD AND REVERSE ARE TESTED IN BOTH PE AND NRZ.

1. REWIND TO BOT.
2. WRITE A 400 FRAME RECORD USING DATA PATTERN 3 (125125).
3. ASSURE NO ERRORS OCCURED.
4. ISSUE A REVERSE WRITE CHECK COMMAND.
5. ASSURE NO ERRORS OCCURED.
6. REPEAT STEP 5 FOR A FORWARD WRITE CHECK.
7. REPEAT STEPS 1 THRU 6 FOR PE.
8. END

FT21: ERASE HEAD TEST: THIS TEST WILL ASSURE THAT THE ERASE HEAD ITSELF IS OPERATING.

1. REWIND TO BOT.
2. WRITE 2 RECORDS OF 800(10) FRAMES EACH. EACH RECORD WILL BE 1 INCH OF TAPE. DATA IS NOT ALL ONES.
3. REWIND TO BOT.
4. NOW WRITE A 400(10) FRAME RECORD. THIS RECORD WILL BE ONE HALF INCH OF TAPE. THE ERASE HEAD SHOULD CLEAR THE REMAINDER OF THE FIRST RECORD (ONE HALF INCH).
5. REWIND TO BOT.
6. NOW READ THE SHORT FIRST RECORD. IT SHOULD BE 400(10) FRAMES.
7. NOW READ THE SECOND RECORD. IT SHOULD BE STILL 800(10) FRAMES.
8. IF THE SECOND RECORD IS TOO LONG, THE ERASE HEAD DID NOT FUNCTION OR IT IS IN THE WRONG POLARITY.
10. END

FT22: BUFFERED COMMAND: THIS TEST WILL ASSURE THAT THE TM02 WILL ACCEPT AND EXECUTE ANOTHER COMMAND WHILE ITS SELECTED SLAVE IS REWINDING.

1. REWIND TO BOT.
2. ISSUE 3 LONG WRITE COMMANDS TO ASSURE BEING OFF BOT.
3. ISSUE A REWIND COMMAND.
4. AS SOON AS DRIVE READY BECOMES SET, ISSUE ANOTHER WRITE COMMAND.
5. THE NEXT DRIVE READY SHOULD BE AFTER THE TAPE HAS REACHED BOT AND EXECUTED THE BUFFERED WRITE COMMAND.
6. ASSURE NO ERRORS OCCURED.
7. END

FT23: READ IN PRESET: THIS TEST WILL ASSURE THAT UNIT 0
IS REWOUND AND SET TO 800 BPI NORMAL.
(ONLY IF SLAVE 0 IS SELECTED).

1. ISSUE A WRITE COMMAND TO ASSURE
   BEING OFF BOT.
2. ISSUE THE READ-IN PRESET COMMAND.
3. AWAIT MOTION STOP.
4. ASSURE THAT BOT WAS REACHED.
5. ASSURE THAT THE TAPE CONTROL REGISTER
   IS SET TO 800 BPI,NORMAL,ODD.
6. END

(THIS TEST IS ONLY PERFORMED IF THE SELECTED SLAVE IS ZERO (0).

FT24: AUTOMATIC DENSITY SELECTION -WRITE NRZ,READPE:
THIS TEST ASSURES THAT AN NRZ WRITTEN
TAPE WHEN READ AS PE WILL SWITCH THE
SLAVE TO NRZ MODE.
1. REWIND SLAVE
2. WRITE AN NRZ RECORD
3. REWIND SLAVE
4. READ RECORD IN PE MODE
5. CHECK DS REG PES BIT=0
6. END

FT25: AUTOMATIC DENSITY SELECTION-WRITE PE,READ NRZ:
THIS TEST ASSURES THAT A PE WRITTEN
TAPE WHEN READ AS NRZ WILL SWITCH
THE SLAVE TO PE MODE.
1. REWIND SLAVE
2. WRITE A PE RECORD
3. REWIND A SLAVE
4. READ RECORD IN NRZ MODE
5. CHECK DS REG PES BIT=1
6. END.

FT26: REWIND: OFF LINE THIS TEST WILL ASSURE
THAT THE UNIT WILL REWIND AND
GO OFF LINE. (NOT IF IN CONTINUOUS CYCLE)

1. ISSUE THE REWIND OFF-LINE COMMAND.
2. ASSURE THAT MOL (BIT 12 OF DRIVE STATUS)
   IS RESET INDICATING THE UNIT WENT OFF LINE.
3. END

(THIS TEST IS NOT PERFORMED WHEN CONTINUOUS CYCLE OPERATION IS SELECTED: SW 12 = 1)

%

519 .LIST BIN,LOC,SEQ

```
                                        .TITLE TM03/TE16 BASIC FUNCTION TEST
                                        ;MAINDEC-11-DZTEC-A-D
                                        ;FEB 77
                                        ;R. BARNES
                                        .MCALL  .$ACT11,.$EOP,$CATCH,$SAVE,$RESTORE,$CHAIN,$CHNMODE
                                        .NLIST  MC
                                        .LIST   ME
                                        .ENABLE ABS,AMA


                                        ;CONSOLE SWITCHES*********
                                        ;
                                        ;SW15(100000):  1=HALT ON ERROR
                                        ;               0=CONTINUE
                                        ;SW14(040000)   1=LOOP ON ERROR (SCOPE(040000) RH TESTS ONLY)
                                        ;               0=CONTINUE
                                        ;SW13(02000):   1=DO NOT PRINT ERRORS
                                        ;               0=PRINT ERRORS
                                        ;SW12(010000):  1=CONTINUOUS CYCLE
                                        ;               0=HALT AT END OF PASS
                                        ;SW11(40000):   1=INHIBIT ITERATIONS
                                        ;               0=DO ITERATIONS
                                        ;SW10(002000):  1=HALT AT END OF EACH TEST
                                        ;               0=CONTINUE
                                        ;SW0-4:         SELECT TEST NUMBER :: 00=ALL TESTS
                                ;USE SOFTWARE SWR IF HARDWARE SWR (15::00) = 177777 OR NOT AVAIL.
```

```
                                        ;TE16 REGISTER BITS**********

                                        ;15 ;14 ;13 ;12 ;11 ;10 ;09 ;08 ;07 ;06 ;05 ;04 ;03 ;02 ;01 ;00 ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;CS1:   ;SC ;TRE;MCP;SPR;DNA;PSL;A17;A16;RDY;IE ;FUN;FUN;FUN;FUN;FUN;GO ;
                                        ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;WC:    ; WORD                                                           ;
                                        ; COUNT                                                          ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;BA:    ; BUS                                                            ;
                                        ; ADDRESS                                                        ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;FC:    ; FRAME                                                          ;
                                        ; COUNT                                                          ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;CS2:   ;DLT;WCE;UPE;NED;NEM;PGE;MXF;MDP;OR ;IR ;CLR;PAT;BAI;U2 ;U1 ;U0 ;
                                        ;   ;   ;   ;   ;   ;   ;   ;ERR;   ;   ;   ;   ;   ;   ;   ;   ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;DS:    ;ATA;ERR;PIP;MOL;WRL;EOT;SPR;DPR;DRY;SSC;PES;SDN;IDB;TMK;BOT;SLA;
                                        ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;   ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;ER:    ;CDE;UNS;OPI;DTE;NEF;CS ;FCE;NSG;PEF;INC;DAT;FMT;CNT;RMR;ILR;ILF;
                                        ;CRC;   ;   ;   ;ITM;   ;   ;   ;LRC;VPE;BPE;   ;BPE;   ;   ;   ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;ATS:   ; ATTENTION                                                      ;
                                        ; SUMMARY                                                        ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;CC:    ; CHECK                                                          ;
                                        ; CHARACTER                                                      ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;DB:    ; DATA                                                           ;
                                        ; BUFFER                                                         ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;MR:    ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;DB ;WRT;MM ;OP ;OP ;OP ;OP ;MM ;
                                        ; 0 ; 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; P ;CLK;CLK; 4 ; 3 ; 2 ; 1 ;GO ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ,DT:    ; DRIVE     ; 7 ;   ;SLV;                                        ;
                                        ; TYPE      ;CH ;   ;PR ;                                        ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;SN:    ; SERIAL                                                         ;
                                        ; NUMBER                                                         ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                                ;TC:    ;ACL;FCS;SAC;ENA;SPR;DEN;DEN;DEN;FMT;FMT;FMT;FMT;EVN;SSN;SSN;SSN;
                                        ;   ;   ;   ;DT ;   ; 4 ; 2 ; 1 ; 8 ; 4 ; 2 ; 1 ;PAR; 4 ; 2 ; 1 ;
                                        ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

```
                                        ;REGISTER EQUIVS**********

            000000                      R0=%0
            000001                      R1=%1
            000002                      R2=%2
            000003                      R3=%3
            000004                      R4=%4
            000005                      R5=%5
            000006                      SP=%6
            000007                      PC=%7


                                ;ACT11 HOOK ***********
            000764                      $SVPC=.                 ;SAVE CURRENT LOCATION CTR
            000046                      .=46
000046      003154                      .WORD   $ENDAD          ;SET LOCATION 46
            000052                      .=52
000052      000000                      .WORD   0               ;SET LOCATION 52 = 0
            000764                      .=$SVPC                 ;RESTORE LOCATION CTR

                                        ;TTY INTERRUPT VECTOR**********

            000060                      .=60
000060      012656                      .WORD   TTINT           ;TTY INTERRUPT HEADER ADDRESS
000062      000340                      .WORD   340             ;PRIORITY LEVEL 7

                                        ;SOFTWARE SWITCH REGISTER**********
                                ;USED IF HARDWARE SWR <15::00> = 177777 OR NOT AVAIL.

            000176                      .=176
000176      000000              SWREG:  0                       ;SOFTWARE SWITCH REGISTER


                                        ;START ADDRESS**********

            000200                      .=200
000200      000137  001600              JMP     START   ;PROGRAM START

                                        ;RESTART ADDRESS**********
            000210                      .=210
000210      000137  002542              JMP     ST4

                                        ;TM03 INTERRUPT VECTOR**********

            000224                      .=224
000224      012646                      MTINT           ;TAPE INTERRUPT HANDLER ADDRESS
000226      000340                      340
```

```
         000510                          .=510
                                         ;MASS BUS REGISTER EQUIVS**********

000510   172440                 C1:      172440
000512   172442                 WC:      172442
000514   172444                 BA:      172444
000516   172446                 FC:      172446
000520   172450                 CS:      172450
000522   172452                 DS:      172452
000524   172454                 ER:      172454
000526   172456                 AS:      172456
000530   172460                 CC:      172460
000532   172462                 DB:      172462
000534   172464                 MR:      172464
000536   172466                 DT:      172466
000540   172470                 SN:      172470
000542   172472                 TC:      172472
000544   172474                 BAE:     172474

                                         ;CONSTANTS**********

000546   177776                 PSW:     177776          ;PROCESSOR STATUS
000550   177570                 SWR:     177570          ;SWITCH REGISTER
000552   177560                 TKS:     177560          ;TTY READER STATUS
000554   177562                 TKB:     177562          ;TTY READ BUFFER
000556   177564                 TPS:     177564          ;TTY PUNCH STATUS
000560   177566                 TPB:     177566          ;TTY PUNCH BUFFER
000562   177777                 SERNUM:  177777          ;SERIAL NUMBER
000564   000011                 DRVTP:   011             ;DRIVE TYPE
000566   000010                 ITAMT:   10              ;ITERATION AMOUNT
000570   000224                 VECT:    224             ;INTERRUPT VECTOR(RH)
000572   172440                 REGS:    172440          ;STARTING REGISTER ADDRESS
000574   000004                 BTRP:    4               ;BUS TRAP ADDRESS
000576   000006                 BTRP2:   6               ;BUS TRAP PRIORITY LEVEL 7
```

```
676                                         ;FLAGS AND COUNTERS**********
677
678  000600  000000        TQB:    0
679  000602  000000        TIB:    0
680  000604  000000        RH17F:  0
681  000606  000000        HDRFL:  0
682  000610  000000        EMADDR: 0
683  000612  000000        DRVN:   0
684  000614  000000        SLVN:   0
685  000616  000000        BADDR:  0
686  000620  000000        FCNT:   0
687  000622  000000        WCNT:   0
688  000624  000000        RCNT:   0
689  000626  000000        ERRP:   0
690  000630  000000        ERRP1:  0
691  000632  000000        RRD:    0
692  000634  000000        RFD:    0
693  000636  000000        RDYDX:  0
694  000640  000000        OPDYX:  0
695  000642  000000        SCNT:   0
696  000644  000000        PFLG:   0
697  000646  000000        RTRN:   0
698  000650  000000        ERRDO:  0
699  000652  000000        TEMP1:  0
700  000654  000000        TEMP2:  0
701  000656  000000        TEMP3:  0
702  000660  000000        STMSK:  0
703  000662  000000        ITCNT:  0
704  000664  000000        DSAV:   0
705  000666  000000        SAV1:   0
706  000670  000000        SAV2:   0
707  000672  000000        SAV3:   0
708  000674  000000        SCOLP:  0
709  000676  000000        ITRLP:  0
710  000700  000000        EXFL:   0
711  000702  000000        PEXFL:  0
712  000704  000000        STFLG:  0
713  000706  000000        LTADD:  0
714  000710  000000        FUN:    0
715  000712  000000        SERFL:  0
716  000714  000000        CRCNT:  0
717  000716  000000        UDES:   0
718  000720  000000        PATRN:  0
719  000722  000000        RHTF:   0
720  000724  000000        NRZOF:  0
721  000726  000000        RHOF:   0
722  000730  000000        PCNTR:  0
723  000732  000000        TEMPST: 0
724  000734  000000        COUNT:  0
725  000736  000000        RDSW:   0
726
```

```
                                        ;DATA PATTERN GENERATORS*****

000740  000000          DATBL:  0
000742  012440          DATA0:  DAT1    ;ALL ONE BITS
000744  012460          DATA1:  DAT2    ;ALL ZERO BITS
000746  012464          DATA2:  DAT3    ;ALTERNATING ONE/ZERO BITS
000750  012472          DATA3:  DAT4    ;ALL BITS 0-377
```

```
735
736                                             ,LOGIC TEST ENTRY TABLE**********
737
738  000752  000000                     TSTTBL: 0
739  000754  000000                             0
740  000756  003216                             FT1
741  000760  003216                             FT1
742  000762  003316                             FT2
743  000764  003316                             FT2
744  000766  003640                             FT3
745  000770  003640                             FT3
746  000772  004060                             FT4
747  000774  004060                             FT4
748  000776  004206                             FT5
749  001000  004206                             FT5
750  001002  004400                             FT6
751  001004  004400                             FT6
752  001006  004652                             FT7
753  001010  004652                             FT7
754  001012  004746                             FT10
755  001014  004746                             FT10
756  001016  005102                             FT11
757  001020  005102                             FT11
758  001022  005220                             FT12
759  001024  005220                             FT12
760  001026  005332                             FT13
761  001030  005332                             FT13
762  001032  005644                             FT14
763  001034  005644                             FT14
764  001036  006516                             FT15
765  001040  006516                             FT15
766  001042  006716                             FT16
767  001044  006716                             FT16
768  001046  007144                             FT17
769  001050  007144                             FT17
770  001052  007546                             FT20
771  001054  007546                             FT20
772  001056  007772                             FT21
773  001060  007772                             FT21
774  001062  010324                             FT22
775  001064  010324                             FT22
776  001066  010530                             FT23
777  001070  010530                             FT23
778  001072  010750                             FT24
779  001074  010750                             FT24
780  001076  011142                             FT25
781  001100  011142                             FT25
782  001102  011334                             FT26
783  001104  011334                             FT26
784  001106  003110                             .WORD   TEND
785  001110  000026             TLAST:          .WORD   26              ;CONTAINS # OF TESTS
```

```
                001600                          .=1600
                                                ;PROGRAM START AND HOUSEKEEPING**********
001600  012706  000500          START:  MOV     #500,SP         ;SET STACK POINTER
001604  013746  000006                  MOV     @#6,-(SP)               ;SAVE VECTORS
001610  013746  000004                  MOV     @#4,-(SP)
001614  012737  001640  000004          MOV     #1$,@#4                 ;SET UP FOR TIMEOUT
001622  005037  000006                  CLR     @#6
001626  022777  177777  176714          CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
001634  001402                          BEQ     2$
001636  000404                          BR      3$
001640  022626                  1$:     CMP     (SP)+,(SP)+             ;ADJUST STACK
001642  012737  000176  000550  2$:     MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
001650  012637  000004          3$:     MOV     (SP)+,@#4               ;RESTORE VECTORS
001654  012637  000006                  MOV     (SP)+,@#6
001660  005027                          CLR     (PC)+           ;;CLEAR CHAIN INDICATOR
001662  000000          CHNFLG: .WORD   0               ;;CHAIN MODE INDICATOR
                                                ;;1/0 = CHAIN/NOT CHAIN MODE
001664  022737  003154  000042          CMP     #SENDAD,@#42    ;;BRANCH IF LOADED VIA ACT11 CHAIN MODE
001672  001404                          BEQ     50$
001674  005737  000042                  TST     @#42            ;;BRANCH IF IN DUMP MODE
001700  001413                          BEQ     52$
001702  000406                          BR      51$
001704  012737  000176  000550  50$:    MOV     #SWREG,SWR      ;;INVOKE SOFTWARE SWR
001712  012777  100000  176630          MOV     #100000,@SWR    ;;WITH HALT ON ERROR SET
001720  005237  001662          51$:    INC     CHNFLG          ;;SET CHNFLG = CHAIN MODE
001724  000137  002556                  JMP     TSCD            ;;GO TO CHAIN ADDRESS
001730                          52$:
001730  122737  000006  000041  4$:     CMPB    #6,@#41         ;BRANCH IF LOADED VIA TMDP (DUMP MODE)
001736  001004                          BNE     5$
001740  012704  016675                  MOV     #MSG69,R4       ;ADVISE USER TO REMOVE TMDP FROM UUT
001744  004737  013442                  JSR     PC,TTOUT
001750  012704  014470          5$:     MOV     #MSG3,R4
001754  004737  013442                  JSR     PC,TTOUT        ;PRINT TITLE
001760  112737  000043  014470          MOVB    #'#,MSG3        ;DO NOT PRINT TITLE ON RESTART
001766  012704  014623          STOB:   MOV     #MSG4,R4
001772  004737  013442                  JSR     PC,TTOUT        ;REQUEST REGISTER ADDRESS
001776  013703  000572                  MOV     REGS,R3
002002  004737  013572                  JSR     PC,OCTP         ;PRINT CURRENT ADDRESS
002006  012705  000572                  MOV     #REGS,R5        ;SET ADDRESS SAVE LOC
002012  012701  000007                  MOV     #7,R1           ;SET SIZE OF RESPONSE
002016  012702  176400                  MOV     #176400,R2      ;SET UPPER LIMIT
002022  012703  172300                  MOV     #172300,R3      ;SET LOWER LIMIT
002026  004737  013120                  JSR     PC,TTR          ;GO GET RESPONSE
002032  012704  014646                  MOV     #MSG5,R4
002036  004737  013442                  JSR     PC,TTOUT        ;REQUEST VECTOR
002042  013703  000570                  MOV     VECT,R3
002046  004737  013572                  JSR     PC,OCTP         ;PRINT CURRENT VECTOR
002052  012705  000570                  MOV     #VECT,R5        ;SET ADDRESS SAVE LOC
002056  012701  000004                  MOV     #4,R1           ;SET SIZE OF RESPONSE
002062  012702  000224                  MOV     #224,R2         ;SET UPPER LIMIT
002066  012703  000150                  MOV     #150,R3         ;SET LOWER LIMIT
002072  004737  013120                  JSR     PC,TTR          ;GO GET RESPONSE
002076  013700  000570                  MOV     VECT,R0         ;GET VECTOR
002102  012720  012646                  MOV     #MTINT,(R0)+    ;LOAD INTERRUPT ADDRESS IN VECTOR
002106  012710  000340                  MOV     #340,(R0)       ;LOAD PRIORITY
```

```
 842  002112  013700  000572                    MOV     REGS,R0         ;GET START OF REGS
 843  002116  012701  000017                    MOV     #17,R1          ;SET NUMBER OF REGS
 844  002122  012702  000510                    MOV     #C1,R2          ;GET START OF TABLE
 845  002126  010022                      STO:  MOV     R0,(R2)+        ;BUILD TABLE
 846  002130  062700  000002                    ADD     #2,R0           ;BUMP ADDRESS
 847  002134  005301                    DEC     R1              ;SEE IF DONE
 848  002136  001373                    BNE     STO             ;IF NOT: BR
 849  002140  012702  000600                    MOV     #T0B,R2
 850  002144  012700  000054                    MOV     #54,R0
 851  002150  005022                      ST1:  CLR     (R2)+           ;CLEAR FLAGS + COUNTERS
 852  002152  005300                    DEC     R0
 853  002154  001375                    BNE     ST1
 854  002156  012737  000001  000722            MOV     #1,RHTF         ;SET ADDRESS TEST FLAG
 855  002164  000137  002750                    JMP     TSRH            ;GO DO INITIAL ADDRESS TEST PASS
 856  002170  012704  014725              ST1A: MOV     #MSG10,R4
 857  002174  004737  013442                    JSR     PC,TTOUT        ;REQUEST DRIVE NUMBER
 858  002200  013703  000612                    MOV     DRVN,R3         ;GET CURRENT DRIVE #
 859  002204  004737  013572                    JSR     PC,OCTP         ;AND TYPE IT
 860  002210  012705  000612                    MOV     #DRVN,R5        ;SET ADDRESS OF DRIVE NUMBER SAVE
 861  002214  012701  000002                    MOV     #2,R1           ;SET SIZE OF RESPONSE
 862  002220  012702  000007                    MOV     #7,R2           ;SET UPPER LIMIT
 863  002224  012703  000000                    MOV     #0,R3           ;SET LOWER LIMIT
 864  002230  004737  013120                    JSR     PC,TTR          ;GO GET RESPONSE
 865  002234  012777  000040  176256            MOV     #40,@CS         ;SET INIT
 866  002242  053777  000612  176250            BIS     DRVN,@CS        ;SET DRIVE NUMBER
 867  002250  005777  176234                    TST     @C1             ;ACCESS DRIVE
 868  002254  032777  010000  176236            BIT     #10000,@CS      ;SEE IF NED
 869  002262  001405                    BEQ     ST2             ;IF NOT: BR
 870  002264  012704  015657                    MOV     #MSG41,R4
 871  002270  004737  013442                    JSR     PC,TTOUT        ;PRINT NOT AVAIL
 872  002274  000735                    BR      ST1A            ;REDO DRIVE REQUEST
 873  002276  012704  014745              ST2:  MOV     #MSG11,R4
 874  002302  004737  013442                    JSR     PC,TTOUT        ;REQUEST SLAVE NUMBER
 875  002306  013703  000614                    MOV     SLVN,R3         ;GET CURRENT SLAVE #
 876  002312  004737  013572                    JSR     PC,OCTP         ;AND TYPE IT
 877  002316  012705  000614                    MOV     #SLVN,R5        ;SET ADDRESS OF SLAVE SAVE
 878  002322  012701  000002                    MOV     #2,R1           ;SET SIZE OF RESPONSE
 879  002326  012702  000007                    MOV     #7,R2           ;SET UPPER LIMIT
 880  002332  012703  000000                    MOV     #0,R3           ;SET LOWER LIMIT
 881  002336  004737  013120                    JSR     PC,TTR          ;GO GET RESPONSE
 882  002342  012777  000040  176150            MOV     #40,@CS         ;INIT
 883  002350  053777  000612  176142            BIS     DRVN,@CS        ;SET DRIVE NUMBER
 884  002356  013777  000614  176156            MOV     SLVN,@TC        ;LOAD SLAVE NUMBER
 885  002364  032777  002000  176144            BIT     #2000,@DT       ;SEE IF SLAVE PRESENT
 886  002372  001005                    BNE     ST3             ;IF SO: BR
 887  002374  012704  015700                    MOV     #MSG42,R4
 888  002400  004737  013442                    JSR     PC,TTOUT        ;PRINT NON-EXIST SLAVE
 889  002404  000734                    BR      ST2             ;REDO SLAVE REQUEST
 890  002406  012704  015721              ST3:  MOV     #MSG43,R4
 891  002412  004737  013442                    JSR     PC,TTOUT        ;PRINT SERIAL NUMBER TAG
 892  002416  017703  176116                    MOV     @SN,R3
 893  002422  004737  014120                    JSR     PC,SNPT         ;PRINT SERIAL NUMBER
 894  002426  005037  000604                    CLR     RH17F           ;SET RH INDICATOR = RH11
 895  002432  013746  000004                    MOV     @#4,-(SP)       ;SAVE ERROR TRAP VECTORS
 896  002436  013746  000006                    MOV     @#6,-(SP)       ;AND PRIORITY
 897  002442  012737  002466  000004            MOV     #1$,@#4         ;SET TIME OUT TRAP TO 1$ BELOW
```

```
002450  005037  000006                    CLR     @#6
002454  005777  176064                    TST     @BAE            ;REFERENCE BAE REGISTER
002460  012737  000001  000604            MOV     #1,RH17F        ;SET FLAG = RH70
002466  012637  000006          1$:       MOV     (SP)+,@#6       ;RESTORE ERROR TRAP
002472  012637  000004                    MOV     (SP)+,@#4
002476  012704  016452                    MOV     #MSG62,R4       ;GET REQUEST
002502  004737  013442                    JSR     PC,TTOUT        ;REQUEST RH11 ONLY RESPONSE
002506  013703  000726                    MOV     RHOF,R3         ;GET CURRENT FLAG SETTING
002512  004737  013572                    JSR     PC,OCTP         ;AND TYPE IT
002516  012705  000726                    MOV     #RHOF,R5        ;SET FLAG ADDRESS
002522  012701  000002                    MOV     #2,R1           ;SET SIZE OF RESPONSE
002526  012702  000001                    MOV     #1,R2           ;SET UPPER LIMIT
002532  012703  000000                    MOV     #0,R3           ;SET LOWER LIMIT
002536  004737  013120                    JSR     PC,TTR          ;GO GET RESPONSE

                                ;START 210
002542  012706  000500          ST4:      MOV     #500,SP         ;SET STACK PTR
002546  005037  000730                    CLR     PCNTR           ;CLEAR PASS COUNTER
002552  004737  014222                    JSR     PC,GTSWR        ;GET SWITCHES
```

```
                                                   ;TEST SCHEDULAR**********

002556  052777  000100  175766  TSCD:    BIS    #100,@TKS        ;SET KEYBOARD IE BIT
00[illegible]54  005037  000704                   CLR    STFLG            ;CLEAR SINGLE TEST FLAG
00[illegible]70  017700  175754                   MOV    @SWR,R0
00[illegible]574 042700  177740                   BIC    #177740,R0
0[illegible]0    001125                           BNE    STSCD            ;GO SELECT SINGLE TEST
0[illegible]2    005737  001662                   TST    CHNFLG           ;;BRANCH IF NOT IN CHAIN MODE
0[illegible]6    001457                           BEQ    TSCDA
0[illegible]10   012737  177777  000612           MOV    #-1,DRVN         ;;INITIALIZE DRIVE #
0[illegible]16   012737  177777  000614  NXTDRV:  MOV    #-1,SLVN         ;;INITIALIZE SLAVE #
0[illegible]4    012777  000040  175666  1$:      MOV    #40,@CS          ;;INIT CONTROLLER
0[illegible]2    0[illegible]37  0[illegible]612           INC    DRVN             ;;STEP DRIVE #
0[illegible]6    0[illegible]37  0[illegible]010  000612           CMP    #10,DRVN         ;;EXIT IF ALL DRIVES TESTED
0[illegible]44   001[illegible]4                           BEQ    $DONE            ;;FOR AVAILABILITY
0[illegible]46   013[illegible]77  000612  175644           MOV    DRVN,@CS         ;;LOAD DRIVE #
0[illegible]54   0[illegible]777  17[illegible]630                   TST    @C1              ;;ACCESS DRIVE
0[illegible]0    0[illegible]777  010000  175632           BIT    #10000,@CS       ;;B[illegible]NCH IF DRIVE NON EXISTANT
0[illegible]6    0[illegible]1356                          BNE    1$               ;;(NED = 1)
0[illegible]70   0[illegible]237  000614          NXTSLV:  INC    SLVN             ;;STEP SLAVE # AND BRANCH
0[illegible]74   001011                           BNE    1$               ;;IF NOT SLAVE 0
0[illegible]76   0[illegible]5737  000612                   TST    DRVN             ;;BRANCH IF NOT DRIVE # 0
0[illegible]02   00[illegible]1006                          BNE    1$
0[illegible]704  122737  000006  000041           CMPB   #6,@#41          ;;BRANCH IF NOT TMOP
0[illegible]2712 001002                           BNE    1$
0[illegible]2714 005237  000614                   INC    SLVN             ;;STEP TO SLAVE # 1
0[illegible]720  022737  000010  000614  1$:      CMP    #10,SLVN         ;;B[illegible]ANCH IF ALL SLAVES TESTED
0[illegible]726  001733                           BEQ    NXTDRV           ;;FOR AVAILABILITY
0[illegible]730  013777  000614  175604           MOV    SLVN,@TC         ;;LOAD SLAVE UNIT #
0[illegible]736  032777  002000  175572           BIT    #2000,@DT        ;;BRANCH IF SLAVE NOT
0[illegible]2744 001751                           BEQ    NXTSLV           ;;PRESENT (SPR = 0)
0[illegible]2746 000240                  TSCDA:   NOP
0[illegible]2750 012737  000752  000706  TSRH:    MOV    #TSTTBL,LTADD
[illegible]2756  062737  0[illegible]004  00[illegible]706  TSCD0:   ADD    #4,LTADD
0[illegible]2764 013737  0[illegible]706  000676  TSCD1:   MOV    LTADD,ITRLP
002772  062737  0[illegible]002  000676           ADD    #2,ITRLP         ;SET ITERATION ADDRESS
003000  0[illegible]037  0[illegible]0                   CLR    ST[illegible]K
003004  0[illegible]037  0[illegible]26                  CLR    EF[illegible]P
003010  005037  000606                   CLR    HDRFL            ;CLEAR PRINT HEADER FLAG
003014  017700  175666                   MOV    @LTADD,R0        ;SET POINTER TO TEST
003020  000110                           JMP    (R0)             ;GO TO TEST
003022  032777  002000  175520  TSCD2:   BIT    #2000,@SWR       ;SEE IF HALT ON TEST
003030  001401                           BEQ    TSCD3            ;IF NOT: BR
003032  000000                           HALT
003034  005737  000704          TSCD3:   TST    STFLG            ;SE IF SINGLE TEST
003040  001746                           BEQ    TSCD0            ;IF NOT: BR
003042  017700  175502                   MOV    @S[illegible]R,R0
003046  042700  177740                   BIC    #177740,R0       ;BRANCH IF ALL TESTS SELECTED
003052  001641                           BEQ    TSCD
003054  012737  000001  000704  STSCD:   MOV    #1,STFLG         ;SET SINGLE TEST FLAG
003062  023700  001110                   CMP    TLAST,R0         ;SEE IF EXCEEDED TESTS
003066  002410                           BLT    TEND             ;IF SO: BR
003070  006300                           ASL    R0
003072  006100                           ROL    R0               ;SET TABLE MODIFIER
003074  012737  000752  000706           MOV    #TSTTBL,LTADD
003102  060037  000706                   ADD    R0,LTADD         ;SET TEST POINTER
```

```
 973  003106  000726                          BR      TSCD1
 974  003110  005737  001662          TEND:   TST     CHNFLG          ;BRANCH IF IN CHAIN MODE
 975  003114  001265                          BNE     NXTSLV
 976  003116  012704  014661          SDONE:  MOV     #MSG6,R4
 977  003122  004737  013442                  JSR     PC,TTOUT        ;PRINT END OF PASS
 978  003126  013703  000730                  MOV     PCNTR,R3
 979  003132  004737  013572                  JSR     PC,OCTP         ;PRINT PASS NUMBER
 980  003136  005000                          CLR     R0
 981  003140  005300                  1$:     DEC     R0
 982  003142  001376                          BNE     1$
 983  003144  013700  000042                  MOV     @#42,R0         ;GET ACT11 RETURN ADDRESS
 984  003150  001405                          BEQ     HERE            ;BRANCH IF NOT ACT11
 985  003152  000005                          RESET
 986  003154  004710                  SENDAD: JSR     PC,(R0)
 987  003156  000240                          NOP
 988  003160  000240                          NOP
 989  003162  000240                          NOP
 990  003164  000240                  HERE:   NOP
 991  003166  005737  001662                  TST     CHNFLG          ;BRANCH IF IN CHAIN MODE
 992  003172  001005                          BNE     TENDX
 993  003174  032777  010000  175346          BIT     #10000,@SWR     ;SEE IF HALT ON PASS
 994  003202  001001                          BNE     TENDX           ;IF NOT: BR
 995  003204  000000                          HALT
 996  003206  005237  000730          TENDX:  INC     PCNTR           ;BUMP PASS COUNTER
 997  003212  000137  002556                  JMP     TSCD            ;RESTART
```

```
  998
  999                                                ;RH ADDRESSING TEST**********
 1000
 1001  003216  012737  016771  000610  FT1:    MOV     #MSFT1,EMADDR   ;SET HEADER
 1002  003224  012777  013004  175342          MOV     #TRAP,@BTRP     ;SET TRAP HANDLER ADDRESS
 1003  003232  012777  000340  175336          MOV     #340,@BTRP2
 1004  003240  012700  000016                  MOV     #16,R0          ;SET NUMBER OF REGISTERS
 1005  003244  013701  000510                  MOV     C1,R1           ;GET FIRST ADDRESS (CS1)
 1006  003250  005711                  FT1A:   TST     (R1)            ;REFERENCE REGISTER
 1007  003252  000240                          NOP                     ;IF ADDRESS IS BAD, BUS TRAP WILL OCCUR
 1008  003254  005300                  FT1B:   DEC     R0              ;SEE IF DONE ALL
 1009  003256  001403                          BEQ     FT1X            ;IF SO: BR
 1010  003260  062701  000002                  ADD     #2,R1           ;BUMP ADDRESS POINTER
 1011  003264  000771                          BR      FT1A            ;CONTINUE
 1012  003266  012777  000006  175300  FT1X:   MOV     #6,@BTRP        ;RESET TRAP CATCHER
 1013  003274  005737  000722                  TST     RHTF            ;SEE IF INITIAL ADDRESS TEST PASS
 1014  003300  001404                          BEQ     FT1XX           ;IF NOT: BR
 1015  003302  005037  000722                  CLR     RHTF            ;CLEAR FLAG
 1016  003306  000137  002170                  JMP     ST1A            ;RETURN
 1017  003312  000137  003022          FT1XX:  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1018
1019                                                    ;RH REGISTER BITS READ/WRITE**********
1020
1021  003316  012737  017016  000610  FT2:    MOV     #MSFT2,EMAODR   ;SET TEST HEADER
1022  003324  012701  177777          FT2A:   MOV     #-1,R1          ;SET ALL ONES PATTERN
1023  003330  004737  012620          FT2A:   JSR     PC,INIT1        ;GO INIT
1024  003334  013700  000512                  MOV     WC,R0           ;GET ADDRESS OF WORD COUNT
1025  003340  010102                          MOV     R1,R2           ;SET EXPT REGISTER BIT PATTERN
1026  003342  010110                          MOV     R1,(R0)         ;LOAD PATTERN
1027  003344  021002                          CMP     (R0),R2         ;SEE IF EXPT=RCVD
1028  003346  001410                          BEQ     FT2B            ;IF SO: BR
1029  003350  012737  015205  000650          MOV     #MSG25,ERRDD    ;SET CODE
1030  003356  012737  003330  000674          MOV     #FT2A,SCOLP     ;SET SCOPE
1031  003364  004737  003504                  JSR     PC,FT2ER        ;GO DO ERROR
1032  003370  013700  000514          FT2B:   MOV     BA,R0           ;GET ADDRESS OF BUS ADDRESS
1033  003374  010102                          MOV     R1,R2
1034  003376  042702  000001                  BIC     #1,R2           ;SET EXPT PATTERN
1035  003402  010110                          MOV     R1,(R0)         ;LOAD PATTERN
1036  003404  020210                          CMP     R2,(R0)         ;SEE IF EXPT=RCVD
1037  003406  001410                          BEQ     FT2C            ;IF SO: BR
1038  003410  012737  015213  000650          MOV     #MSG26,ERRDD    ;SET ERROR CODE
1039  003416  012737  003370  000674          MOV     #FT2B,SCOLP     ;SET SCOPE ADDRESS
1040  003424  004737  003504                  JSR     PC,FT2ER        ;GO DO ERROR
1041  003430  013700  000532          FT2C:   MOV     DB,R0           ;GET ADDRESS OF DATA BUFFER
1042  003434  010102                          MOV     R1,R2
1043  003436  010110                          MOV     R1,(R0)         ;LOAD PATTERN
1044  003440  012703  004000                  MOV     #4000,R3
1045  003444  005303                  FT2D:   DEC     R3              ;DELAY
1046  003446  001376                          BNE     FT2D
1047  003450  020210                          CMP     R2,(R0)         ;SEE IF EXPT=RCVD
1048  003452  001410                          BEQ     FT2E            ;IF SO: BR
1049  003454  012737  015221  000650          MOV     #MSG27,ERRDD    ;SET ERROR CODE
1050  003462  012737  003430  000674          MOV     #FT2C,SCOLP     ;SET SCOPE ADDRESS
1051  003470  004737  003504                  JSR     PC,FT2ER        ;GO DO ERROR
1052  003474  005701                  FT2E:   TST     R1              ;SEE IF DONE RESET
1053  003476  001453                          BEQ     FT2X            ;IF SO: BR
1054  003500  005001                          CLR     R1              ;SET ZERO PATTERN
1055  003502  000712                          BR      FT2A            ;DO ZERO BITS
1056  003504  000240                  FT2ER:  NOP
1057  003506  032777  020000  175034          BIT     #20000,@SWR     ;SEE IF PRINT ERROR
1058  003514  001034                          BNE     FT2ERB          ;IF NOT: BR
1059  003516  005737  000606                  TST     HDRFL           ;SEE ID DONE HEADER
1060  003522  001004                          BNE     FT2ERA          ;IF SO: BR
1061  003524  013704  000610                  MOV     EMAODR,R4
1062  003530  004737  013442                  JSR     PC,TTOUT        ;DO HEADER
1063  003534  012737  000001  000606  FT2ERA: MOV     #1,HDRFL        ;SET FLAG
1064  003542  013704  000650                  MOV     ERRDD,R4
1065  003546  004737  013442                  JSR     PC,TTOUT        ;PRINT ERROR CODE
1066  003552  012704  015151                  MOV     #MSG22,R4
1067  003556  004737  013442                  JSR     PC,TTOUT        ;PRINT EXPT TAG
1068  003562  010103                          MOV     R1,R3
1069  003564  004737  013560                  JSR     PC,OCTPE        ;PRINT EXPT
1070  003570  012704  015161                  MOV     #MSG23,R4
1071  003574  004737  013442                  JSR     PC,TTOUT        ;PRINT RCVD TAG
1072  003600  011003                          MOV     (R0),R3
1073  003602  004737  013560                  JSR     PC,OCTPE        ;PRINT RCVD
```

```
1074  003606  005777  174736          FT2ERB: TST     @SWR            ;SEE IF HALT ON ERROR
1075  003612  100001                          BPL     FT2ERC          ;IF NOT: BR
1076  003614  000000                          HALT
1077  003616  004737  012512          FT2ERC: JSR     PC,SCOPE        ;GO SEE IF SCOPE ON ERROR
1078  003622  000240                          NOP
1079  003624  000207                          RTS     PC              ;IF NO SCOPE: CONTINUE TEST
1080  003626  000240                  FT2X:   NOP
1081  003630  004737  012546                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
1082  003634  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1083
1084                                                    ;RH INITIALIZE TEST**********
1085
1086  003640  012737  017053  000610  FT3:    MOV     #MSFT3,ERRADR   ;SET TEST HEADER
1087  003646  012737  003640  000674          MOV     #FT3,SCOLP
1088  003654  004737  012620                  JSR     PC,INIT1        ;GO INIT
1089  003660  012777  020000  174632          BIS     #20000,@CS      ;FORCE UPE =1
1090  003666  000240                          NOP
1091  003670  004737  012620                  JSR     PC,INIT1        ;GO INIT
1092  003674  005777  174610                  TST     @C1             ;SEE IF SC IS RESET
1093  003700  100005                          BPL     FT3A            ;IF SO: BR
1094  003702  012737  015257  000650          MOV     #MSG29,ERRDD    ;SET ERROR CODE
1095  003710  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1096  003714  032777  040000  174566  FT3A:   BIT     #40000,@C1      ;SEE IF TRE IS RESET
1097  003722  001405                          BEQ     FT3B            ;IF SO: BR
1098  003724  012737  015306  000650          MOV     #MSG30,ERRDD    ;SET ERROR CODE.
1099  003732  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1100  003736  017701  174556          FT3B:   MOV     @CS,R1          ;GET CS2
1101  003742  042701  000307                  BIC     #307,R1         ;MASK IR/OR
1102  003746  005701                          TST     R1              ;SEE IF RESET
1103  003750  001405                          BEQ     FT3X            ;IF SO: BR
1104  003752  012737  015336  000650          MOV     #MSG31,ERRDD    ;SET ERROR CODE
1105  003760  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1106  003764  004737  012546          FT3X:   JSR     PC,ITER         ;GO SEE IF ITERATION
1107  003770  000137  003022                  JMP     TSC02           ;RETURN TO SCHEDULAR
1108
1109                                          ;ERROR REPORT SUBROUTINE
1110  003774  000240          FT3ER:  NOP
1111  003776  032777  020000  174544          BIT     #20000,@SWR     ;SEE IF PRINT ERROR
1112  004004  001015                          BNE     2$              ;IF NOT: BR
1113  004006  005737  000606                  TST     HDRFL           ;SEE IF DONE HEADER
1114  004012  001006                          BNE     1$              ;IF SO: BR
1115  004014  013704  000610                  MOV     ERRADR,R4
1116  004020  004737  013442                  JSR     PC,TTOUT        ;PRINT HEADER
1117  004024  005237  000606                  INC     HDRFL
1118  004030  013704  000650          1$:     MOV     ERRDD,R4
1119  004034  004737  013442                  JSR     PC,TTOUT        ;PRINT ERROR CODE
1120  004040  005777  174504          2$:     TST     @SWR            ;SEE IF HALT ON ERROR
1121  004044  100001                          BPL     3$              ;IF NOT: BR
1122  004046  000000                          HALT
1123  004050  000240          3$:     NOP
1124  004052  004737  012512                  JSR     PC,SCOPE        ;GO SEE IF SCOPE
1125  004056  000207                          RTS     PC              ;IF NOT: BR
```

```
1126
1127                                                ;RH11 SILO TEST 1: EPMTY SILO READ**********
1128
1129  004060  005737  000604          FT4:    TST     RH17F
1130  004064  001141                  BNE     FT5X            ;IF RH70: BR
1131  004066  012737  017105  000610          MOV     #MSFT4,EMADDR   ;SET TEST TEST HEADER
1132  004074  012777  000040  174416          MOV     #40,@CS         ;INIT
1133  004102  017700  174424                  MOV     @DB,R0          ;READ DB
1134  004106  005777  174406                  TST     @CS             ;SEE IF DLT IS SET
1135  004112  100013                  BPL     FT4ER           ;IF NOT: BR
1136  004114  005777  174370                  TST     @C1             ;SEE IF SC IS SET
1137  004120  100014                  BPL     FT4ERA          ;IF NOT: BR
1138  004122  032777  040000  174360          BIT     #40000,@C1      ;SEE IF TRE IS SET
1139  004130  001414                  BEQ     FT4ERB          ;IF NOT: BR
1140  004132  004737  012546          FT4X:   JSR     PC,ITER         ;GO SEE IF ITERATION
1141  004136  000137  003022                  JMP     TSCO2           ;RETURN TO SCHEDULAR
1142  004142  012737  015366  000650  FT4ER:  MOV     #MSG32,ERADD    ;SET ERROR CODE
1143  004150  000407                  BR      FT4ERC
1144  004152  012737  015404  000650  FT4ERA: MOV     #MSG33,ERADD    ;SET ERROR CODE
1145  004160  000403                  BR      FT4ERC
1146  004162  012737  015421  000650  FT4ERB: MOV     #MSG34,ERADD    ;SET ERROR CODE.
1147  004170  000240          FT4ERC: NOP
1148  004172  012737  004060  000674          MOV     #FT4,SCOLP      ;SET SCOPE ADDRESS
1149  004200  004737  003774                  JSR     PC,FT3ER        ;GO PRINT ERROR
1150  004204  000752                  BR      FT4X
```

```
1151
1152                                                ;RH11 SILO TEST 2: IR/OR CHECK**********
1153
1154  004206  005737  000604          FTS:    TST     @#172476        ;SEE IF RH70
1155  004212  001066                          BNE     FTSX            ;IF SO: BR
1156  004214  012737  017135  000610          MOV     #MSFTS,EMADDR   ;SET TEST HEADER
1157  004222  012737  004230  000674          MOV     #FTSA,$COLP     ;SET SCOPE ADDRESS
1158  004230  004737  012620          FTSA:   JSR     PC,INITI        ;GO INIT
1159  004234  032777  000100  174256          BIT     #100,@CS        ;SEE IF IR IS SET
1160  004242  001005                          BNE     FTSB            ;IF SO: BR
1161  004244  012737  015437  000650          MOV     #MSG35,ERADD    ;SET ERROR CODE
1162  004252  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1163  004256  032777  000200  174234  FTSB:   BIT     #200,@CS        ;SEE IF OR IS RESET
1164  004264  001405                          BEQ     FTSC            ;IF SO: BR
1165  004266  012737  015464  000650          MOV     #MSG36,ERADD    ;SET ERROR CODE
1166  004274  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1167  004300  012777  000000  174224  FTSC:   MOV     #0,@DB          ;LOAD ZERO INTO SILO
1168  004306  032777  000200  174204          BIT     #200,@CS        ;SEE THAT OR RESET
1169  004314  001405                          BEQ     FTSD            ;IF IT DOES: BR
1170  004316  012737  015513  000650          MOV     #MSG37,ERADD    ;SET ERROR CODE
1171  004324  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1172  004330  012777  177777  174174  FTSD:   MOV     #-1,@DB         ;LOAD SILO WITH -1
1173  004336  012700  004000                  MOV     #4000,R0
1174  004342  032777  000200  174150  FTSE:   BIT     #200,@CS        ;SEE IF OR IS SET
1175  004350  001007                          BNE     FTSX            ;IF SO: BR
1176  004352  005300                          DEC     R0
1177  004354  001372                          BNE     FTSE            ;AWAIT OR
1178  004356  012737  015513  000650          MOV     #MSG37,ERADD    ;SET ERROR CODE
1179  004364  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1180  004370  004737  012546          FTSX:   JSR     PC,ITER         ;GO SEE IF ITERATION
1181  004374  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1182
1183                                                ;RH11 SILO TEST 3: SILO DATA TEST**********
1184
1185  004400  005737  000604          FT6:    TST     RH17F
1186  004404  001052                          BNE     FT6X            ;IF RH70: BR
1187  004406  012737  017165  000610          MOV     #MSFT6,EMADDR   ;SET TEST HEADER
1188  004414  012737  004422  000674          MOV     #FT6A,SCOLP     ;SET SCOPE ADDRESS
1189  004422  004737  012620          FT6A:   JSR     PC,INIT1        ;GO INIT
1190  004426  005000                          CLR     R0              ;PRESET DATA
1191  004430  010077  174076          FT6B:   MOV     R0,@08          ;LOAD SILO
1192  004434  005200                          INC     R0              ;BUMP DATA
1193  004436  022700  000102                  CMP     #102,R0         ;SEE IF FILLED ALL
1194  004442  001372                          BNE     FT6B            ;IF NOT: BR
1195  004444  032777  000100  174046          BIT     #100,@CS        ;SEE IF IR IS RESET.
1196  004452  001405                          BEQ     FT6C            ;IF SO: BR
1197  004454  012737  015624  000650          MOV     #MSG40,ERADD    ;SET ERROR CODE
1198  004462  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1199  004466  032777  000200  174024  FT6C:   BIT     #200,@CS        ;SEE IF OR IS SET
1200  004474  001005                          BNE     FT6D            ;IF SO: BR
1201  004476  012737  015552  000650          MOV     #MSG38,ERADD    ;SET ERROR CODE
1202  004504  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1203  004510  005000          FT6D:   CLR     R0              ;PRESET DATA
1204  004512  017701  174014          FT6E:   MOV     @08,R1          ;READ SILO
1205  004516  020001                          CMP     R0,R1           ;SEE IF EXPT=RCVD
1206  004520  001010                          BNE     FT6DE           ;IF NOT: BR
1207  004522  005200                          INC     R0              ;BUMP DATA
1208  004524  022700  000102                  CMP     #102,R0         ;SEE IF DONE ALL
1209  004530  001370                          BNE     FT6E            ;IF NOT: BR
1210  004532  004737  012546          FT6X:   JSR     PC,ITER         ;GO SEE IF ITERATION
1211  004536  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULAR
1212
1213  004542  000240          FT6DE:  NOP
1214  004544  032777  020000  173776          BIT     #20000,@SWR     ;SEE IF PRINT ERROR
1215  004552  001032                          BNE     FT6DEB          ;IF NOT: BR
1216  004554  005737  000606                  TST     HDRFL           ;SEE IF DONE HEADER
1217  004560  013701  000610                  MOV     EMADDR,R1
1218  004564  004737  013442                  JSR     PC,TTOUT        ;PRINT HEADER
1219  004570  005237  000606                  INC     HDRFL           ;SET FLAG
1220  004574  012704  015604          FT6DEA: MOV     #MSG39,R4
1221  004600  004737  013442                  JSR     PC,TTOUT        ;PRINT SILO READ ERROR
1222  004604  012704  015151                  MOV     #MSG22,R4
1223  004610  004737  013442                  JSR     PC,TTOUT        ;PRINT EXPT TAG
1224  004614  010003                          MOV     R0,R3
1225  004616  004737  013572                  JSR     PC,OCTP         ;PRINT EXPT
1226  004622  012704  015161                  MOV     #MSG23,R4
1227  004626  004737  013442                  JSR     PC,TTOUT        ;PRINT RCVD TAG
1228  004632  010103                          MOV     R1,R3
1229  004634  004737  013572                  JSR     PC,OCTP         ;PRINT RCVD
1230  004640  005777  173704          FT6DEB: TST     @SWR            ;SEE IF HALT ON ERROR
1231  004644  100001                          BPL     FT6DEX          ;IF NOT: BR
1232  004646  000000                          HALT
1233  004650  000207          FT6DEX: RTS     PC              ;RETURN TO TEST
```

```
1234
1235                                                    ;RH11 SILO TEST 4: SILO OVERFLOW**********
1236
1237  004652  005737  000604          FT7:    TST     RH17F
1238  004656  001021                  BNE     FT7X            ;IF RH70: BR
1239  004660  012737  017215  000610          MOV     #MSFT7,EMADDR   ;SET TEST HEADER
1240  004666  012737  004652  000674          MOV     #FT7,SCOLP      ;SET SCOPE ADDRESS
1241  004674  004737  012620                  JSR     PC,INIT1        ;GO INIT
1242  004700  012700  000103                  MOV     #103,R0         ;SET SIZE OF SILO +1
1243  004704  010077  173622          FT7A:   MOV     R0,@#8          ;LOAD SILO
1244  004710  005300                  DEC     R0                      ;SEE IF DONE
1245  004712  001374                  BNE     FT7A                    ;IF NOT: BR
1246  004714  005777  173600                  TST     @CS             ;SEE IF DLT IS SET
1247  004720  100004                  BPL     FT7ER                   ;IF NOT: BR
1248  004722  004737  012546          FT7X:   JSR     PC,ITER         ;GO SEE IF ITERATION
1249  004726  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULAR
1250  004732  012737  015366  000650  FT7ER:  MOV     #MSG32,ERADD    ;SET ERROR CODE
1251  004740  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1252  004744  000766                  BR      FT7X
```

```
1253
1254                                                    ;RH11 SILO TEST 5: SILO RESET**********
1255
1256  004746  005737  000604          FT10:   TST     RH17F
1257  004752  001034                  BNE     FT10X           ;IF RH70: BR
1258  004754  012737  017245  000610  MOV     #MSFT10,ERADDR  ;SET TEST HEADER
1259  004762  012737  004746  000674  MOV     #FT10,SCOLP     ;SET SCOPE ADDRESS
1260  004770  012777  000040  173522  MOV     #40,@CS         ;INITIALIZE
1261  004776  012700  000004          MOV     #4,R0           ;SET NUMBER OF SILO WRITER
1262  005002  010077  173524          FT10A:  MOV     R0,@DB  ;WRITE SILO
1263  005006  005300                  DEC     R0              ;SEE IF DONE
1264  005010  001374                  BNE     FT10A           ;IF NOT: BR
1265  005012  012777  000040  173500  BIS     #40,@CS         ;INITIALIZE
1266  005020  012777  177777  173504  MOV     #-1,@DB         ;WRITE SILO
1267  005026  017701  173500          MOV     @DB,R1          ;READ SILO 1
1268  005032  017701  173474          MOV     @DB,R1          ;READ SILO 2
1269  005036  005777  173456          TST     @CS             ;SEE IF DLT IS SET
1270  005042  100011                  BPL     FT10ER          ;IF NOT: BR
1271  005044  004737  012546          FT10X:  JSR     PC,ITER         ;GO SEE IF ITERATION
1272  005050  005737  000726          TST     RH0F            ;SEE IF RH11 ONLY
1273  005054  001402                  BEQ     FT10XX          ;IF NOT: BR
1274  005056  000137  003110          JMP     TEND            ;ELSE GO TO END
1275  005062  000137  003022          FT10XX: JMP     TSCD2           ;RETURN TO SCHEDULAR
1276  005066  012737  015366  000650  FT10ER: MOV     #MSG32,ERADD    ;SET ERROR CODE
1277  005074  004737  003774          JSR     PC,FT3ER        ;GO DO ERROR
1278  005100  000761                  BR      FT10X
```

```
1279                                                    ;NOP TEST*****
1280
1281  005102  000240                          FT11:     NOP
1282  005104  012737  005102  000674                    MOV     #FT11,SCOLP     ;SET SCOPE ADDRESS
1283  005112  004737  012620                            JSR     PC,INITI
1284  005116  012737  000300  000716                    MOV     #300,UDES       ;SET TC= ALL NRZ,NORM,ODD
1285  005124  012737  177777  000620                    MOV     #-1,FCNT        ;SET FC= ALL OVER
1286  005132  012737  177777  000622                    MOV     #-1,WCNT        ;SET WC= ALL OVER
1287  005140  012737  177777  000616                    MOV     #-1,BADDR       ;SET BA= ALL OVER
1288  005146  012737  000001  000636                    MOV     #1,RDYDX        ;SET DELAY
1289  005154  012737  000001  000640                    MOV     #1,OPDYX        ;SET OP DELAY
1290  005162  012737  000001  000710                    MOV     #1,FUN          ;SET NOP FUNCTIONS CODE
1291  005170  004737  011546                            JSR     PC,EXEC         ;GO EXECUTE COMMAND
1292  005174  000240                                    NOP
1293  005176  012737  017276  000610                    MOV     #MSFT11,EMADDR
1294  005204  004737  011776                            JSR     PC,ERCHK        ;GO CHECK REGISTER
1295  005210  004737  012546                            JSR     PC,ITER         ;GO SEE IF ITERATIONS
1296  005214  000137  003022                            JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1297                                                    ;REWIND TEST*****
1298
1299  005220  000240                          FT12:     NOP
1300  005222  012737  005220  000674                    MOV     #FT12,SCOLP
1301  005230  004737  011430                            JSR     PC,INITI        ;GO INITIALIZE
1302  005234  052777  001700  173300                    BIS     #1700,@TC       ;SET TO NRZ,NORMAL
1303  005242  012737  177760  000620                    MOV     #-20,FCNT       ;SET FC=20
1304  005250  012737  177770  000622                    MOV     #-10,WCNT       ;SET WC=10
1305  005256  012737  020112  000616                    MOV     #WDATA,BADDR    ;SET ADDR=WRITE BUFFER
1306  005264  012737  000007  000710                    MOV     #7,FUN          ;SET REWIND OP CODE
1307  005272  004737  011546                            JSR     PC,EXEC         ;GO EXECUTE COMMAND
1308  005276  000240                                    NOP
1309  005300  032777  020000  173214          FT12A:    BIT     #20000,@DS
1310  005306  001374                                    BNE     FT12A           ;AWAIT PIP
1311  005310  012737  017316  000610                    MOV     #HSFT12,EMADDR
1312  005316  004737  011776                            JSR     PC,ERCHK        ;GO CHECK FOR ERROR
1313  005322  004737  012546                            JSR     PC,ITER         ;GO SEE IF ITERATION
1314  005326  000137  003022                            JMP     TSCD2           ;RETURN TO SCHEDULAR
1315
```

```
1316                                                    ;WRITE/READ TEST*****
1317
1318  005332  000240                          FT13:     NOP
1319  005334  012737  000001  000636                    MOV     #1,RDYDX
1320  005342  012737  000001  000640                    MOV     #1,OPDYX
1321  005350  012737  000100  000624                    MOV     #100,RCNT       ;SET RECORD COUNT
1322  005356  012737  017341  000610                    MOV     #MSFT13,EMADDR  ;SET TEST HEADER
1323  005364  012737  000001  000720                    MOV     #1,PATRN
1324  005372  004737  012700                          JSR     PC,DSUP         ;SET UP ALL ONES DATA PATTERN
1325  005376  012737  001700  000716                    MOV     #1700,UDES      ;SET TO 800 BPI NORMAL
1326  005404  004737  011700                FT13A:    JSR     PC,REWD         ;GO REWIND
1327  005410  012737  177600  000620                    MOV     #-200,FCNT      ;SET FC
1328  005416  012737  177700  000622                    MOV     #-100,WCNT      ;SET WC
1329  005424  012737  002112  000616                    MOV     #WDATA,BADDR    ;SET BA
1330  005432  012737  000061  000710                    MOV     #61,FUN         ;SET WRITE OP-CODE
1331  005440  012737  011765  000626                    MOV     #MSG12,ERRP
1332  005446  004737  011546                FT13B:    JSR     PC,EXEC         ;GO EXECUTE COMMAND
1333  005452  005037  000674                          CLR     SCOLP           ;NO SCOPE LOOP
1334  005456  004737  011776                          JSR     PC,ERCHK        ;GO CHECK ERROR
1335  005462  005337  000624                          DEC     RCNT            ;SEE IF DONE ALL
1336  005466  001367                                  BNE     FT13B           ;IF NOT: BR
1337  005470  012737  000100  000624                    MOV     #100,RCNT       ;SET RECORD COUNT
1338  005476  012737  002624  001616                    MOV     #WDATA,BADDR
1339  005504  062737  000010  001616                    ADD     #10,BADDR       ;SET BA
1340  005512  012737  000077  000710                    MOV     #77,FUN         ;SET READ REVERSE OP-CPDE
1341  005520  012737  015003  000626                    MOV     #MSG13,ERRP
1342  005526  004737  011546                FT13C:    JSR     PC,EXEC         ;GO EXECUTE COMMAND
1343  005532  004737  011776                          JSR     PC,ERCHK        ;GO CHECK ERROR
1344  005536  005337  000624                          DEC     RCNT            ;SEE IF READ ALL
1345  005542  001371                                  BNE     FT13C           ;IF NOT:BR
1346  005544  162737  000200  000616                    SUB     #200,BADDR      ;SET BA
1347  005552  012737  000071  000710                    MOV     #71,FUN         ;SET READ FORWARD OP-CODE
1348  005560  012737  015030  000626                    MOV     #MSG14,ERRP
1349  005566  012737  000100  000624                    MOV     #100,RCNT       ;SET RECORD COUNT
1350  005574  004737  011546                FT13D:    JSR     PC,EXEC         ;GO EXECUTE COMMAND
1351  005600  004737  011776                          JSR     PC,ERCHK        ;GO CHECK ERRORS
1352  005604  005337  000624                          DEC     RCNT            ;SEE IF DONE ALL
1353  005610  001371                                  BNE     FT13D           ;IF NOT:BR
1354  005612  032737  002000  000716                    BIT     #2000,UDES      ;SEE IF DONE PE
1355  005620  001007                                  BNE     FT13X           ;IF SO: BR
1356  005622  012737  002300  000716                    MOV     #2300,UDES      ;SET PE MODE
1357  005630  012737  000100  000624                    MOV     #100,RCNT       ;RESET RECORD COUNT
1358  005636  000662                                  BR      FT13A           ;GO DO NEXT DENSITY
1359  005640  000137  003022                FT13X:    JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
                                                    ;SPACE TEST*****

005644  000240                           FT14:     NOP
005646  012737  017370  000610                     MOV     #MSFT14,EMADDR     ;SET TEST HEADER
005654  012737  001700  000716                     MOV     #1700,UDES         ;SET NRZ,NORMAL
0[illegible]62  004737  011700           FT14A1:   JSR     PC,RWND            ;GO INITIALIZE
0[illegible]66  012737  000100  000624             MOV     #100,RCNT          ;SET NUMBER OF RECORDER
0[illegible]674  012737  177777  0[illegible]112   MOV     #-1,WDATA          ;SET DATA PATTERN
005702  012737  177700  0[illegible]20             MOV     #-100,FCNT         ;PRESET FRAME CNT
005710  012737  177740  0[illegible]22             MOV     #-40,WCNT          ;PRESET WORD CNT
005716  004737  012620                   FT14A:    JSR     PC,INIT1           ;GO REWIND
005722  012737  001000  000640                     MOV     #1000,OPDYX
005730  012737  040000  000636                     MOV     #40000,RDYDX
005736  012737  000061  000710                     MOV     #61,FUN            ;SET WRITE OP-CODE
005744  012737  102300  000660                     MOV     #102300,STMSK      ;MASK DATA RELATED ERRORS
005752  052777  000010  172540                     BIS     #10,@CS            ;INHIBIT BUS ADDRESS INCREMENT
005760  004737  011546                             JSR     PC,EXEC            ;GO EXECUTE COMMAND
005764  012737  016043  000626                     MOV     #MSG46,ERRP        ;SET ERROR CODE
005772  004737  011776                             JSR     PC,ERCHK           ;GO CHECK ERRORS
005776  005737  000712                             TST     SERFL              ;SEE IF ERROR
0[illegible]002  001402                            BEQ     FT14A2             ;IF NOT: BR
0[illegible]04  000137  006470                     JMP     FT14X              ;ELSE EXIT
0[illegible]10  0[illegible]337  00[illegible]20   FT14A2:   DEC     FCNT     ;BUMP FC
0[illegible]14  0[illegible]737  000001  000620    BIT     #1,FCNT            ;SEE IF SHOULD BUMP WC
0[illegible]2  001403                              BEQ     FT14A3             ;IF NOT: BR
0[illegible]4  162737  000001  000622              SUB     #1,WCNT            ;BUMP WC
0[illegible]2  0[illegible]337  0[illegible]24   FT14A3:   DEC     RCNT       ;SEE IF DONE ALL
0[illegible]  001[illegible]27                     BNE     FT14A              ;WRITE ALL RECORDS
0[illegible]  012737  000100  000632               MOV     #100,RRD           ;PRESET RECORD POSITION
0[illegible]6  012737  000176  000634              MOV     #176,RFD
0[illegible]4  012737  177701  000642              MOV     #-77,SCNT          ;SET SPACE AMOUNT
0[illegible]2  012737  000[illegible]33  000710  FT14B:    MOV     #33,FUN    ;SET OP-CODE SPACE REVERSE
0[illegible]70  004737  011546                     JSR     PC,EXEC            ;GO EXECUTE COMMAND
006074  012737  016114  000626                     MOV     #MSG48,ERRP        ;SET ERROR CODE
006102  004737  011776                             JSR     PC,ERCHK           ;GO CHECK ERRORS
006106  005737  000712                             TST     SERFL              ;SEE IF ERROR
006112  001166                                     BNE     FT14X              ;IF SO: BR
006114  004737  006210                             JSR     PC,FT14RR          ;GO READ REVERSE + CHECK DATA
006120  000240                                     NOP
006122  012737  000031  000710                     MOV     #31,FUN            ;SET SPACE FORWARD OP-CODE
006130  005237  000642                             INC     SCNT               ;SET SPACE AMOUNT
006134  001535                                     BEQ     FT14X              ;IF DONE: BR
006136  004737  011546                             JSR     PC,EXEC            ;GO EXECUTE COMMAND
006142  012737  016067  000626                     MOV     #MSG47,ERRP        ;SET ERROR CODE
006150  004737  011776                             JSR     PC,ERCHK           ;GO CHECK ERROR
006154  005737  000712                             TST     SERFL              ;SEE IF ERROR FLAG
006160  001143                                     BNE     FT14X              ;IF NO: BR
006162  004737  006252                             JSR     PC,FT14RF          ;GO READ FORWARD FOR POSITION CHECK
006166  000240                                     NOP
006170  005237  000642                             INC     SCNT               ;DECREMENT SPACE AMOUNT
006174  001535                                     BEQ     FT14X              ;IF DONE: BR
006176  005237  000632                             INC     RRD                ;BUMP DATA EXPT
006202  005337  000634                             DEC     RFD                ;BUMP DATA EXPT
006206  000725                                     BR      FT14B
006210  000240                           FT14RR:   NOP
006212  012737  021624  000616                     MOV     #RDATA,BADDR       ;SET BA
```

```
1416  006220  012737  000077  000710          MOV     #77,FUN         ;SET READ REVERSE OP-CODE
1417  006226  004737  011546                  JSR     PC,EXEC         ;GO EXECUTE COMMAND
1418  006232  000240                          NOP
1419  006234  013705  000632                  MOV     RRD,R5
1420  006240  020577  172252                  CMP     R5,@FC          ;SEE IF CORRECT RECORD
1421  006244  001020                          BNE     FT14RER         ;IF NOT: BR
1422  006246  000137  006300                  JMP     FT14EC          ;GO CLEAR RH11 ERROR BIT
1423  006252  000240          FT14RF: NOP
1424  006254  012737  000071  000710          MOV     #71,FUN         ;SET READ FORWARD OP-CODE
1425  006262  004737  011546                  JSR     PC,EXEC         ;GO EXECUTE COMMAND
1426  006266  013705  000634                  MOV     RFD,R5
1427  006272  020577  172220                  CMP     R5,@FC          ;SEE IF CORRECT RECORD
1428  006276  001003                          BNE     FT14RER         ;IF NOT: BR
1429  006300  004737  012620          FT14EC: JSR     PC,INIT1        ;CLEAR RH
1430  006304  000207                          RTS     PC              ;RETURN
1431  006306  000240          FT14RER: NOP
1432  006310  032777  020000  172232          BIT     #20000,@SWR     ;SEE IF PRINT INHIBITED
1433  006316  001060                          BNE     FT14R3          ;IF SO: BR
1434  006320  012704  017370                  MOV     #MSFT14,R4
1435  006324  004737  013442                  JSR     PC,TTOUT        ;PRINT HEADER
1436  006330  012704  014703                  MOV     #MSG9,R4
1437  006334  004737  013442                  JSR     PC,TTOUT        ;PRINT ERROR TYPE
1438  006340  012704  015136                  MOV     #MSG20,R4       ;SET NRZ TAG POINTER
1439  006344  032737  002000  000716          BIT     #2000,UDES      ;SEE IF PE
1440  006352  001402                          BEQ     FT14R0          ;IF NOT: BR
1441  006354  012704  015144                  MOV     #MSG21,R4       ;ELSE SET PE TAG POINTER
1442  006360  004737  013442          FT14R0: JSR     PC,TTOUT        ;PRINT TAG
1443  006364  032737  000002  000710          BIT     #2,FUN          ;SEE IF READ REVERSE
1444  006372  001003                          BNE     FT14R1          ;IF SO: BR
1445  006374  012704  015116                  MOV     #MSG17,R4
1446  006400  000402                          BR      FT14R2          ;GO PRINT
1447  006402  012704  015076          FT14R1: MOV     #MSG16,R4
1448  006406  004737  013442          FT14R2: JSR     PC,TTOUT        ;PRINT FRWD/REV
1449  006412  012704  015151                  MOV     #MSG22,R4
1450  006416  004737  013442                  JSR     PC,TTOUT        ;PRINT EXPT TAG
1451  006422  010503                          MOV     R5,R3
1452  006424  042703  177700                  BIC     #177700,R3      ;MASK RECORD NUMBER
1453  006430  004737  013572                  JSR     PC,OCTP         ;PRINT EXPT RECORD NUMBER
1454  006434  012704  015161                  MOV     #MSG23,R4
1455  006440  004737  013442                  JSR     PC,TTOUT        ;PRINT RCVD TAG
1456  006444  017703  172046                  MOV     @FC,R3
1457  006450  042703  177700                  BIC     #177700,R3      ;MASK RECORD NUMBER
1458  006454  004737  013572                  JSR     PC,OCTP         ;PRINT ACTUAL RECORD NUMBER
1459  006460  005777  172064          FT14R3: TST     @SWR            ;SEE IF HALT ON ERROR
1460  006464  100001                          BPL     FT14X           ;IF NOT: BR
1461  006466  000000                          HALT
1462  006470  032737  002000  000716  FT14X:  BIT     #2000,UDES      ;SEE IF DONE PE
1463  006476  001005                          BNE     FT14XX          ;IF SO: BR
1464  006500  012737  002300  000716          MOV     #2300,UDES      ;SET TO PE
1465  006506  000137  005662                  JMP     FT14A1          ;DO IN PE
1466  006512  000137  003022          FT14XX: JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1467                                                    ;ERASE TEST*****
1468
1469  006516  000240                          FT15:     NOP
1470  006520  005037  000660                            CLR     STMSK
1471  006524  012737  000100  000636                    MOV     #100,RDYDX
1472  006532  012737  000010  000640                    MOV     #10,OPDYX
1473  006540  012737  017412  000610                    MOV     #MSFT15,ERRADDR ;SET TEST HEADER
1474  006546  004737  011700                            JSR     PC,RWND         ;REWIND
1475  006552  012737  021624  000616                    MOV     #RDATA,BADDR    ;SET BA
1476  006560  012737  001700  000716                    MOV     #1700,UDES      ;SET NRZ, NORMAL
1477  006566  012737  000025  000710          FT15A:    MOV     #25,FUN         ;SET ERASE OP-CODE
1478  006574  012737  000200  000624                    MOV     #200,RCNT       ;SET TO ERASE 128 TIMES
1479  006602  004737  011546                  FT15B:    JSR     PC,EXEC         ;GO EXECUTE COMMAND
1480  006606  012737  016043  000626                    MOV     #MSG46,ERRP     ;SET ERROR CODE
1481  006614  004737  011776                            JSR     PC,ERCHK        ;GO CHECK ERRORS
1482  006620  005737  000712                            TST     SERFL           ;SEE IF ANY ERRORS
1483  006624  001032                                    BNE     FT15X           ;IF SO EXIT
1484  006626  005337  000624                            DEC     RCNT            ;SEE IF DONE ERASING
1485  006632  001363                                    BNE     FT15B           ;IF NOT: BR
1486  006634  000240                                    NOP
1487  006636  004737  011700                            JSR     PC,RWND         ;REWIND
1488  006642  012737  177600  000622                    MOV     #-200,WCNT      ;SET WC
1489  006650  012737  000071  000710                    MOV     #71,FUN         ;SET READ FORWARD OP-CODE
1490  006656  012737  000040  000636                    MOV     #40,RDYDX       ;SET DELAY
1491  006664  004737  011546                            JSR     PC,EXEC         ;GO EXECUTE COMMAND
1492  006670  000240                                    NOP
1493  006672  012737  016503  000626                    MOV     #MSG60,ERRP     ;SET ERROR CODE
1494  006700  012737  020000  000660                    MOV     #20000,STMSK
1495  006706  004737  011776                            JSR     PC,ERCHK        ;GO CHECK ERRORS
1496  006712  000137  003022                  FT15X:    JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1497                                                    ;TAPE MARK WRITE/READ TEST*****
1498
1499  006716  000240                          FT16:     NOP
1500  006720  012737  000001  000636                    MOV     #1,RDYDX
1501  006726  012737  001000  000640                    MOV     #1000,OPDYX
1502  006734  012737  017434  000610                    MOV     #MSFT16,EMADDR  ;SET HEADER
1503  006742  012737  001700  000716                    MOV     #1700,UDES      ;SET TO NRZ,NORMAL,ODD
1504  006750  004737  011700                FT16A:    JSR     PC,RWND         ;INIT AND REWIND SLAVE
1505  006754  012737  177760  000620        FT16B:    MOV     #-20,FCNT       ;FC=20
1506  006762  012737  177770  000622                    MOV     #-10,WCNT       ;WC=10
1507  006770  012737  000027  000710                    MOV     #27,FUN         ;SET WRITE TAPE MARK OP-CODE
1508  006776  004737  011546                          JSR     PC,EXEC         ;GO EXECUTE COMMAND
1509  007002  012737  001000  000660                    MOV     #1000,STMSK     ;SET FOR FCE MASK
1510  007010  012737  014765  000626                    MOV     #MSG12,ERRP     ;SET ERROR CODE
1511  007016  004737  011776                          JSR     PC,ERCHK        ;GO CHECK ERROR
1512  007022  004737  012340                          JSR     PC,TMCHK        ;GO SEE IF TM SET
1513  007026  012737  000077  000710                    MOV     #77,FUN         ;SET UP REVERSE OP-CODE
1514  007034  004737  011546                          JSR     PC,EXEC         ;GO EXECUTE COMMAND
1515  007040  012737  001000  000660                    MOV     #1000,STMSK     ;SET FOR ERROR MASK
1516  007046  012737  015003  000626                    MOV     #MSG13,ERRP     ;SET ERROR CODE
1517  007054  004737  011776                          JSR     PC,ERCHK        ;GO CHECK ERRORS
1518  007060  004737  012340                          JSR     PC,TMCHK        ;GO SEE IF TM SET
1519  007064  012737  000071  000710                    MOV     #71,FUN         ;SET UP FORWARD OP-CODE
1520  007072  004737  011546                          JSR     PC,EXEC         ;GO EXECUTE COMMAND
1521  007076  012737  015030  000626                    MOV     #MSG14,ERRP     ;SET ERROR CODE
1522  007104  004737  011776                          JSR     PC,ERCHK        ;TO CHECK ERRORS
1523  007110  004737  012340                          JSR     PC,TMCHK        ;GO SEE IF TM SET
1524  007114  032737  002000  000716                    BIT     #2000,UDES      ;SEE IF DONE PE
1525  007122  001004                                   BNE     FT16X           ;IF SO: BR
1526  007124  012737  002300  000716                    MOV     #2300,UDES      ;SET PE, NORMAL
1527  007132  000706                                   BR      FT16A           ;DO IN PE
1528  007134  004737  012546                FT16X:    JSR     PC,ITER         ;DO ITERATIONS
1529  007140  000137  003022                          JMP     TSCD2           ;RETURN TO SCHEDULAR
1530
```

```
1531
1532                                                    ;TAPE MARK SPACE TEST**********
1533
1534  007144  005037  000624          FT17:   CLR     RCNT
1535  007150  012737  017475  000610          MOV     #MSFT17,EMADDR  ;SET HEADER
1536  007156  012737  001700  000716          MOV     #1700,UDES      ;SET TO NRZ
1537  007164  004737  011700          FT17A:  JSR     PC,RWND         ;REWIND TAPE
1538  007170  012737  000027  000710  FT17B:  MOV     #27,FUN
1539  007176  012737  040000  000636          MOV     #40000,RDYDX    ;SET DRY DELAY
1540  007204  012737  040000  000640          MOV     #40000,OPDYX    ;SET OP DELAY
1541  007212  004737  011546                  JSR     PC,EXEC         ;GO WRITE TM
1542  007216  012737  102300  000660          MOV     #102300,STMSK   ;MASK DATA RELATED ERRORS
1543  007224  012737  015055  000626          MOV     #MSG15,ERRP     ;SET ERROR TYPE
1544  007232  004737  011776                  JSR     PC,ERCHK        ;GO CHECK ERROR
1545  007236  005737  000712                  TST     SERFL           ;SEE IF ERROR
1546  007242  001137                          BNE     FT17X           ;IF SO: BR
1547  007244  004737  012340                  JSR     PC,TMCHK        ;GO SEE IF TM SET
1548  007250  000240                          NOP
1549  007252  000240                          NOP
1550  007254  032737  000100  000624          BIT     #100,RCNT       ;SEE IF DONE PATTERN
1551  007262  001045                          BNE     FT17D           ;IF SO: BR
1552  007264  062737  000020  000624          ADD     #20,RCNT        ;ADD 20 TO RECORD COUNT
1553  007272  013737  000624  000652          MOV     RCNT,TEMP1      ;SAVE RECORD COUNT
1554  007300  012737  177600  000622          MOV     #-200,WCNT      ;WC=128
1555  007306  012737  177400  000620          MOV     #-400,FCNT      ;FC=256
1556  007314  012737  020112  000616          MOV     #DATA,BADDR     ;BA=WRITE BUFFER
1557  007322  012737  000061  000710          MOV     #61,FUN         ;SET WRITE OP CODE
1558  007330  000240                  FT17C:  NOP
1559  007332  000240                          NOP
1560  007334  004737  011546                  JSR     PC,EXEC         ;GO WRITE
1561  007340  012737  014765  000626          MOV     #MSG12,ERRP     ;SET ERROR CODE
1562  007346  012737  102300  000660          MOV     #102300,STMSK   ;MASK DATA RELATED ERRORS
1563  007354  004737  011776                  JSR     PC,ERCHK        ;GO CHECK ERROR
1564  007360  005737  000712                  TST     SERFL           ;SEE IF ERROR
1565  007364  001066                          BNE     FT17X           ;IF SO: BR
1566  007366  005337  000652                  DEC     TEMP1           ;SEE IF DONE ALL
1567  007372  001356                          BNE     FT17C           ;IF NOT: BR
1568  007374  000675                          BR      FT17B           ;ELSE GO DO TM
1569  007376  000240                  FT17D:  NOP
1570  007400  012737  000033  000710          MOV     #33,FUN         ;SET SPACE REVERSE
1571  007406  012737  015076  000626          MOV     #MSG16,ERRP     ;SET ERROR CODE
1572  007414  012737  177600  000642  FT17D1: MOV     #-200,SCNT      ;SET TO DO RECORDS
1573  007422  012737  000005  000624          MOV     #5,RCNT         ;SET NUMBER OF OPS TO DO
1574  007430  004737  012620          FT17E:  JSR     PC,INIT1        ;GO INIT
1575  007434  004737  011546                  JSR     PC,EXEC         ;GO SPACE
1576  007440  012737  001000  000660          MOV     #1000,STMSK     ;SET ERROR MASK
1577  007446  004737  011776                  JSR     PC,ERCHK        ;GO CHECK ERROR
1578  007452  005737  000712                  TST     SERFL           ;SEE IF ERROR
1579  007456  001031                          BNE     FT17X           ;IF SO: BR
1580  007460  004737  012340                  JSR     PC,TMCHK        ;GO SEE IF TM SET
1581  007464  005337  000624                  DEC     RCNT            ;SEE IF DONE SPACES
1582  007470  001357                          BNE     FT17E           ;IF NOT: BR
1583  007472  022737  000031  000710          CMP     #31,FUN         ;SEE IF DONE FORWARD
1584  007500  001407                          BEQ     FT17F           ;IF SO: BR
1585  007502  012737  015116  000626          MOV     #MSG17,ERRP     ;SET ERROR CODE
1586  007510  012737  000031  000710          MOV     #31,FUN         ;SET TO SPACE FORWARD
```

```
1587  007516  000736                          BR      FT17D1          ;DO FORWARD
1588  007520  032737  002000  000716  FT17F:  BIT     #2000,UDES      ;SEE IF DONE PE
1589  007526  001005                          BNE     FT17X           ;IF SO: BR
1590  007530  012737  002300  000716          MOV     #2300,UDES      ;SET TO PE
1591  007536  000137  007164                  JMP     FT17A           ;GO PE
1592  007542  000137  003022          FT17X:  JMP     TSCD2           ;RETURN  TO SCHEDULAR
```

```
1593
1594                                                ;WRITE CHECK TEST**********
1595
1596  007546  000240                      FT20:     NOP
1597  007550  012737  017523  000610                MOV     #MSFT20,EMADDR  ;SET HEADER
1598  007556  012737  001700  000716                MOV     #1700,UDES      ;SET UNIT DESCRIPTION
1599  007564  004737  011700              FT20A:    JSR     PC,RWND         ;INIT AND REWIND SLAVE
1600  007570  012737  000003  000720                MOV     #3,PATRN
1601  007576  004737  012400                       JSR     PC,DSUP         ;GO SET PATTERN 3
1602  007602  012737  020112  000616                MOV     #WDATA,BADDR    ;SET BA
1603  007610  012737  177400  000620                MOV     #-400,FCNT      ;SET FC
1604  007616  012737  177600  000622                MOV     #-200,WCNT      ;SET WC
1605  007624  012737  000061  000710                MOV     #61,FUN         ;SET WRITE OP CODE
1606  007632  004737  011546                       JSR     PC,EXEC         ;GO WRITE RECORD
1607  007636  012737  016043  000626                MOV     #MSG46,ERRP     ;SET ERROR CODE
1608  007644  004737  011776                       JSR     PC,ERCHK        ;GO CHECK ERROR
1609  007650  005737  000712                       TST     SERFL           ;SEE IF ERORR
1610  007654  001042                              BNE     FT20X           ;IF SO: BR
1611  007656  012737  015076  000626                MOV     #MSG16,ERRP     ;SET REVERSE ERROR TAG
1612  007664  012737  000057  000710                MOV     #57,FUN         ;SET REVERSE WRITE CHECK OP-CODE
1613  007672  062737  000376  000616                ADD     #376,BADDR      ;SET BA FOR REVERSE CHECK
1614  007700  004737  011546                       JSR     PC,EXEC         ;GO DO REVERSE CHECK
1615  007704  004737  011776                       JSR     PC,ERCHK        ;GO CHECK ERROR
1616  007710  012737  015116  000626  FT20B:     MOV     #MSG17,ERRP     ;SET FORWARD TAG
1617  007716  012737  000051  000710                MOV     #51,FUN         ;SET FORWARD CHECK OP CODE
1618  007724  162737  000376  000616                SUB     #376,BADDR      ;SET BA FOR FORWARD CHECK
1619  007732  004737  011546                       JSR     PC,EXEC         ;GO DO FORWARD CHECK
1620  007736  004737  011776                       JSR     PC,ERCHK        ;GO CHECK ERROR
1621  007742  032737  002000  000716  FT20C:     BIT     #2000,UDES      ;SEE IF DONE PE
1622  007750  001004                              BNE     FT20X           ;IF SO: BR
1623  007752  012737  002300  000716                MOV     #2300,UDES      ;ELSE SET PE
1624  007760  000701                              BR      FT20A           ;DO IN PE
1625  007762  004737  012546              FT20X:    JSR     PC,ITER         ;DO ITERATIONS
1626  007766  000137  003022                       JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
1627
1628                                                ;ERASE HEAD TEST*****
1629
1630  007772  012737  017554  000610  FT21:   MOV     #MSFT21,EMADDR  ;SET TEST HEADER
1631  010000  004737  011700          FT21A:  JSR     PC,RWND         ;GO REWIND
1632  010004  012737  000003  000720          MOV     #3,PATRN
1633  010012  004737  012400                  JSR     PC,DSUP         ;GO SET PATTERN 3
1634  010016  012737  021112  000616          MOV     #WDATA,BADDR    ;SET BA=WRITE BUFFER
1635  010024  012737  176340  000620          MOV     #-800.,FCNT     ;SET FC=E  0(10)
1636  010032  012737  177160  000622          MOV     #-400.,WCNT     ;SET WC=400(10)
1637  010040  012737  001700  000716          MOV     #1700,UDES      ;SET NRZ  NORMAL
1638  010046  012737  000061  000710          MOV     #61,FUN         ;SET WRITE OP-CODE
1639  010054  004737  011546                  JSR     PC,EXEC         ;GO DO WRITE 1
1640  010060  012737  014765  000626          MOV     #MSG12,ERRP     ;SET EP OR CODE
1641  010066  004737  011776                  JSR     PC,ERCHK        ;GO CHECK FOR ERROR
1642  010072  004737  011546                  JSR     PC,EXEC         ;YES DO WRITE 2
1643  010076  004737  011776                  JSR     PC,ERCHK        ;YES CHECK FOR ERROR
1644  010102  000240                          NOP
1645  010104  004737  011700                  JSR     PC,RWND         ;GO REWIND
1646  010110  012737  177160  000620          MOV     #-400.,FCNT     ;SET FC=400(10)
1647  010116  012737  177470  000622          MOV     #-200.,WCNT     ;SET WC=200(10)
1648  010124  004737  011546                  JSR     PC,EXEC         ;GO REWRITE RECORD 1-WH TO EH
1649  010130  000240          FT21SCP:NOP
1650  010132  004737  011700                  JSR     PC,RWND         ;REWIND
1651  010136  012737  021624  000616          MOV     #RDATA,BADDR    ;SET E  READ BUFFER
1652  010144  012737  177160  000620          MOV     #-400.,FCNT     ;SET FC=400
1653  010152  012737  177470  000622          MOV     #-200.,WCNT     ;SET WC=200
1654  010160  012737  000071  000710          MOV     #71,FUN         ;SET READ OP-CODE
1655  010166  004737  011546                  JSR     PC,EXEC         ;GO RE D RECORD 1
1656  010172  012737  015030  000626          MOV     #MSG14,ERRP     ;SET ERROR CODE
1657  010200  004737  011776                  JSR     PC,ERCHK        ;GO CHECK FOR ERROR
1658  010204  000240                          NOP
1659  010206  052777  000010  170304          BIS     #10,@CS         ;INHIBIT BA INCREMENT
1660  010214  012737  176340  000620          MOV     #-800.,FCNT     ;SET FC=800(10)
1661  010222  012737  177160  000622          MOV     #-400.,WCNT     ;SET WC=400(10)
1662  010230  004737  011546                  JSR     PC,EXEC         ;GO READ RECORD 2
1663  010234  022777  001440  170254          CMP     #800.,@FC       ;SEE IF READ RECORD 2 OK
1664  010242  001424                          BEQ     FT21X           ;IF SO: BR
1665  010244  022777  001441  170244          CMP     #801.,@FC       ;BRANCH IF IN GREY AREA
1666  010252  001420                          BEQ     FT21X
1667  010254  022777  001440  170234  1$:     CMP     #800.,@FC       ;BRANCH IF ERASE HEAD REVERSED
1668  010262  101404                          BLOS    FT21B           ;IF SO: BR
1669  010264  012737  015736  000650          MOV     #MSG44,ERADD    ;SET ERASE HEAD INOPERATIVE ERROR CODE
1670  010272  000403                          BR      FT21C
1671  010274  012737  015766  000650  FT21B:  MOV     #MSG45,ERADD    ;SET ERASE HEAD REVERSED ERROR CODE
1672  010302  012737  010130  000674  FT21C:  MOV     #FT21SCP,SCOLP  ;SET SCOPE ADDRESS
1673  010310  004737  003774                  JSR     PC,FT3ER        ;GO PRINT ERROR
1674  010314  004737  012546          FT21X:  JSR     PC,ITER         ;GO SEE IF ITERATION
1675  010320  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULAR
1676
1677
```

```
                                                        ;BUFFERED COMMAND TEST*****

010324 012737 017603 000610  FT22:   MOV     #MSET22,EMADDR  ;SET TEST HEADER
010332 004737 011700                 JSR     PC,RWND         ;GO REWIND
010336 012700 000003                 MOV     #3,R0           ;SET NUMBER OF WRITES
010342 012737 001700 000716          MOV     #1700,UDES      ;SET TO MHZ NORMAL
010350 012737 020112 000616          MOV     #WDATA,BADDR    ;SET BA=WRITE BUFFER
010356 012737 177000 000620          MOV     #-1000,FCNT     ;SET FC=1000
010364 012737 177400 000622          MOV     #-400,WCNT      ;SET WC=400
010372 012737 000061 000710          MOV     #61,FUN         ;SET WRITE OP-CODE
010400 004737 011546         FT22A:  JSR     PC,EXEC         ;GO DO WRITE
010404 005300                        DEC     R0              ;SEE IF DONE ALL
010406 001374                        BNE     FT22A           ;IF NOT: BR
010410 000240                        NOP
010412 012777 000007 170070          MOV     #7,@C1          ;START REWIND
010420 032777 000200 170074  FT22B:  BIT     #200,@DS
010426 001774                        BEQ     FT22B
010430 004737 012620                 JSR     PC,INIT1        ;INITIALIZE
010434 012737 000010 000636          MOV     #10,RDYDX       ;SET LONG READY DELAY
010442 004737 011546                 JSR     PC,EXEC         ;ISSUE BUFFERED WRITE
010446 000240                        NOP
010450 012737 016141 000626          MOV     #MSG49,ERRP     ;SET ERROR CODE
010456 012737 102300 000660          MOV     #102300,STMSK   ;MARK DATA ERROR
010464 004737 011776                 JSR     PC,ERCHK        ;GO CHECK ERROR
010470 032777 000002 170024          BIT     #2,@DS          ;SEE IF BOT IS SET
010476 001410                        BEQ     FT22X           ;IF NOT: BR
010500 012737 016167 000650          MOV     #MSG50,ERADD    ;SET ERROR CODE
010506 012737 010324 000674          MOV     #FT22,SCOLP
010514 004737 003774                 JSR     PC,FTSER        ;GO DO ERROR
010520 004737 012546         FT22X:  JSR     PC,ITER         ;GO SEE IF ITERATION
010524 000137 003022                 JMP     TSCD2           ; RETURN TO SCHEDULAR
```

```
1711                                                    ;READ-IN PRESET TEST*****
1712
1713  010530  005737  000614          FT23:   TST     SLVN            ;SEE IF SLAVE SELECT=0
1714  010534  001103                  BNE     FT23X           ;IF NOT:BR
1715  010536  012737  017640  000610          MOV     #MSFT23,EMADDR  ;SET TEST HEADER
1716  010544  004737  012620                  JSR     PC,INIT1        ;GO INIT
1717  010550  012737  001700  000716          MOV     #1700,UDES      ;SET TO NRZ NORMAL
1718  010556  012737  020112  000616          MOV     #WDATA,BADDR    ;SET BA=WRITE BUFFER
1719  010564  012737  177400  000620          MOV     #-400,FCNT      ;SET FC=400
1720  010572  012737  177600  000622          MOV     #-200,WCNT      ;SET WC=200
1721  010600  012737  000061  000710          MOV     #61,FUN         ;SET WRITE OP-CODE
1722  010606  004737  011546                  JSR     PC,EXEC         ;GO DO WRITE
1723  010612  000240                  NOP
1724  010614  004737  012620                  JSR     PC,INIT1        ;INITIALIZE
1725  010620  012737  000021  000710          MOV     #21,FUN         ;SET READ-IN PRESET OP CODE
1726  010626  004737  011546                  JSR     PC,EXEC         ;GO DO COMMAND
1727  010632  005000                  CLR     R0
1728  010634  012703  000004                  MOV     #4,R3           ;SET MULT
1729  010640  032777  020000  167654  FT23A:  BIT     #20000,@DS      ;SEE IF PIP RESET
1730  010646  001404                  BEQ     FT23B           ;IF SO: BR
1731  010650  005300                  DEC     R0
1732  010652  001372                  BNE     FT23A           ;AWAIT PIP RESET
1733  010654  005303                  DEC     R3
1734  010656  001370                  BNE     FT23A           ;DELAY
1735  010660  032777  000002  167634  FT23B:  BIT     #2,@DS          ;SEE IF BOT
1736  010666  001010                  BNE     FT23C           ;IF SO: BR
1737  010670  012737  016225  000650          MOV     #MSG51,ERADD    ;SET ERROR CODE
1738  010676  012737  010530  000674          MOV     #FT23,SCOLP
1739  010704  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
1740  010710  012701  141000          FT23C:  MOV     #141000,R1      ;SET EXPT TC
1741  010714  013700  000542                  MOV     TC,R0           ;SET TC ADDRESS
1742  010720  020110                  CMP     R1,(R0)         ;SEE IF EXPT=RCVD
1743  010722  001410                  BEQ     FT23X           ;IF SO: BR
1744  010724  012737  016261  000650          MOV     #MSG52,ERADD    ;SET ERROR CODE
1745  010732  012737  010530  000674          MOV     #FT23,SCOLP     ;CLEAR SCOPE ADDRESS
1746  010740  004737  003504                  JSR     PC,FT2ER        ;GO DO ERROR
1747  010744  000137  003022          FT23X:  JMP     TSCD2           ;RETURN TO SCHEDULAR
1748
1749
```

```
1750
1751                                        ;AUTO-DENSITY SELECT TEST: WRITE-NRZ,REWD-PE
1752
1753  010750  012737  017727  000610  FT24:  MOV   #MSE24,EMADDR  ;SET ERROR MSG HEADER
1754  010756  004737  011700                 JSR   PC,RWND       ;REWIND SLAVE
1755  010762  012737  000001  000720         MOV   #1,PATRN      ;SELECT PATTERN
1756  010770  004737  012400                 JSR   PC,DSUP       ;GO DO DATA SETUP
1757  010774  012737  020112  000616         MOV   #WDATA,BADDR  ;SET BUS ADDRESS,
1758  011002  012737  177400  000620         MOV   #-400,FCNT    ;FRAME COUNT,
1759  011010  012737  177600  000622         MOV   #-200,WCNT    ;WORD COUNT,
1760  011016  012737  001700  000716         MOV   #1700,UDES    ;& SLAVE DESC = NRZ NORMAL
1761  011024  012737  000061  000710         MOV   #61,FUN       ;LOAD OP CODE WRITE FWD
1762  011032  004737  011546                 JSR   PC,EXEC       ;GO EXECUTE COMMAND
1763  011036  012737  016043  000626         MOV   #MSG46,ERRP   ;SET ERROR MSG ADDRESS
1764  011044  004737  011776                 JSR   PC,ERCHK      ;GO CHECK ERRORS
1765  011050  005737  000712                 TST   SERFL         ;BRANCH IF AN ERROR OCCURRED
1766  011054  001026                         BNE   FT24X
1767  011056  004737  011700                 JSR   PC,RWND       ;REWIND SLAVE
1768  011062  012737  021624  000616         MOV   #RDATA,BADDR  ;SET BUS ADDRESS FOR READ
1769  011070  012737  002300  000716         MOV   #2300,UDES    ;SET SLAVE DESC = PE,NORMAL
1770  011076  012737  000071  000710         MOV   #71,FUN       ;SET OP CODE = READ FWD
1771  011104  004737  011546                 JSR   PC,EXEC       ;GO READ RECORD
1772  011110  032777  000040  167404         BIT   #40,@DS       ;BRANCH ID PES BIT CLEARED
1773  011116  001405                         BEQ   FT24X
1774  011120  012737  016602  000650         MOV   #MSG63,ERADD
1775  011126  004737  003774                 JSR   PC,FT3ER      ;GO PROCESS ERROR
1776  011132  004737  012546          FT24X: JSR   PC,ITER
1777  011136  000137  003022                 JMP   TSCD2         ;RETURN TO SCHEDULER
1778
```

```
                                        ;AUTO-DENSITY SELECT TEST: WRITE-PE,READ-NRZ
011142  012737  020005  000610  FT25:   MOV     #MSFT25,EMADDR  ;SET ERROR MESSAGE ADDRESS
011150  004737  011700                  JSR     PC,RWND         ;REWIND SLAVE
011154  012737  000001  000720          MOV     #1,PATRN        ;SELECT PATTERN
011162  004737  012400                  JSR     PC,DSUP         ;GO DO DATA SETUP
011166  012737  000112  000616          MOV     #WDATA,BADDR    ;SET BUS PROCESS
011174  012737  177400  000620          MOV     #-400,FCNT      ;FRAME COUNT,
011202  012737  177600  000622          MOV     #-200,WCNT      ;WORD COUNT,
011210  012737  001700  000716          MOV     #2300,UDES      ;& SLAVE DESC = PE,NORMAL
011216  012737  000001  000710          MOV     #61,FUN         ;LOAD WRITE OP CODE
011224  004737  011546                  JSR     PC,EXEC         ;GO EXECUTE WRITE
011230  012737  016043  000626          MOV     #MSG46,ERRP     ;SET ERROR MSG HDR
011236  004737  011776                  JSR     PC,ERCHK        ;GO CHECK FOR ERRORS
011242  005737  000712                  TST     SERFL           ;BRANCH IF ERROR OCURRED
011246  001006                          BNE     FT25X
011250  004737  011700                  JSR     PC,RWND         ;REWIND SLAVE
011254  012737  021624  000616          MOV     #RDATA,BADDR    ;SET BUS ADDRESS FOR READ
011262  012737  001700  000716          MOV     #1700,UDES      ;SET SLAVE DESC = NRZ,NORMAL
011270  012737  000071  000710          MOV     #71,FUN         ;SET READ FWD OP CODE
011276  004737  011546                  JSR     PC,EXEC         ;GO EXECUTE
011302  032777  000040  167212          BIT     #40,@DS         ;BRANCH ID PES BIT GOT SET
011310  001005                          BNE     FT25X
011312  012737  016633  000650          MOV     #MSG64,ERADD
011320  004737  003774                  JSR     PC,FT3ER        ;GO PROCESS ERROR
011324  004737  012546          FT25X:  JSR     PC,ITER         ;ITERATION LOOP
011330  000137  003022                  JMP     TSCD2           ;RETURN TO SCHEDULER

                                        ;REWIND: OFF LINE TEST*****

011334  032777  010000  167206  FT26:   BIT     #10000,@SWR     ;SEE IF IN CONTINUOUS MODE
011342  001077                          BNE     FT26XX          ;IF SO: BR
011344  005737  001662                  TST     CHNFLG          ;BRANCH IF CHAIN MODE
011350  001074                          BNE     FT26XX
011352  012737  017673  000610          MOV     #MSFT26,EMADDR  ;SET TEST HEADER
011360  004737  011700                  JSR     PC,RWND         ;REWIND & SELECT SLAVE
011364  012737  000001  000720          MOV     #1,PATRN        ;SELECT PATTERN (ALL 1'S)
011372  004737  012400                  JSR     PC,DSUP         ;FILL WRITE BUFFER
011376  012737  000112  000616          MOV     #WDATA,BADDR    ;SET WRITE BUFFER BUS ADDRESS
011404  012737  177400  000620          MOV     #-400,FCNT      ;SET FRAME COUNT
011412  012737  177600  000622          MOV     #-200,WCNT      ;SET WORD COUNT
011420  012737  001700  000716          MOV     #1700,UDES      ;SET UNIT DESCRIPTION = NRZ
011426  012737  000061  000710          MOV     #61,FUN         ;SET WRITE COMMAND
011434  004737  011546                  JSR     PC,EXEC         ;GO WRITE A RECORD
011440  012777  000003  167042          MOV     #3,@CS1         ;ISSUE REWIND: OFF LINE COMMAND
011446  005037  000674                  CLR     SCOLP           ;CLEAR SCOPE LOOP
011452  012700  004000                  MOV     #4000,R0
011456  005300                  1$:     DEC     R0              ;DELAY
011460  001376                          BNE     1$
011462  032777  010000  167032          BIT     #10000,@DS      ;SEE IF MOL IS RESET
011470  001406                          BEQ     2$              ;IF SO: BR
011472  012737  016300  000650          MOV     #MSG53,ERADD    ;SET ERROR CODE
011500  004737  003774                  JSR     PC,FT3ER        ;GO DO ERROR
011504  000412                          BR      FT26X
011506  013700  000524          2$:     MOV     ER,R0           ;GET ADDRESS OF ERROR REG
011512  005001                          CLR     R1              ;RESULT SHOULD BE 0
```

```
 1835  011514  020110                          CMP     R1,(R0)         ;BRANCH IF ERROR REG = 0
 1836  011516  001405                          BEQ     FT26X
 1837  011520  012737  016667  000650          MOV     #MSG67,ERADD    ;SET ERROR MSG HEADER
 1838  011526  004737  003504                  JSR     PC,FT2ER        ;GO TYPE ERROR
 1839  011532  012704  016325          FT26X:  MOV     #MSG54,R4
 1840  011536  004737  013442                  JSR     PC,TTOUT        ;PRINT ON LINE REQUEST
 1841  011542  000137  003022          FT26XX: JMP     TSCD2           ;RETURN TO SCHEDULER
 1842
```

```
1843                                                ;COMMAND EXECUTE SUBROUTINE*****
1844
1845  011546  000240                        EXEC:   NOP
1846  011550  053777  000716  166764                BIS     UDES,@TC        ;LOAD TAPE CONT
1847  011556  013777  000622  166726                MOV     WCNT,@WC        ;LOAD WC
1848  011564  013777  000620  166724                MOV     FCNT,@FC        ;LOAD FC
1849  011572  013777  000616  166714                MOV     BADDR,@BA       ;LOAD BA
1850  011600  022737  000031  000710                CMP     #31,FUN         ;SEE IF SPACE FORWARD
1851  011606  001404                                BEQ     EXECA           ;IF SO: BR
1852  011610  022737  000033  000710                CMP     #33,FUN         ;SEE IF SPACE REVERSE
1853  011616  001003                                BNE     EXECB           ;IF NOT: BR
1854  011620  013777  000642  166670        EXECA:  MOV     SCNT,@FC        ;SET SPACE COUNT
1855  011626  000240                        EXECB:  NOP
1856  011630  013777  000710  166652                MOV     FUN,@C1         ;LOAD OP-CODE + GO
1857  011636  000240                                NOP
1858  011640  013703  000636                        MOV     RDYDX,R3        ;SET DELAY
1859  011644  005004                                CLR     R4
1860  011646  032777  000200  166646        EXECC:  BIT     #200,@DS        ;SEE IF DRY
1861  011654  001004                                BNE     EXECX           ;IF SO: BR
1862  011656  005304                                DEC     R4
1863  011660  001372                                BNE     EXECC
1864  011662  005303                                DEC     R3              ;DELAY FOR DRY
1865  011664  001370                                BNE     EXECC
1866  011666  013703  000640                EXECX:  MOV     OPDYX,R3
1867  011672  005303                        EXECXA: DEC     R3              ;DELAY
1868  011674  001376                                BNE     EXECXA
1869  011676  000207                        EXECXX: RTS     PC              ;RETURN TO CALLER
1870
```

```
1871                                                    ;REWIND SUBROUTINE*****
1872
1873  011700  000240                           RWND:   NOP
1874  011702  004737  012620                           JSR     PC,INIT1        ;INIT
1875  011706  012777  000007  166574                   MOV     #7,@C1          ;START REWIND
1876  011714  012700  040000                           MOV     #40000,R0
1877  011720  005300                           RWNDA:  DEC     R0
1878  011722  001376                                   BNE     RWNDA           ;DELAY
1879  011724  032777  020000  166570           RWND8:  BIT     #20000,@DS
1880  011732  001374                                   BNE     RWND8           ;WAIT PIP
1881  011734  032777  000002  166560                   BIT     #2,@DS          ;SEE IF BOT
1882  011742  001012                                   BNE     RWNDX           ;IF SO: BR
1883  011744  013704  000610                           MOV     ERRDDR,R4
1884  011750  004737  013442                           JSR     PC,TTOUT        ;PRINT HEADER
1885  011754  012704  014452                           MOV     #MSG2,R4
1886  011760  004737  013442                           JSR     PC,TTOUT        ;PRINT REWIND ERROR
1887  011764  000137  003022                           JMP     TSCD2           ;RETURN TO SECHEDULAR
1888  011770  004737  012620           RWNDX:  JSR     PC,INIT1        ;INIT
1889  011774  000207                           RTS     PC              ;RETURN TO CALLER
1890
```

```
                                                 ;ERROR CHECK SUBROUTINE*****

011776  005037  000712          ERCHK:  CLR     SERFL           ;CLEAR FLAG
012002  017737  166514  000664          MOV     @DS,DSAV        ;SAVE DRIVE STATUS REGISTER
012010  032777  040000  166504          BIT     #40000,@DS      ;SEE IF ERROR
012016  001001                          BNE     ERPT            ;IF SO: BR
012020  000207                          RTS     PC              ;RETURN
012022  017704  166476          ERPT:   MOV     @ER,R4          ;GET ERROR REGISTER
012026  032737  002000  000716          BIT     #2000,UDES      ;SEE IF PE
012034  001403                          BEQ     ERPTA1          ;IF SO: BR
012036  042737  000200  000660          BIC     #200,STMSK      ;RESET PEF MASK
012044  043704  000660          ERPTA1: BIC     STMSK,R4        ;MASK DONT CARE BITS
012050  001530                          BEQ     ERPTX           ;IF NO UNEXPECTED ERRORS: BR
012052  012737  000001  000712  ERPTG:  MOV     #1,SERFL        ;SET FLAG
012060  032777  020000  166462          BIT     #20000,@SWR     ;SEE IF SHOULD PRINT ERRORS
012066  001115                          BNE     ERPTD           ;IF NOT: BR
012070  005737  000606                  TST     HDRFL           ;SEE IF DONE HEADER
012074  001006                          BNE     ERPTA           ;IF SO: BR
012076  005237  000606                  INC     HDRFL           ;SET HEADER FLAG
012102  013704  000610                  MOV     EMADDR,R4
012106  004737  013442                  JSR     PC,TTOUT        ;PRINT HEADER
012112  013704  000626          ERPTA:  MOV     ERRP,R4         ;GET ERROR CODE
012116  001414                          BEQ     ERPTB           ;IF NONE: BR
012120  004737  013442                  JSR     PC,TTOUT        ;PRINT ERROR CODE
012124  012704  015136                  MOV     #MSG20,R4       ;SET NRZ TAG
012130  032777  002000  166404          BIT     #2000,@TC       ;SEE IF PE
012136  001402                          BEQ     ERPT1A          ;IF NOT: BR
012140  012704  015144                  MOV     #MSG21,R4       ;ELSE SET PE TAG
012144  004737  013442          ERPT1A: JSR     PC,TTOUT        ;PRINT TAG
012150  013704  000630          ERPTB:  MOV     ERRP1,R4        ;SEE IF CODE 2
012154  001402                          BEQ     ERPTB1          ;IF NOT: BR
012156  004737  013442                  JSR     PC,TTOUT        ;PRINT CODE 2
012162  032777  004000  166360  ERPTB1: BIT     #4000,@SWR      ;SEE IF ITERATION
012170  001010                          BNE     ERPTC           ;IF NOT: BR
012172  012704  016457                  MOV     #MSG56,R4
012176  004737  013442                  JSR     PC,TTOUT        ;PRINT ITER TAG
012202  013703  000662                  MOV     ITCNT,R3
012206  004737  013572                  JSR     PC,OCTP         ;PRINT ITERATION
012212  012704  014364          ERPTC:  MOV     #MSG1,R4
012216  004737  013442                  JSR     PC,TTOUT        ;PRINT REGISTER TAG
[illegible]  017703  [illegible]        MOV     @C1,R3
[illegible]  004737  [illegible]        JSR     PC,OCTPE        ;PRINT CS1
012232  017703  [illegible]             MOV     @WC,R3
012236  004737  [illegible]             JSR     PC,OCTPE        ;PRINT WC
012242  017703  [illegible]             MOV     @BA,R3
[illegible]  004737  013560             JSR     PC,OCTPE        ;PRINT BA
[illegible]  017703  166240             MOV     @FC,R3
[illegible]  004737  013560             JSR     PC,OCTPE        ;PRINT FC
[illegible]  017703  166232             MOV     @CS,R3
[illegible]  004737  013560             JSR     PC,OCTPE        ;PRINT CS2
012272  017703  [illegible]             MOV     @DS,R3
012276  004737  013560                  JSR     PC,OCTPE        ;PRINT DS
012302  017703  166216                  MOV     @ER,R3
012306  004737  013560                  JSR     PC,OCTPE        ;PRINT ER
012312  017703  166224                  MOV     @TC,R3
012316  004737  013560                  JSR     PC,OCTPE        ;PRINT TC
```

```
 1947  012322  005777  166222          ERPTD:  TST     @SWR            ;SEE IF HALT ON ERROR
 1948  012326  100001                          BPL     ERPTX           ;IF NOT: BR
 1949  012330  000000                          HALT
 1950  012332  004737  012620          ERPTX:  JSR     PC,INIT1        ;INIT
 1951  012336  000207                  ERPTXX: RTS     PC              ;RETURN
 1952
 1953
```

```
1954                                                ;TAPE MARK STATUS CHECK**********
1955
1956  012340  032737  000004  000664  TMCHK:  BIT     #4,DSAV         ;SEE IF TM SET
1957  012346  001401                          BEQ     TMCHK1          ;IF NOT: BR
1958  012350  000207                  TMCHK0: RTS     PC              ;ELSE RETURN
1959  012352  005737  000712          TMCHK1: TST     SERFL           ;SEE IF HARD ERROR
1960  012356  001374                          BNE     TMCHK0          ;IF SO: BR
1961  012360  012737  016467  000630          MOV     #MSG57,ERRP1    ;SET ERROR CODE 2
1962  012366  004737  012052                  JSR     PC,ERPTG        ;GO PRINT TM ERROR
1963  012372  005037  000630                  CLR     ERRP1           ;CLEAR CODE 2 FLAG
1964  012376  000207                          RTS     PC              ;RETURN
1965
1966                                                ;DATA SETUP ROUTINE**********
1967
1968  012400  000240                  DSUP:   NOP
1969  012402  012703  020112          DS0:    MOV     #WDATA,R3       ;R3 = ADDRS OF WRITE BUFFER
1970  012406  013701  000720                  MOV     PATRN,R1        ;R1 = PATTERN SELECTOR
1971  012412  006301                          ASL     R1              ;MAKE PATTERN SELECTOR EVEN
1972  012414  004771  000740                  JSR     PC,@DATBL(R1)   ;GO GENERATE PATTERN
1973  012420  012702  000640                  MOV     #640,R2         ;R2=BUFFER SIZE +2
1974  012424  012701  021624                  MOV     #RDATA,R1       ;R1=READ DATA START
1975  012430  005021                  1$:     CLR     (R1)+           ;CLEAR BUFFER
1976  012432  005302                          DEC     R2              ;SEE IF DONE ALL
1977  012434  001375                          BNE     1$              ;IF NOT: BR
1978  012436  000207                          RTS     PC              ;EXIT
1979
1980                                                ;ALL ONES**********
1981
1982  012440  012701  177777          DAT1:   MOV     #-1,R1          ;R1=DATA
1983  012444  012702  000640          DAT1A:  MOV     #640,R2         ;R2=WORD COUNT +2
1984  012450  010123                  1$:     MOV     R1,(R3)+        ;LOAD BUFFER
1985  012452  005302                          DEC     R2              ;SEE IF DONE
1986  012454  001375                          BNE     1$              ;IF NOT: BR
1987  012456  000207                          RTS     PC
1988
1989                                                ;ALL ZEROS**********
1990
1991  012460  005001                  DAT2:   CLR     R1              ;R1=DATA
1992  012462  000770                          BR      DAT1A           ;LOAD BUFFER
1993
1994                                                ;ONE/ZERO IN ALTERNATING CHARACTERS**********
1995
1996  012464  012701  125125          DAT3:   MOV     #125125,R1      ;R1=DATA
1997  012470  000765                          BR      DAT1A           ;LOAD BUFFER
1998
1999                                                ;ALL BITS 0-377**********
2000
2001  012472  005001                  DAT4:   CLR     R1              ;R1=STARTING DATA
2002  012474  012702  001500                  MOV     #1500,R2        ;R2=CHARACTER COUNT
2003  012500  110123                  1$:     MOVB    R1,(R3)+        ;LOAD BUFFER
2004  012502  105201                          INCB    R1              ;BUMP DATA
2005  012504  005302                          DEC     R2              ;SEE IF DONE
2006  012506  001374                          BNE     1$              ;IF NOT: BR
2007  012510  000207                          RTS     PC
2008
```

```
2009
2010
2011
2012                                        ;SCOPE LOOP ON ERROR SUBROUTINE**********
2013
2014  012512  000240                SCOPE:  NOP
2015  012514  032777  040000  166026        BIT     #40000,@SWR     ;SEE IF LOOP ON ERROR
2016  012522  001001                        BNE     1$              ;IF SO: BR
2017  012524  000207                        RTS     PC              ;ELSE EXIT
2018  012526  000240                1$:     NOP
2019  012530  005737  000674                TST     SCOLP           ;SEE IF SCOPE ADDRESS
2020  012534  001001                        BNE     2$              ;IF NOT: BR
2021  012536  000207                        RTS     PC              ;ELSE EXIT
2022  012540  022626                2$:     CMP     (SP)+,(SP)+     ;RESET STACK
2023  012542  000177  166126                JMP     @SCOLP          ;LOOP ON ERROR
2024
2025                                        ;TEST ITERATION SUBROUTINE**********
2026
2027  012546  000240                ITER:   NOP
2028  012550  032777  004000  165772        BIT     #4000,@SWR      ;SEE IF ITERATIONS
2029  012556  001403                        BEQ     2$              ;IF SO: BR
2030  012560  005037  000662        1$:     CLR     ITCNT           ;CLEAR ITERATION COUNTER
2031  012564  000207                        RTS     PC              ;ELSE EXIT
2032  012566  005737  000730        2$:     TST     PCNTR           ;DO SINGLE SUBTEST ITERATION
2033  012572  001772                        BEQ     1$              ;ON FIRST PASS
2034  012574  005237  000662                INC     ITCNT           ;BUMP COUNTER
2035  012600  023737  000662  000566        CMP     ITCNT,ITAMT     ;SEE IF DONE ALL
2036  012606  001764                        BEQ     1$              ;IF SO: BR
2037  012610  005726                        TST     (SP)+           ;RESET STACK
2038  012612  017700  166060                MOV     @ITRLP,R0       ;SET ITERATION POINTER
2039  012616  000110                        JMP     (R0)            ;GO ITERATE
2040
2041                                        ;INITIALIZE SUBROUTINE**********
2042
2043  012620  000240                INIT1:  NOP
2044  012622  012777  000040  165670        MOV     #40,@CS         ;INIT
2045  012630  013777  000612  165662  INIT2: MOV     DRVN,@CS        ;SELECT DRIVE
2046  012636  013777  000614  165676        MOV     SLVN,@TC        ;SELECT SLAVE
2047  012644  000207                        RTS     PC              ;RETURN
2048
```

```
                                                ;MAG TAPE INTERRUPT HANDLER**********
                                                ;
012646  000240                          MTINT:  NOP
012650  013716  000646                          MOV     RTRN,(SP)       ;RETURN TO (RTRN)
012654  000002                          RTI                             ;RETURN
                                                ;
                                                ;TTY INTERRUPT HANDLER**********
                                                ;
012656  017746  165672                  TTINT:  MOV     @TKB,-(SP)      ;GET CHARACTER
012662  042716  000200                          BIC     #200,(SP)       ;CLEAR PARITY BIT
012666  122716  000003                          CMPB    #3,(SP)         ;BRANCH IF NOT CONTROL C
012672  001010                                  BNE     1$
012674  005737  001662                          TST     CHNFLG          ;INHIBIT ↑C IF CHAIN MODE
012700  001005                                  BNE     1$
012702  005077  165640                          CLR     @PSW
012706  000005                                  RESET
012710  000137  000200                          JMP     @#200           ;RESTART PROGRAM
012714  122716  000001                  1$:     CMPB    #1,(SP)         ;BRANCH IF NOT ↑A
012720  001017                                  BNE     2$
012722  012737  000176  000550                  CMP     #SWREG,SWR      ;BRANCH IF HARDWARE SWR IS INVOKED
012730  001016                                  BNE     3$
012732  012737  177570  000550                  MOV     #177570,SWR     ;INVOKE HARDWARE SWR
012740  004737  014320                          JSR     PC,.SAVE        ;SAVE REGISTERS ON THE STACK
012744  012704  016743                          MOV     #MSG70,R4       ;TYPE 'HARDWARE SWR IN USE'
012750  004737  013442                          JSR     PC,TTOUT
012754  004737  014342                          JSR     PC,.RESTORE
012760  122716  000007                  2$:     CMPB    #7,(SP)         ;BRANCH IF NOT ↑G
012764  001005                                  BNE     4$
012766  012737  000176  000550          3$:     MOV     #SWREG,SWR      ;INVOKE SOFTWARE SWR
012774  004737  014222                          JSR     PC,GTSWR        ;GET SOFTWARE SWITCHES
013000  005726                          4$:     TST     (SP)+           ;POP CHARACTER OFF THE STACK
013002  000002                          RTI
                                                ;
                                                ;BUS ADDRESS TRAP HANDLER**********
                                                ;
013004  000240                          TRAP:   NOP
013006  032777  020000  165534                  BIT     #20000,@SWR     ;SEE IF SHOULD PRINT ERRORS
013014  001020                                  BNE     TRAP2           ;IF NOT: BR
013016  005737  000606                          TST     HDRFL           ;SEE IF DONE HEADER
013022  001006                                  BNE     TRAP1           ;IF SO: BR
013024  005237  000606                          INC     HDRFL           ;ELSE SET HEADER FLAG
013030  013704  000610                          MOV     EMADDR,R4
013034  004737  013442                          JSR     PC,TTOUT        ;PRINT HEADER
013040  012704  015171                  TRAP1:  MOV     #MSG24,R4
013044  004737  013442                          JSR     PC,TTOUT        ;PRINT ERROR
013050  010103                                  MOV     R1,R3           ;GET ADDRESS THAT CAUSED THE TRAP
013052  004737  013572                          JSR     PC,OCTP         ;PRINT ADDRESS OF TRAP
013056  005777  165466                  TRAP2:  TST     @SWR            ;SEE IF HALT ON ERROR
013062  100001                                  BPL     TRAPX           ;IF NOT: BR
013064  000000                                  HALT
013066  022626                          TRAPX:  CMP     (SP)+,(SP)+     ;RESET STACK
013070  012737  003250  000674                  MOV     #FT1A,SCOLP     ;SET SCOPE ADDRESS
013076  004737  012512                          JSR     PC,SCOPE        ;GO SEE IF SCOPE LOOP
013102  005737  000722                          TST     RHTF            ;SEE IF INITIAL ADDRESS TEST
013106  001402                                  BEQ     TRAPXX          ;IF NOT: BR
013110  000137  001766                          JMP     STOB            ;ELSE REDO ADDRESS REQUEST
```

```
 2105  013114  000137  003254          TRAPXX: JMP     FT1B            ;RETURN TO TEST 1
 2106
```

```
 2107                                   ;*********************************************************
 2108                                   ;TTY ENTRY SUBROUTINE:
 2109                                   ;
 2110                                   ;THIS SUBROUTINE IS USED BY THE TEST CONDITION
 2111                                   ;ENTRY ROUTINE TO READ THE RESPONSE ENTERED
 2112                                   ;AT THE TTY AND CHECK THEM FOR LEGALITY AND
 2113                                   ;LIMITS.  ALL RESPONSE MUST BE TYPED IN OCTAL
 2114                                   ;(0-7) AND MUST FALL WITHIN THE LIMITS SET BY
 2115                                   ;THE CALLING ROUTINE.
 2116                                   ;IF AN ENTRY IS ILLEGAL OR OUTSIDE THE LIMITS,
 2117                                   ;A QUESTION MARK IS TYPED (?) AND THE RESPONSE
 2118                                   ;MAY BE REENTERED.
 2119                                   ;ENTRIES MAY NOT EXCEED SIX (6) CHARACTERS AND
 2120                                   ;MAY BE TERMINATED AT LESS THAN SIX BY TYPING A
 2121                                   ;CARRIAGE RETURN
 2122                                   ;*********************************************************
 2123
 2124  013120  010146          TTR:    MOV     R1,-(SP)        ;SAVE CHAR COUNT ON STACK
 2125  013122  011601          10$:    MOV     (SP),R1         ;RESTORE CHAR COUNT (FOR ↑U)
 2126  013124  005037  000652          CLR     TEMP1           ;CLEAR FIRST CHARACTER FLAG
 2127  013130  005000                  CLR     R0
 2128  013132  004737  013400  1$:     JSR     PC,TTIN         ;GO READ CHARACTER
 2129  013136  122737  000003  000602  CMPB    #3,TIB          ;BRANCH IF NOT ↑C
 2130  013144  001003                  BNE     11$
 2131  013146  000105                  RESET                   ;RESET
 2132  013150  000137  000200          JMP     @#200           ;RESTART
 2133  013154  122737  000015  000602  11$:    CMPB    #15,TIB         ;SEE IF CR
 2134  013162  001004                  BNE     2$              ;IF NOT: BR
 2135  013164  005737  000652          TST     TEMP1           ;SEE IF FIRST CHARACTER
 2136  013170  001471                  BEQ     9$              ;IF SO: BR
 2137  013172  000457                  BR      6$              ;ELSE GO LOAD VALUE
 2138  013174  122737  000025  000602  2$:     CMPB    #25,TIB         ;BRANCH IF NOT CONTROL U
 2139  013202  001005                  BNE     21$
 2140  013204  012704  016663          MOV     #MSG65,R4       ;TYPE <CR><LF>
 2141  013210  004737  013442          JSR     PC,TTOUT
 2142  013214  000742                  BR      10$             ;RESTART
 2143  013216  122737  000177  000602  21$:    CMPB    #177,TIB        ;BRANCH IF NOT 'RUBOUT'
 2144  013224  001012                  BNE     3$
 2145  013226  000241                  CLC                     ;REMOVE LAST CHARACTER
 2146  013230  006000                  ROR     R0
 2147  013232  006200                  ASR     R0
 2148  013234  006200                  ASR     R0
 2149  013236  012704  016665          MOV     #MSG66,R4       ;TYPE '\'
 2150  013242  004737  013442          JSR     PC,TTOUT
 2151  013246  005201                  INC     R1              ;DECREMENT CHAR RECEIVED COUNT
 2152  013250  000730                  BR      1$              ;GET NEXT CHARACTER
 2153  013252  122737  000060  000602  3$:     CMPB    #60,TIB         ;SEE IF CHAR IS LESS THAN 0
 2154  013260  101402                  BLOS    4$              ;IF NOT: BR
 2155  013262  000137  013360          JMP     TIMER           ;ELSE GO TO ERROR
 2156  013266  122737  000070  000602  4$:     CMPB    #70,TIB         ;SEE IF CHAR IS GREATER THAN 7
 2157  013274  101002                  BHI     5$              ;IF NOT: BR
 2158  013276  000137  013360          JMP     TIMER           ;ELSE GO TO ERROR
 2159  013302  005237  000652          5$:     INC     TEMP1           ;SET FIRST CHARACTER FLAG
 2160  013306  006300                  ASL     R0
 2161  013310  006300                  ASL     R0              ;SHIFT 3 LEFT
 2162  013312  006300                  ASL     R0
```

```
2163  013314  042737  177770  000602          BIC     #177770,TIB     ;STRIP ASCII
2164  013322  053700  000602                  BIS     TIB,R0          ;LOAD CHARACTER
2165  013326  005301                          DEC     R1              ;SEE IF DONE
2166  013330  001300                          BNE     1$              ;IF NOT: BR
2167  013332  020002                  6$:     CMP     R0,R2           ;SEE IF EXCEEDED MAXIMUM LIMIT
2168  013334  101402                          BLOS    7$              ;IF NOT: BR
2169  013336  000137  013360                  JMP     TINER           ;ELSE GO TO ERROR
2170  013342  020300                  7$:     CMP     R3,R0           ;SEE IF BELOW MINIMUM LIMIT
2171  013344  101402                          BLOS    8$              ;IF NOT: BR
2172  013346  000137  013360                  JMP     TINER           ;ELSE GO TO ERROR
2173  013352  010015                  8$:     MOV     R0,(R5)         ;LOAD VALUE
2174  013354  005726                  9$:     TST     (SP)+           ;POP CHAR COUNT OFF STACK
2175  013356  000207                          RTS     PC              ;EXIT
2176
2177                                          ;TTY ENTRY ERROR SUBROUTINE**********
2178
2179  013360  012704  014677          TINER:  MOV     #MSG7,R4
2180  013364  004737  013442                  JSR     PC,TTOUT        ;PRINT?
2181  013370  005726                          TST     (SP)+           ;POP CHAR COUNT OFF STACK
2182  013372  162716  000020                  SUB     #20,(SP)        ;RESET SP TO START OF VALUE ROUTINE
2183  013376  000207                          RTS     PC              ;REDO VALUE ENTRY
2184
2185                                          ;TTY READ SUBROUTINE**********
2186
2187  013400  005277  165146          TTIN:   INC     @TKS
2188  013404  105777  165142          1$:     TSTB    @TKS
2189  013410  100375                          BPL     1$
2190  013412  117737  165136  000602          MOVB    @TKB,TIB
2191  013420  042737  000200  000602          BIC     #200,TIB        ;STRIP PARITY BIT
2192  013426  013737  000602  000600          MOV     TIB,TOB         ;MOVE CHAR TO OUTPUT BFR
2193  013434  004737  013542                  JSR     PC,TOG          ;AND TYPE IT
2194  013440  000207                          RTS     PC
2195
2196                                          ;TTY OUTPUT SUBROUTINE************
2197
2198  013442  112437  000600          TTOUT:  MOVB    (R4)+,TOB
2199  013446  122737  000043  000600          CMPB    #43,TOB
2200  013454  001440                          BEQ     TEX
2201  013456  122737  000045  000600          CMPB    #45,TOB
2202  013464  001403                          BEQ     1$
2203  013466  004737  013542                  JSR     PC,TOG
2204  013472  000763                          BR      TTOUT
2205  013474  112737  000015  000600  1$:     MOVB    #15,TOB
2206  013502  004737  013542                  JSR     PC,TOG
2207  013506  012703  000004                  MOV     #4,R3
2208  013512  005037  000600          2$:     CLR     TOB
2209  013516  004737  013542                  JSR     PC,TOG
2210  013522  005303                          DEC     R3
2211  013524  001372                          BNE     2$              ;DO FILLERS
2212  013526  112737  000012  000600          MOVB    #12,TOB
2213  013534  004737  013542                  JSR     PC,TOG
2214  013540  000740                          BR      TTOUT
2215  013542  105777  165010          TOG:    TSTB    @TPS
2216  013546  100375                          BPL     TOG
2217  013550  113777  000600  165002          MOVB    TOB,@TPB
2218  013556  000207                  TEX:    RTS     PC
```

```
2219
2220
```

```
                                                      ;OCTAL OUTPUT SUBROUTINE***********

013560  012737  000001  014010  OCTPE:   MOV     #1,OFL
[illegible] 010304                       MOV     R3,R4
013570  000410                           BR      OCTP0
013572  005037  014010          OCTP:    CLR     OFL              ;CLEAR FLAG FOR LEADING ZERO
013576  010304                  OCTPE1:  MOV     R3,R4            ;SEE IF NUMBER IS ZERO
013600  001004                           BNE     OCTP0            ;IF NOT ZERO: BR
013602  004737  013770                   JSR     PC,OCTPG1        ;ELSE PRINT ZERO
013606  000137  013732                   JMP     OCTP3            ;SPACE AND EXIT
013612  [illegible] 100000      OCTP0:   BIT     #100000,R4       ;SEE IF MSD = 1
013616  001406                           BEQ     OCTP1            ;IF NOT: BR
013620  012704  000001                   MOV     #1,R4
[illegible] 004737  013746               JSR     PC,OCTPG         ;PRINT 1
[illegible] 000137  013642               JMP     OCTP2
[illegible] [illegible]         OCTP1:   CLR     R4
[illegible] 004737  013746               JSR     PC,OCTPG         ;PRINT 0
[illegible] 010304              OCTP2:   MOV     R3,R4
[illegible] [illegible]                  ROR     R4
[illegible] [illegible]                  ROR     R4
[illegible] [illegible]                  ROR     R4               ;POSITION DIGIT
[illegible] [illegible]                  ROR     R4
[illegible] [illegible]                  SWAB    R4
[illegible] [illegible] 013746           JSR     PC,OCTPG         ;PRINT DIGIT 2
[illegible] [illegible]                  MOV     R3,R4
[illegible] [illegible]                  ROR     R4
[illegible] [illegible]                  SWAB    R4
013670  004737  013746                   JSR     PC,OCTPG         ;PRINT DIGIT 3
013674  010304                           MOV     R3,R4
013676  006104                           ROL     R4
013700  006104                           ROL     R4
013702  000304                           SWAB    R4
013704  004737  013746                   JSR     PC,OCTPG         ;PRINT DIGIT 4
013710  010304                           MOV     R3,R4
013712  006004                           ROR     R4
013714  006004                           ROR     R4
013716  006004                           ROR     R4
013720  004737  013746                   JSR     PC,OCTPG
013724  010304                           MOV     R3,R4
013726  004737  013746                   JSR     PC,OCTPG         ;PRINT DIGIT 5
013732  012737  000240  000600  OCTP3:   MOV     #240,TOB
013740  004737  013542                   JSR     PC,TOG           ;PRINT SPACE
013744  000207                           RTS     PC               ;EXIT
013746  042704  177770          OCTPG:   BIC     #177770,R4
013752  001004                           BNE     OCTPG0
013754  005737  014010                   TST     OFL
013760  001001                           BNE     OCTPG0
013762  000207                           RTS     PC

013764  005237  014010          OCTPG0:  INC     OFL
013770  052704  000260          OCTPG1:  BIS     #260,R4
013774  010437  000600                   MOV     R4,TOB
014000  004737  013542                   JSR     PC,TOG
014004  010304                           MOV     R3,R4
014006  000207                           RTS     PC
014010  000000                  OFL:     0                        ;FIRST CHAR FLAG
```

```
2277
2278                                                ;DATA CHARACTER OUTPUT SUBROUTINE***********
2279
2280  014012  005037  000600          DOUT:   CLR     T0B
2281  014016  012704  000010                  MOV     #10,R4          ;SET NUMBER TO PRINT
2282  014022  110337  000600                  MOVB    R3,T0B
2283  014026  105777  164524          1$:     TSTB    @TPS
2284  014032  100375                          BPL     1$
2285  014034  132737  000200  000600        BITB    #200,T0B
2286  014042  001404                          BEQ     2$
2287  014044  012777  000061  164506        MOV     #061,@TPB
2288  014052  000403                          BR      3$
2289  014054  012777  000060  164476  2$:     MOV     #060,@TPB
2290  014062  006137  000600          3$:     ROL     T0B
2291  014066  005304                          DEC     R4
2292  014070  001356                          BNE     1$
2293  014072  000207                          RTS     PC
2294
2295  014074  013703  000656          DOUTD:  MOV     TEMP3,R3
2296  014100  000303                          SWAB    R3
2297  014102  004737  014012                  JSR     PC,DOUT
2298  014106  013703  000656                  MOV     TEMP3,R3
2299  014112  004737  014012                  JSR     PC,DOUT
2300  014116  000207                          RTS     PC
2301
2302                                                ;TE16 SERIAL NUMBER PRINT SUBROUTINE**********
2303
2304  014120  010304          SNPT:   MOV     R3,R4
2305  014122  000304                  SWAB    R4
2306  014124  006004                  ROR     R4
2307  014126  006004                  ROR     R4
2308  014130  006004                  ROR     R4
2309  014132  006004                  ROR     R4                      ;GET FIRST DIGIT
2310  014134  004737  014176          JSR     PC,SNPG                 ;GO PRINT
2311  014140  010304                  MOV     R3,R4
2312  014142  000304                  SWAB    R4                      ;GET SECOND DIGIT
2313  014144  004737  014176          JSR     PC,SNPG                 ;GO PRINT
2314  014150  010304                  MOV     R3,R4
2315  014152  006004                  ROR     R4
2316  014154  006004                  ROR     R4
2317  014156  006004                  ROR     R4
2318  014160  006004                  ROR     R4                      ;GET THIRD DIGIT
2319  014162  004737  014176          JSR     PC,SNPG                 ;GO PRINT
2320  014166  010304                  MOV     R3,R4                   ;GET FOURTH DIGIT
2321  014170  004737  014176          JSR     PC,SNPG                 ;GO PRINT
2322  014174  000207                  RTS     PC                      ;EXIT
2323  014176  012737  000260  000600  SNPG:   MOV     #260,T0B        ;SET BASE = 0
2324  014204  042704  177760          BIC     #177760,R4              ;MASK DIGIT
2325  014210  050437  000600          BIS     R4,T0B                  ;SET ASCII
2326  014214  004737  013542          JSR     PC,T0G                  ;TYPE DIGIT
2327  014220  000207                  RTS     PC                      ;RETURN
2328
```

```
2329
2330                                        ;ROUTINE TO LOAD NEW VALUE INTO SWITCHES
2331  014222  022737  000176  000550  GTSWR:  CMP     #SWREG,SWR      ;BRANCH IF SOFTWARE SWR
2332  014230  001032                        BNE     1$              ;NOT INVOKED
2333  014232  004737  014320                JSR     PC,.SAVE        ;SAVE REGISTERS ON THE STACK
2334  014236  012704  020007                MOV     #SWREG,R4
2335  014242  004737  013112                JSR     PC,TTOUT
2336  014246  017703  164276                MOV     @SWR,R3
2337  014252  004737  013160                JSR     PC,OCTPE
2338  014256  012704  020046                MOV     #SNEW,R4
2339  014262  004737  013112                JSR     PC,TTOUT
2340  014266  013705  000000                MOV     SWR,R5          ;TTR ROUTINE RETURNS NEW VALUE TO (R5)
2341  014272  012701  000007                MOV     #7,R1           ;LIMIT RESPONSE TO 7 CHARS
2342  014276  012702  177777                MOV     #177777,R2      ;BETWEEN 0 AND 177777
2343  014302  012703  000000                MOV     #0,R3
2344  014306  004737  013120                JSR     PC,TTR
2345  014312  004737  014342                JSR     PC,.RESTORE     ;RESTORE REGISTERS
2346  014316  000207              1$:       RTS     PC
2347
2348                                        ;;ROUTINE TO SAVE REGISTERS ON THE STACK
2349  014320  010546              .SAVE:    MOV     %5,-(SP)        ;;R5 IS SAVED AT 12(SP)
2350  014322  010446                        MOV     %4,-(SP)        ;;R4 IS SAVED AT 10(SP)
2351  014324  010346                        MOV     %3,-(SP)        ;;R3 IS SAVED AT 6(SP)
2352  014326  010246                        MOV     %2,-(SP)        ;;R2 IS SAVED AT 4(SP)
2353  014330  010146                        MOV     %1,-(SP)        ;;R1 IS SAVED AT 2(SP)
2354  014332  010046                        MOV     %0,-(SP)        ;;R0 IS SAVED AT (SP)
2355  014334  016646  000014                MOV     14(SP),-(SP)    ;;PUSH RETURN PC ON THE STACK
2356  014340  000207                        RTS     PC              ;;RETURN TO CALLER
2357
2358                                        ;;ROUTINE TO RESTORE REGISTERS SAVED ON THE STACK
2359  014342  012666  000014      .RESTORE: MOV     (SP)+,14(SP)    ;;STORE RETURN PC ON STACK
2360  014346  012600                        MOV     (SP)+,%0
2361  014350  012601                        MOV     (SP)+,%1
2362  014352  012602                        MOV     (SP)+,%2
2363  014354  012603                        MOV     (SP)+,%3
2364  014356  012604                        MOV     (SP)+,%4
2365  014360  012605                        MOV     (SP)+,%5
2366  014362  000207                        RTS     PC              ;;RETURN
2367
2368
```

```
                                                        ;MESSAGE TABLE#####

        014364  041445  030523  020040  MSG1:   .ASCII  /%CS1    WC     BA     FC     CS2    /
        014372  020040  041527  020040
        014400  0[illegible]040  041040  020101
        014406  0[illegible]040  0[illegible]040  041506
        014414  020040  0[illegible]40  041440
        014422  031123  0[illegible]40  0[illegible]040
        014430  051504  0[illegible]40  0[illegible]040          .ASCII  /DS     ER     TC%#/
        014436  0[illegible]40  0[illegible]2  0[illegible]040
        014444  0[illegible]40  041[illegible]4  0[illegible]1445
        014452  0[illegible]045  0[illegible]5  047111  MSG2:   .ASCII  /%REWIND ERROR#/
        0144[illegible]0  0[illegible]04  051105  047522
        0144[illegible]6  0[illegible]2
        0144[illegible]0  0[illegible]5  04[illegible]524  031460  MSG3:   .ASCII  /%%TM03-TE16 BASIC FUNCTION TEST (DZTEC-A)%/
        014476  0[illegible]5  0[illegible]5  0[illegible]066
        014504  0[illegible]  0[illegible]3  0[illegible]103
        014512  0[illegible]  041516  0[illegible]524
        [illegible]  047117  052040  051505
        014[illegible]6  020124  042050  0[illegible]132
        0145[illegible]  0415[illegible]5  040455  0[illegible]451
        014542  054524  042520  0[illegible]040          .ASCII  /TYPE <CR> TO TERMINATE RESPONSE & ↑C TO RESTART%#/
        014550  051103  020076  047524
        0145[illegible]6  0[illegible]040  051105  044515
        014564  04[illegible]516  042524  051040
        014572  051505  047520  051516
        014600  0[illegible]105  020046  041536
        014606  0[illegible]040  020117  042522
        014614  052123  051101  022524
        014622     043
        014623     045  042522  044[illegible]07  MSG4:   .ASCII  /%REGISTER START = #/
        014630  052123  051105  051440
        014636  040524  052122  036440
        014644  021440
        014646  053045  041505  047524  MSG5:   .ASCII  /%VECTOR = #/
        014654  020122  020075     043
        014661     045  047105  020104  MSG6:   .ASCII  /%END OF PASS #/
        014666  043117  050040  051501
        014674  020123     043
        014677     040  020077     043  MSG7:   .ASCII  / ? #/
        014703     045  047520  044523  MSG9:   .ASCII  /%POSITION ERROR: #/
        014710  044524  047117  042440
        014716  051122  051117  020072
        014724     043
        014725     045  051104  053111  MSG10:  .ASCII  /%DRIVE NUMBER: #/
        014732  020105  0[illegible]516  041115
        014740  051105  0[illegible]072     043
        014745     045  046123  053101  MSG11:  .ASCII  /%SLAVE NUMBER: #/
        014752  020105  052516  041115
        014760  051105  020072     043
        014765     045  051127  052111  MSG12:  .ASCII  /%WRITE ERROR #/
        014772  020105  051105  047522
        015000  020122     043
        015003     045  042522  042101  MSG13:  .ASCII  /%READ REVERSE ERROR #/
        015010  051040  053105  051105
        015016  042523  042440  051122
```

```
015024  051117  021440
015030  051045  040505  020104  MSG14:  .ASCII  /%READ FORWARD ERROR #/
015036  047506  053522  051101
015044  020104  051105  047522
015052  020122     043
015055     045  051127  052111  MSG15:  .ASCII  /%WRITE TM ERROR #/
015062  020105  046524  042440
015070  051122  051117  021440
015076  051045  053105  051105  MSG16:  .ASCII  /%REVERSE ERROR #/
015104  042523  042440  051122
015112  051117  021440
015116  043045  051117  040527  MSG17:  .ASCII  /%FORWARD ERROR #/
015124  042122  042440  051122
015132  051117  021440
015136  047040  055122  021440  MSG20:  .ASCII  / NRZ #/
015144  050040  020105     043  MSG21:  .ASCII  / PE #/
015151     040  054105  052120  MSG22:  .ASCII  / EXPT: #/
015156  020072     043
015161     040  041522  042126  MSG23:  .ASCII  / RCVD: #/
015166  020072     043
015171     045  052502  020123  MSG24:  .ASCII  /%BUS TRAP: #/
015176  051124  050101  020072
015204     043
015205     045  041527  020072  MSG25:  .ASCII  /%WC: #/
015212     043
015213     045  040502  020072  MSG26:  .ASCII  /%BA: #/
015220     043
015221     045  041104  020072  MSG27:  .ASCII  /%DB: #/
015226     043
015227     045  047111  052111  MSG28:  .ASCII  /%INIT DID NOT CLEAR RH #/
015234  042040  042111  047040
015242  052117  041440  042514
015250  051101  051040  020110
015256     043
015257     045  041523  047040  MSG29:  .ASCII  /%SC NOT RESET BY INIT #/
015264  052117  051040  051505
015272  052105  041040  020131
015300  047111  052111  021440
015306  052045  042522  047040  MSG30:  .ASCII  /%TRE NOT RESET BY INIT #/
015314  052117  051040  051505
015322  052105  041040  020131
015330  047111  052111  021440
015336  041445  031123  047040  MSG31:  .ASCII  /%CS2 NOT RESET BY INIT #/
015344  052117  051040  051505
015352  052105  041040  020131
015360  047111  052111  021440
015366  042045  052114  047040  MSG32:  .ASCII  /%DLT NOT SET #/
015374  052117  051440  052105
015402  021440
015404  051445  020103  047516  MSG33:  .ASCII  /%SC NOT SET #/
015412  020124  042523  020124
015420     043
015421     045  051124  020105  MSG34:  .ASCII  /%TRE NOT SET #/
015426  047516  020124  042523
015434  020124     043
015437     045  051111  047040  MSG35:  .ASCII  /%IR NOT SET BY INIT #/
```

```
2481  015444  052117  051440  052105
2482  015452  041040  020131  047111
2483  015460  052111  021440
2484  015464  047445  020122  047516  MSG36:  .ASCII  /%OR NOT RESET BY INIT #/
2485  015472  020124  042522  042523
2486  015500  020124  054502  044440
2487  015506  044516  020124      043
2488  015513      045  051117  047040  MSG37:  .ASCII  /%OR NOT RESET BY 1 SILO ENTRY #/
2489  015521  052117  051040  051505
2490  015537  020105  041040  020131
2491  015545  020061  044523  047514
2492  015553  042440  052116  054522
2493  015561  021440
2494  015565  047445  020122  047516  MSG38:  .ASCII  /%OR NOT SET BY SILO FULL #/
2495  015573  020124  020123  020124
2496  015601  020122  051440  046111
2497  015607  020117  052506  046114
2498  015615  021440
2499  015621  041045  042101  051440  MSG39:  .ASCII  /%BAD SILO READ #/
2500  015627  046111  020117  042522
2501  015635  042101  021440
2502  015641  044445  020122  047516  MSG40:  .ASCII  /%IR NOT RESET BY SILO FULL#/
2503  015647  020124  042522  042523
2504  015655  020124  054502  051440
2505  015663  046111  020117  052506
2506  015671  046114      043
2507  015676      045  047516  020515  MSG41:  .ASCII  /%NON-EXIST DRIVE#/
2508  015704  041040  051511  020124
2509  015712  051104  053111  021505
2510  015720  047045  047117  042515  MSG42:  .ASCII  /%NON-EXIST SLAVE#/
2511  015726  044530  052123  051440
2512  015734  040514  020116      043
2513  015741      045  020123  044522  MSG43:  .ASCII  /%SERIAL NO: #/
2514  015746  046101  047040  035117
2515  015754  021440
2516  015756  042445  040522  042523  MSG44:  .ASCII  /%ERASE HEAD INOPERATIVE#/
2517  015764  044040  040505  020104
2518  015772  047111  050117  051105
2519  016000  052101  053111  021505
2520  016006  050045  051517  044523  MSG45:  .ASCII  /%POSSIBLE ERASE HEAD PROBLEM: /
2521  016014  046102  020105  051105
2522  016022  051501  020106  042510
2523  016030  042101  050040  047522
2524  016036  046102  046505  020072
2525  016044  044103  041505  020113          .ASCII  /CHECK POLARITY#/
2526  016052  047520  040514  044522
2527  016060  054524      043
2528  016063      045  042523  026524  MSG46:  .ASCII  /%SET-UP WRITE ERROR#/
2529  016071  050125  053440  044522
2530  016077  042524  042440  051122
2531  016104  051117      043
2532  016107      045  050123  041501  MSG47:  .ASCII  /%SPACE FORWARD ERROR#/
2533  016114  020105  047506  053522
2534  016122  051101  020104  051105
2535  016130  047522  021522
2536  016134  051445  040520  042503  MSG48:  .ASCII  /%SPACE REVERSE ERROR#/
```

```
                016128  051040  053105  051105
                016134  042523  042440  051122
                016138  051117     043
                016141     045  052503  043106  MSG49:  .ASCII  /%BUFFERED WRITE ERROR#/
                016146  051105  042105  053440
                016152  046523  042524  042440
                016156  051122  051117     043
                016162     045  047503  020124  MSG50:  .ASCII  /%BOT SET AFTER BUFFERED WRITE#/
                016166  042523  020124  043101
                016172  042523  020124  052502
                016176  043106  051105  042105
                016202  053440  046522  042524
                016206     043
                016207     045  047516  041040  MSG51:  .ASCII  /%NO BOT FROM READ IN PRESET#/
                016213  052117  043040  047522
                016217  020115  042522  042101
                016223  046440  020116  051120
                016227  051505  052105     043
                016233     045  041524  044440  MSG52:  .ASCII  /%TC INCORRECT #/
                016237  041516  051117  042522
                016243  052103  021440
                016247  046445  046117  043040  MSG53:  .ASCII  /%MOL FAILED TO CLEAR#/
                016253  044501  042514  020104
                016257  047524  041440  042514
                016263  051101     043
                016266     045  051045  051505  MSG54:  .ASCII  /%%RESET SLAVE TO ON LINE BEFORE CONTINUING/
                016272  052105  051440  040514
                016276  042523  052040  020117
                016302  047117  046040  047111
                016306  020105  042502  047506
                016312  042522  041440  047117
                016316  044524  052516  047111
                016322     107
                016323     045  042523  020124          .ASCII  /%SET SW12=1 IF YOU DOT WISH TO REPEAT THIS TEST#/
                016327  053523  031061  030475
                016333  044440  020106  047531
                016337  020125  047504  020124
                016343  044527  044123  052040
                016347  020117  042522  042520
                016353  052101  052040  044510
                016357  020123  042524  052123
                016363     043
                016364     040  052111  051105  MSG56:  .ASCII  / ITER: #/
                016371  020072     043
                016374     045  046524  047040  MSG57:  .ASCII  /%TM NOT SET#/
                016400  052117  051440  052105
                016404     043
                016405     045  044505  044124  MSG60:  .ASCII  /%EITHER TAPE NOT ERASED OR OPI PROBLEM#/
                016411  051105  052040  050101
                016415  020105  047516  020124
                016421  051105  051501  042105
                016425  047440  020122  050117
                016431  020111  051120  041117
                016435  042514  021515
                016441  051045  020110  047117  MSG62:  .ASCII  /%RH ONLY (NO=0,YES=1): #/
                016445  054514  024040  047516
```

```
016566  030075  054454  051505
016574  0[illegible]475  035051  021440
016602  042045  042111  047040   MSG63:  .ASCII  /%DID NOT AUTO SELECT NRZ#/
016610  052117  040440  052125
016616  020117  042523  042514
016624  052103  047040  055122
016632     043
016633     045  044504  020104   MSG64:  .ASCII  /%DID NOT AUTO SELECT PE#/
016640  047516  020124  052501
016646  047524  051440  046105
016654  041505  020124  042520
016662     043
016663     045     043           MSG65:  .ASCII  /%#/
016665     134     043           MSG66:  .ASCII  /\#/
016667     045  051105  020072   MSG67:  .ASCII  /%ER: #/
016674     043
016675     045  042522  047515   MSG69:  .ASCII  /%REMOVE TMDP FROM SLAVE TO BE TESTED%#/
016702  042526  052040  042115
016710  020120  051106  046517
016716  051440  040514  042526
016724  052040  020117  042502
016732  052040  051505  042524
016740  022504     043
016743     045  040510  042122   MSG70:  .ASCII  /%HARDWARE SWR IN USE%#/
016750  040527  042522  051440
016756  051127  044440  020116
016764  051525  022505     043
```

```
                                                  ;TEST HEADERS#####

 016771      045  043045  030524  MSFT1:   .ASCII  /%%FT1:RH ADDRESSING #/
 016776   051072  020110  042101
 017004   051104  051505  044523
 017012   043516  021440
 017016   022445  052106  035062  MSFT2:   .ASCII  /%%FT2:RH REGISTER BITS TEST #/
 017024   044122  051040  043505
 017032   051511  042524  020122
 017040   044502  051524  052040
 017046   051505  020124     043
 017053      045  043045  031524  MSFT3:   .ASCII  /%%FT3:RH INITIALIZE TEST #/
 017060   051072  020110  047111
 017066   052111  040511  044514
 017074   042532  052040  051505
 017102   020124     043
 017105      045  043045  032124  MSFT4:   .ASCII  /%%FT4:RH11 SILO TEST 1 #/
 017112   051072  030510  020061
 017120   044523  047514  052040
 017126   051505  020124  020061
 017134      043
 017135      045  043045  032524  MSFT5:   .ASCII  /%%FT5:RH11 SILO TEST 2 #/
 017142   051072  030510  020061
 017150   044523  047514  052040
 017156   051505  020124  020062
 017164      043
 017165      045  043045  033124  MSFT6:   .ASCII  /%%FT6:RH11 SILO TEST 3 #/
 017172   051072  030510  020061
 017200   044523  047514  052040
 017206   051505  020124  020063
 017214      043
 017215      045  043045  033524  MSFT7:   .ASCII  /%%FT7:RH11 SILO TEST 4 #/
 017222   051072  030510  020061
 017230   044523  047514  052040
 017236   051505  020124  020064
 017244      043
 017245      045  043045  030524  MSFT10:  .ASCII  /%%FT10:RH11 SILO TEST 5 #/
 017252   035060  044122  030461
 017260   051440  046111  020117
 017266   042524  052123  032440
 017274   021440
 017276   022445  052106  030461  MSFT11:  .ASCII  /%%FT11:NOP TEST#/
 017304   047072  050117  052040
 017312   051505  021524
 017316   022445  052106  031061  MSFT12:  .ASCII  /%%FT12:REWIND TEST#/
 017324   051072  053505  047111
 017332   020104  042524  052123
 017340      043
 017341      045  043045  030524  MSFT13:  .ASCII  /%%FT13:WRITE-READ TEST#/
 017346   035063  051127  052111
 017354   026505  042522  042101
 017362   052040  051505  021524
 017370   022445  052106  032061  MSFT14:  .ASCII  /%%FT14:SPACE TEST#/
 017376   051472  040520  042503
 017404   052040  051505  021524
 017412   022445  052106  032461  MSFT15:  .ASCII  /%%FT15:ERASE TEST#/
```

```
2677  017420  042472  040522  042523
2678  017426  052040  051505  021524
2679  017434  022445  052106  033061  MSFT16: .ASCII  /%%FT16:TAPE MARK WRITE-READ TEST#/
2680  017442  020072  050101  020105
2681  017450  020515  042524  053440
2682  017456  044522  042524  051055
2683  017464  040505  020104  042524
2684  017472  052123      043
2685  017475      045  043045  030524  MSFT17: .ASCII  /%%FT17:TM SPACE TEST #/
2686  017502  035067  046524  051440
2687  017510  040520  042503  052040
2688  017516  051505  020124      043
2689  017523      045  043045  031124  MSFT20: .ASCII  /%%FT20:WRITE CHECK TEST #/
2690  017530  035063  051127  052111
2691  017536  020103  044103  041505
2692  017544  020113  042524  052123
2693  017552  021440
2694  017554  022445  052106  030462  MSFT21: .ASCII  /%%FT21:ERASE HEAD TEST#/
2695  017562  042472  04[illegible]2  042523
2696  017570  044040  04[illegible]5  020104
2697  017576  042524  052123      043
2698  017603      045  043045  031124  MSFT22: .ASCII  /%%FT22:BUFFERED COMMAND TEST#/
2699  017610  035062  0[illegible]502  043106
2700  017616  051105  04[illegible]105  041440
2701  017624  046517  04[illegible]515  042116
2702  017632  052040  051505  021524
2703  017640  022445  052106  031462  MSFT23: .ASCII  /%%FT23:READ IN PRESET TEST#/
2704  017646  051072  04[illegible]505  020104
2705  017654  047111  05[illegible]040  042522
2706  017662  042523  020124  042524
2707  017670  052123      043
2708  017673      045  043045  031124  MSFT26: .ASCII  /%%FT26:REWIND-OFF LINE TEST#/
2709  017700  035066  042522  044527
2710  017706  042116  047455  043106
2711  017714  046040  047111  020105
2712  017722  042524  052123      043
2713  017727      045  043045  031124  MSFT24: .ASCII  /%%FT24:AUTO DENSITY SELECT: WRITE-NRZ,READ-PE#/
2714  017734  035064  052501  047524
2715  017742  042040  047105  044523
2716  017750  054524  051440  046105
2717  017756  041505  035124  053440
2718  017764  044522  042524  047055
2719  017772  055122  051054  040505
2720  020000  026504  042520      043
2721  020005      045  043045  031124  MSFT25: .ASCII  /%%FT25:AUTO DENSITY SELECT: WRITE-PE,READ-NRZ#/
2722  020012  035065  052501  047524
2723  020020  042040  047105  044523
2724  020026  054524  051440  046105
2725  020034  041505  035124  053440
2726  020042  044522  042524  050055
2727  020050  026105  042522  042101
2728  020056  047055  055122      043
2729  020063      045  043536      043  $CNTG:  .ASCII  /%TG#/
2730  020067      045  053523  036522  $MSWR:  .ASCII  /%SWR= #/
2731  020074  021440
2732  020076  020040  042516  036527  $MNEW:  .ASCII  /  NEW= #/
```

```
 2733  020104  021440
 2734  020106  022477     043          $QUEST: .ASCII  /?%#/
 2735
 2736
 2737                  020112                  .EVEN
 2738  020112  000000                  WDATA:  0
 2739                  021624                  .=.+1510
 2740  021624  000000                  RDATA:  0
 2741
 2742                  000001                  .END
```

```
AS      000526
BA      000514
BADDR   000616
BAE     000544
BTRP    000574
BTRP2   000576
CC      000530
CHNFLG  001662
COUNT   000734
CRCNT   000714
CS      000520
C1      000510
DATA0   000742
DATA1   000744
DATA2   000746
DATA3   000750
DATBL   000740
DAT1    012440
DAT1A   012444
DAT2    012460
DAT3    012464
DAT4    012472
DB      000532
DOUT    014012
DOUTD   014074
DRVN    000612
DRVTP   000564
DS      000522
DSAV    000664
DSUP    012400
DSO     012402
DT      000536
EMADDR  000610
ER      000524
ERADD   000650
ERCHK   011776
ERPT    012022
ERPTA   012112
ERPTA1  012044
ERPTB   012150
ERPTB1  012162
ERPTC   012212
ERPTD   012322
ERPTG   012052
ERPTX   012332
ERPTXX  012336
ERPT1A  012144
ERRP    000626
ERRP1   000630
EXEC    011546
EXECA   011620
EXECB   011626
EXECC   011646
EXECX   011666
EXECXA  011672
EXECXX  011676
EXFL    000700
FC      000516
FCNT    000620
FT1     003216
FT1A    003250
FT1B    003254
FT1X    003266
FT1XX   003312
FT10    004746
FT10A   005002
FT10ER  005066
FT10X   005044
FT10XX  005062
FT11    005102
FT12    005220
FT12A   005300
FT13    005332
FT13A   005404
FT13B   005446
FT13C   005526
FT13D   005574
FT13X   005640
FT14    005644
FT14A   005716
FT14A1  005662
FT14A2  006010
FT14A3  006032
FT14B   006062
FT14EC  006300
FT14ER  006306
FT14RF  006252
FT14RR  006210
FT14RD  006360
FT14R1  006402
FT14R2  006406
FT14R3  006460
FT14X   006470
FT14XX  006512
FT15    006516
FT15A   006565
FT15B   006602
FT15X   006712
FT16    006716
FT16A   006750
FT16B   006754
FT16X   007134
FT17    007144
FT17A   007164
FT17B   007170
FT17C   007330
FT17D   007376
FT17D1  007414
FT17E   007430
FT17F   007520
FT17X   007542
FT2     003316
FT2A    003330
FT2B    003370
FT2C    003430
FT2D    003444
FT2E    003474
FT2ER   003504
FT2ERA  003534
FT2ERB  003606
FT2ERC  003616
FT2X    003626
FT20    007546
FT20A   007564
FT20B   007710
FT20C   007742
FT20X   007762
FT21    007772
FT21A   010000
FT21B   010274
FT21C   010302
FT21SC  010130
FT21X   010314
FT22    010324
FT22A   010400
FT22B   010420
FT22X   010520
FT23    010530
FT23A   010640
FT23B   010660
FT23C   010710
FT23X   010744
FT24    010750
FT24X   011132
FT25    011142
FT25X   011324
FT26    011334
FT26X   011532
FT26XX  011542
FT3     003640
FT3A    003714
FT3B    003736
FT3ER   003774
FT3X    003764
FT4     004060
FT4ER   004142
FT4ERA  004152
FT4ERB  004162
FT4ERC  004170
FT4X    004132
FT5     004206
FT5A    004230
FT5B    004256
FT5C    004300
FT5D    004330
FT5E    004342
FT5X    004370
FT6     004400
FT6A    004422
FT6B    004430
FT6C    004466
FT6D    004510
FT6DE   004542
FT6DEA  004574
FT6DEB  004640
FT6DEX  004650
FT6E    004512
FT6X    004532
FT7     004652
FT7A    004704
FT7ER   004732
FT7X    004722
FUN     000710
GTSWR   014222
HDRFL   000606
HERE    003164
INIT1   012620
INIT2   012630
ITAMT   000566
ITCNT   000662
ITER    012546
ITRLP   000676
LTADD   000706
MR      000534
MSFT1   016771
MSFT10  017245
MSFT11  017276
MSFT12  017316
MSFT13  017341
MSFT14  017370
MSFT15  017412
MSFT16  017434
MSFT17  017475
MSFT2   017016
MSFT20  017523
MSFT21  017554
MSFT22  017603
MSFT23  017640
MSFT24  017727
MSFT25  020005
MSFT26  017673
MSFT3   017053
MSFT4   017105
MSFT5   017135
MSFT6   017165
MSFT7   017215
MSG1    014364
MSG10   014725
MSG11   014745
MSG12   014765
MSG13   015003
MSG14   015030
MSG15   015055
MSG16   015076
MSG17   015116
MSG2    014452
MSG20   015136
MSG21   015144
MSG22   015151
MSG23   015161
MSG24   015171
MSG25   015205
MSG26   015213
MSG27   015221
MSG28   015227
MSG29   015257
MSG3    014470
MSG30   015306
MSG31   015336
MSG32   015366
MSG33   015404
MSG34   015421
MSG35   015437
MSG36   015464
MSG37   015513
MSG38   015552
MSG39   015604
MSG4    014623
MSG40   015624
MSG41   015657
MSG42   015700
MSG43   015721
MSG44   015736
MSG45   015766
MSG46   016043
MSG47   016067
MSG48   016114
MSG49   016141
MSG5    014646
MSG50   016167
MSG51   016225
MSG52   016261
MSG53   016300
MSG54   016325
MSG56   016457
```

```
TM03/TE16 BASIC FUNCTION TEST   MACY11 27(1006)  31-MAR-77  17:23  PAGE 75
C    29-MAR-77 09:54            SYMBOL TABLE

MSG57   016467          OCTP3   013732          SCNT    000642          TEMP3   000656          TSCD3   003034
MSG6    014661          OFL     014010          SCOLP   000674          TEND    003110          TSRH    002750
MSG60   016503          OPOYX   000640          SCOPE   012512          TENDX   003206          TSTTBL  000752
MSG62   016552          PATRN   000720          SERFL   000712          TEX     013556          TTIN    013400
MSG63   016602          PCNTR   000730          SERNUM  000562          TIB     000602          TTINT   012656
MSG64   016633          PEXFL   000702          SLVN    000614          TIMER   013360          TTOUT   013442
MSG65   016663          PFLG    000644          SN      000540          TKB     000554          TTR     013120
MSG66   016665          PSW     000546          SNPG    014176          TKS     000552          UDES    000716
MSG67   016667          RCNT    000624          SNPT    014120          TLAST   001110          VECT    000570
MSG69   016675          ROATA   021624          START   001600          TMCHK   012340          WC      000512
MSG7    014677          ROSW    000736          STFLG   000704          TMCHKO  012350          WCNT    000622
MSG70   016743          ROYDX   000638          STMSK   000660          TMCHKT  012362          WDATA   020112
MSG9    014703          REGS    000572          STSCD   003054          TOB     000600          $CNTG   020063
MTINT   012646          RFD     000634          STO     002126          TOG     013542          $DONE   003116
NRZOF   000724          RHOF    000726          STOB    001766          TPB     000560          $ENDAD  003154
NXTDRV  002616          RHTF    000722          ST1     002150          TPS     000556          $MNEM   020076
NXTSLV  002670          RH17F   000604          ST1A    002170          TRAP    013004          $MSWR   020067
OCTP    013572          RRD     000632          ST2     002276          TRAPX   013066          $QUEST  020105
OCTPE   013560          RTRN    000646          ST3     002406          TRAPXX  013114          $SVPC = 000764
OCTPE1  013576          RWND    011700          ST4     002542          TRAP1   013040          .       = 021626
OCTPG   013746          RWNDA   011720          SWR     000550          TRAP2   013056          .RESTO  014342
OCTPGO  013764          RWNDB   011724          SWREG   000176          TSCD    002556          .SAVE   014320
OCTPG1  013770          RWNDX   011770          TC      000542          TSCDA   002746
OCTPO   013612          SAV1    000666          TEMPST  000732          TSCDO   002756
OCTP1   013634          SAV2    000670          TEMP1   000652          TSCD1   002764
OCTP2   013642          SAV3    000672          TEMP2   000654          TSCD2   003022

. ABS.  021626      000

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 DZTECA,DZTECA/SOL=C.DOC,C
 RUN-TIME:  3 5  .3 SECONDS
 RUN-TIME RATIO: 36/8=4.1
 CORE USED:  6K  (11 PAGES)
```