TM03/TE16

CONTROL LOGIC TEST PART 2

MD-11-DZTEB-A

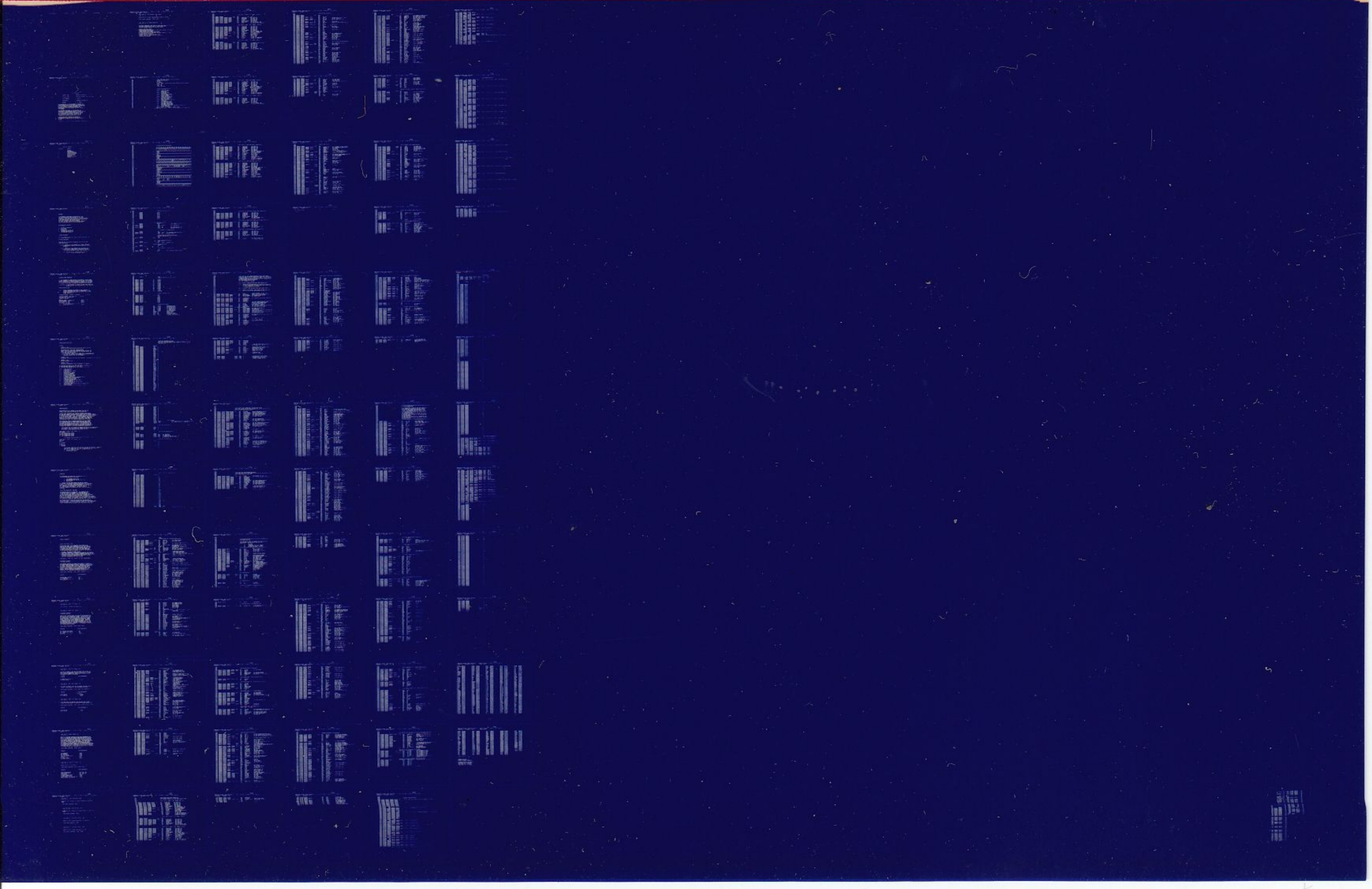
EP-DZTEB-A-DL-A

FICHE 1 OF 1

JUN 1977

digital

MADE IN USA



B01

EOF1DZTEFASEQ	00010000	770608	PDP10 411	HDR1DZTEBASEQ	00010000	770608

```
.REM  %
```

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DZTEB-A-D
PRODUCT NAME.	TM03/TE16 CONTROL LOGIC TEST PART II
DATE CREATED:	21 FEB 77
MAINTAINER:	DIAGNOSTIC ENGINEERING
AUTHOR:	J. G. ADAMS

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1. ABSTRACT

THIS PROGRAM IS DESIGNED TO SEQUENTIALLY TEST
THE DATA FORMATTING FUNCTIONALITY OF THE TM03
FORMATTER. EACH TEST WILL ATTEMPT TO ISOLATE FAILURES
TO THE MODULE LEVEL AND PROVIDE PRINTOUT INFORMATION
WHICH WILL IDENTIFY THE FAILING MODULE.
THE LEVEL OF FAULT ISOLATION IS POSSIBLE BECAUSE OF
TM03 THE STRUCTURE AND ITS MAINTAINENCE MODES.

2. REQUIREMENTS (HARDWARE)

A. ANY PDP-11 PROCESSOR
B. 8K OF CORE
C. CONSOLE TTY
D. TM03 MAGTAPE CONTROLLER
E. MASSBUS CONTROLLER (RH)
F. TE16 MAGTAPE TRANSPORT

3. LOADING PROCEDURE

USE STANDARD PROCEDURE FOR LOADING BINARY PAPER TAPE.

4. STARTING PROCEDURE

THERE ARE TWO (2) STARTING ADDRESSES THAT MAY BE USED:
200(8) AND 210(8).

A. 200(8): STARTING AT THIS ADDRESS WILL CAUSE A PROGRAM
IDENTIFICATION HEADER TO BE PRINTED BEFORE TESTING
IS BEGUN.

B. 210(8): STARTING AT THIS ADDRESS WILL NOT PRINT THE
IDENTIFICATION HEADER AND IS THEREFORE GENERALLY
TO BE USED FOR RESTARTS RATHER THAN INITIAL START

** NOTE: SEE ALSO SEC 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. THE SOFTWARE SWR IS INVOKED WITH A SWITCH SETTING OF 100000 (HALT ON ERROR) IF IN ACT11 CHAIN MODE. NO OPERATOR INTERVENTION IS REQUIRED.

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

4.2 SAMPLE START AT 200

NOTE: DEFAULT RESPONSES ARE SHOWN IN ANGLE BRACKETS <>, OPERATOR RESPONSES ARE SHOWN IN PARENTESES (), AND MEMORY LOCATIONS CONTAINING THE DEFAULT ARE SHOWN IN SQUARE BRACKETS [].

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

TM03-TE16 CONTROL LOGIC TEST PART II (DZTEB-A)
***ASSURE TAPE IS AT BOT***
TYPE ↑C TO RESTART
REGISTER START: <172440> (CR)                    [REGS:]
VECTOR ADDRESS: <224> (CR)                       [VECT:]
TM03 DRIVE: <0> (CR)                             [DRVN:]
TE16 SLAVE: <0> (CR)                             [SLVN:]
        IF THE SOFTWARE SWR IS INVOKED:
SWR = <000000> NEW = (CR)                        [SWREG:]
```

5. CONSOLE SWITCH SETTINGS

CONTROL:

1) CONTROL G (↑G);
   SELECTS THE SOFTWARE SWR AND ALLOWS NEW SWITCH SETTINGS.

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

2) CONTROL A (↑A);
   ALTERNATES THE SWITCH REGISTER FROM HARDWARE TO SOFTWARE & VICE VERSA.

3) CONTROL C (↑C);
   RESTART PROGRAM AT 200

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

ALL SWITCHES ARE USED (0-15) AND THE NORMAL, OR DEFAULT, RUN
IS DONE WITH ALL SWITCHES SET TO ZERO (0).
ALL SWITCHES ARE DYNAMIC AND MAY BE CHANGED AT ANY TIME.

SW15: 1=HALT ON ERROR
       0=CONTINUE
SW14: 1=LOOP ON ERROR (SCOPE)
       0=CONTINUE
SW13: 1=DO NOT PRINT ERRORS
       0=PRINT ALL ERRORS
SW12: 1=DO CONTINUOUS CYCLE
       0=HALT AT END OF PASS
SW11: 1=INHIBIT ITERATIONS
       0=ITERATE EACH TEST ITS ASSIGNED AMOUNT
SW10: 1=HALT AT END OF CURRENT TEST
       0=CONTINUE TO NEXT TEST
SW8:   1=INHIBIT WRAP AROUND DATA CHECK
       0=DO DATA CHECKS
SW7:   1=INHIBIT WRAP AROUND STATUS CHECK
       0=DO STATUS CHECK
SW6:   1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
       0=AUTO PATTERN
SW5-0: SELECT INDIVIDUAL TEST ** 00=DO ALL TESTS

6. ERROR PRINTOUTS

ERROR PRINTOUTS WILL APPEAR IN TWO FORMS, ONE FOR THE CONTROL LOGIC TESTS AND ANOTHER FOR THE DATA TESTS.

CONTROL LOGIC PRINTOUTS WILL CONTAIN A HEADER WHICH CALLS OUT THE TEST NUMBER, FUNCTION BEING TESTED, AND THE SUSPECT MODULE OR MODULES ON THE FIRST LINE. THE SECOND LINE WILL CONTAIN INFORMATION AS TO THE ACTUAL ERROR. BOTH THE EXPECTED RESULT AND THE ACTUAL RESULT OF THE TEST WILL BE GIVEN. LINE THREE WILL SHOW THE CONTENTS OF THE MAJOR REGISTERS AT THE TIME OF THE ERROR AND LINE FOUR WILL PRINT THE ITERATION NUMBER WHEN APPLICABLE.

DATA TESTS WILL PRINT A HEADER CONTAINING THE TEST NUMBER, AND A DESCRIPTION OF THE WRAP AROUND FUNCTION UNDER TEST. FOLLOWING THE HEADER WILL BE A LIST OF THE MAJOR REGISTERS WITH THE EXPECTED AND ACTUAL VALUES. ANY BAD DATA WILL BE PRINTED (PER CHARACTER) FOLLOWING THE REGISTER INFORMATION OR FOLLOWING THE HEADER IF NO STATUS ERRORS WERE ENCOUNTERED.

5. THE FOLOWING ARE TWO EXAMPLES OF ERRORS DETECTED BY THE WRAP AROUND DATA TESTS. NOTE THAT EACH WRAP AROUND TEST MAY BE ACCOMPANIED BY EITHER A STATUS ERROR OF A DATA ERROR OR BOTH.

```
LOGIC TEST 1: WRAP 3, NRZ, NORMAL, ODD
BAD STATUS
CS1 EXPT 004270 RCVD 144270
CS2 EXPT 000100 RCVD 000100
DS  EXPT 010600 RCVD 150600
ER  EXPT 000000 RCVD 000100
```

THIS MESSAGE INDICATES BAD STATUS OF VPE (BIT 6 OF ER)

```
LOGIC TEST 3: WRAP 2, NRZ, NORMAL, ODD
BAD DATA
CN:0
G: 11111111
B: 11111011
CN:10
G: 00000000
B: 00001000
```

THIS MESSAGE SHOWS THAT DATA RECEIVED WAS NOT AS EXPECTED. CHARACTER ZERO (CN: 0) SHOWS THAT BIT TWO (2) WAS DROPPED, WHILE CHARACTER TEN (CN: 10) SHOWS BIT THREE (3) HAS BEEN PICKED UP
G: = EXPECTED DATA (GOOD)
B: = ACTUAL DATA (BAD)

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
3. PRESS START

ALL CONSOLE SWITCHES ARE DYNAMIC AND MAY BE CHANGED
AT ANY TIME. THE NORMAL OPERATING SEQUENCE IS ALL SWITCHES
DOWN (0). THE TEST WILL TAKE APPROXIMATELY 3 MINUTES TO
RUN; HOWEVER, IF ITERATIONS ARE INHIBITED (SW11=1) THE TEST
WILL RUN IN ABOUT 30 SECONDS. THE END OF PASS IS
NOTED BY A PRINTOUT STATING END OF PASS, AND THE NUMBER OF
THAT PASS.

SINGLE TEST SELECTION: (SW0-SW5)

WHEN SW0-SW5 ARE SET TO ZERO (00), THE SCHEDULAR WILL
EXECUTE ALL TESTS IN SEQUENCE. IF SW0-SW5 ARE SET
TO SOME SPECIFIC TEST NUMBER THEN THAT PARTICULAR TEST
ONLY WILL BE EXECUTED UNTIL THE TEST SELECT NUMBER IS CHANGED.
WHEN YOU WISH TO SELECT A PARTICULAR TEST, SET SW10 TO
A ONE (1) IN ORDER TO STOP AT THE END OF THE CURRENT TEST BEFORE
SELECTING A DIFFERENT TEST NUMBER. YOU MAY SELECT THAT NUMBER IN
ANY DIRECTION (HIGHER OR LOWER) BECAUSE EACH TEST IS SELF CONTAINED.

WRAP AROUND DATA PATTERNS MAY BE SELECTED VIA SW6 WHEN IN
SINGLE TEST MODE. A TELETYPE REQUEST IS MADE FOR THE DESIRED DATA
PATTERN WHENEVER SWITCH TEN (SW10) AND SWITCH SIX (SW6) ARE SET TO
A ONE (1) WHILE ONE OF THE WRAP TESTS IS SELECTED IN SW0-SW5.

8. SUBTEST SUMMARIES

NOTE: FOR TESTS 1-15

FOR THE MOST PART, THIS DIAGNOSTIC TESTS PARTICULAR AREAS OF THE TM03 LOGIC INDEPENDENT OF THE TE16. HOWEVER THERE ARE A FEW SIGNALS WHICH ARE REQUIRED FROM THE TE16 TO COMPLETE THE TESTS, AND AT LEAST ONE CASE WHERE TE16 FAILURES INTERFERE WITH THE TESTS. THE KNOWN CASES ARE LISTED HERE AND SHOULD BE CHECKED AS PART OF THE DEBUGGING.

1. MOL(SB)L: REQUIRED TO ENABLE CLOCK
2. CLOCK(SB)L: REQUIRED TO GENERATE ACCELERATION AND SHUTDOWN.
3. WRITE CLOCK(SB)L: USED IN WAMD TO GENERATE DATA AND REC(SB)L
4. RSDO(SB)L: SHOULD NOT OCCUR DURING WRAP AROUND TESTS, BUT WILL INTERFERE WITH THEIR OPERATION IF CAUSED BY A FAILURE SUCH AS A GROUNDED OUTPUT FROM THE GOS6.

LOGIC TEST 1: WRP3, NRZ, NORMAL, ODD (BIT FIDDLER READ)

PROGRAMMED SEQUENCE:

TAPE CONTROL REGISTER IS LOADED WITH DENSITY 3, FORMAT 14, ODD PARITY WRP3 IS LOADED IN MAINT. REGISTER. READ FUNCTION IS LOADED. EXECUTING WRAP3 CONSISTS LOADING DATA CHARACTERS INTO MAINT. REGISTER DATA FIELD, WHERE THERE ARE MULTI-PLEXERS TO BIT FIDDLER. MM CLK IS TOGGLED TO CREATE RDS. THE BIT FIDDLER TRANSMIT DATA ACCESS MASSBUS DATA LINES. WHEN ALL THE DATA HAS BEEN TRANSMITTED AN EOR CLK IS TRANSMITTED TO M REGISTER WHICH BRINGS OPERATION TO A CLOSE.

LIKELY FAULT LOCATIONS: M8906, M8905, MASSBUS P-LINES

CIRCUITS	PRINT REFERENCES
MASSBUS CHAR. ASSEMBLE	BF5
CLK. GENERATOR	BF2
MAINT. REGISTER DATA FIELD	MR2, MR3
RDS GENERATION	MR5

LOGIC TEST 2: WRAP3, PE, NORMAL, ODD

JUST LIKE TEST 1 EXCEPT FOR DENSITY BITS.

LOGIC TEST 3: WRAP2, NRZ, NORMAL, ODD

PROGRAMMED SEQUENCE:

WRAP2 IS BIT FIDDLER WRITE. MM CLOCK IS MULTIPLEXED INTO WRT CLK SO THAT IT FORMS WRT STROBE. THE OUTPUT OF THE BIT FIDDLER IS CLOCKED INTO THE DATA FIELD OF THE MAINT-ENANCE REGISTER. SET UP CONSISTS OF MOVING NRZ, NORMAL FORMAT, ODD PARITY TO UNIT DESCRIPTION MAINT. REGISTER IS LOADED WITH WAM2 WRITE COMMAND IS ISSUED. AFTER THE ACCELERATION DELAY, MM CLOCK ARE GENERATED UNTIL ALL THE DATA HAS BEEN CLOCKED. SE JENCE IS COMPLETED BY LOADING MANTENANCE REGISTER WITH EOR CLR. THE SEQUENCE IS REPEATED WITH VARYING DATA PATTERNS.

LIKELY FAULT LOCATIONS: M8906, M8905, M8903

CIRCUITS	PRINT REFERENCES
BIT FIDDLER CHAR UNPACK	BF4
BIT FIDDLER DATA REQUEST	BF2
WRT STRB.	TCCM4
MAINT. REG. DATA FIELD	MR2, MR3

LOGIC TEST 4: WRP2, PE, NORMAL, ODD

THE TEST IS EXACTLY LIKE TEST 43 EXCEPT THAT PE WRT CLK ENBL L MUST BE ASSERTED BY M8902 TO ENABLE WR TO STROBE. THIS DOES NOT HAPPEN UNTIL THE PE WRITE CONTROL CIRCUIT HAS CLOCKED THROUGH THE PREAMBLE.

CIRCUITS	PRINT REFERENCES
(IN ADDITION TO TEST 44)	
PE WRITE CONTROL	TCPE3

LOGIC TEST 5: WRP1, NRZ, NORMAL, ODD

THIS TEST IS EXACTLY LIKE TEST 43 EXCEPT THE WRITE BUFFER (TCCM2) IS MULTIPLEXED TO THE MAINTENANCE REGISTER.

LIKELY FAULT LOCATIONS: M8903, M8904 (CRC GENERATOR)

CIRCUITS	PRINT REFERENCES
WRITE BUFFER	TCCM2
CRC GENERATOR	CNRZ2

LOGIC TEST 6: WRAP1, PE, NORMAL, ODD

IN PE MODE BOTH THE PREAMBLE AND POSAMBLE ARE CLOCKED THROUGH THE WRITE BUFFER IN ADDITION TO PHASE ENCODED DATA.

LIKELY FAULT LOCATIONS: M8902 (WRITE CONTROL STATES), M8903

CIRCUITS	PRINT REFERENCE
WRITE BUFFER	TCCM2
WRITE CONTROL	TCPE3

LOGIC TEST 7: WRAP0, NORMAL, ODD

WRAP 0 IS THE MOST COMPLETE OF THE TM03 WRAPAROUND DATA PATH. IT CONSISTS OF A WRITE OPERATION IN WHICH THE OUTPUT OF THE WRITE DATA BUFFER IS MULTIPLEXED TO THE READ DATA INPUTS, CHECKED AND LOADED INTO THE MAINTENANCE REGISTER FOR RETRIEVAL BY THE PROCESSOR. THE WHOLE OPERATION USES THE TYPE SYSTEM CLOCKS AND HAPPENS AT THE PROPER DATA RATES. MM CLK SERVES AS A FLAG ANNOUNCING WHEN A NEW CHARACTER HAS BEEN LOADED INTO THE MAINTENANCE REGISTER. IN PE MODE EVERY OTHER CHARACTER IS READ TO ALLOW SUFFICIENT PROCESSOR LOOP TIME. IN NRZ WRAP 0 IS EXPECTED TO PRODUCE LRC ERRORS BECAUSE THE TM03 DOES NOT WRITE THE LRC CHARACTER.

LIKELY FAULT LOCATIONS: M8904, M8903

CIRCUITS	PRINT REFERENCES
CRC GENERATOR	CNRZ2
CRC CHECKOUT	CNRZ3
CRC, CRC STROBE	TCCM4
READ LINE MULTIPLEXERS	TCCM6
MM CLK	MRS
CRC READ TIMING	CNRZ4
SHUTDOWN CIRCUITRY	TCCM5

LOGIC TEST 10: WRP0, PE, NORMAL, ODD

REPEAT OF TEST 7 IN PE MODE.

LIKELY FAULT LOCATIONS: M8901, M8902, M8903

CIRCUITS	PRINT REFERENCES
DATA DISCRIMINATOR	DS2, DS4, DS6
PHASE LOCKED CLOCK	DS3, DS5, DS7
SKEW BUFFER	DS3, DS5, DS7
PE WRITE MAJOR STATES	TCPE3
PE READ MAJOR STATES	TCPE5
WRAP 0 CIRCUIT TO BLOCK RLT RDS	TCPE3
DESKEW BUFFER READ COUNTER	TCPE4

LOGIC TEST 11: CORE DUMP WRITE, WAM2

REPEAT OF TEST 3 EXCEPT BIT FIDDLER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 12: CORE DUMP READ, WAM3

REPEAT OF TEST 1 EXCEPT BIT FIDDLER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 13: EVEN PARITY WRITE - WAM1

REPEAT OF TEST 5 EXCEPT EVEN PARITY IS SPECIFIED.

LIKELY FAULT LOCATION: M8903

LOGIC TEST 14: EVEN PARITY READ: WAM0,

REPEAT OF TEST 7 EXCEPT EVEN PARITY IS USED.

LIKELY FAULT LOCATIONS: M8903, M8904

LOGIC TEST 15: READ REVERSE, WAM3 (M8906)

REPEAT OF TEST 2 EXCEPT READ REVERSE COMMAND IS ISSUED.

LIKELY FAULT LOCATIONS: M8908, M8909

LOGIC TEST 16: CRC ERROR CORRECTION

THIS TEST SIMULATES A BAD TRACK ON TAPE RESULTING IN A CRC ERROR &
SUBSEQUENT CORRECTION OF DATA IN THE FAILING TRACK.
THE TEST PROCEDS THROUGH THE FOLLOWING STEPS:

A:WRITE DATA USING WRAP 0
B:REWRITE DATA WITH DATA BITS IN ONE TRACK ALTERED USING WRAP 4
C:READ REVERSE USING WRAP3
D:REWRITE DATA AS IN STEP8 USING WRAP4
AT THIS POINT THE DATA READ BACK HAS BEEN CORRECTED TO MATCH
THE DATA WRITTEN IN STEP A
E:REPEAT STEPS A-D ABOVE FOR EACH TRACK
F:REPEAT STEPS A-E ABOVE FOR ALL 1'S,ALL 0'S &
12S12S DATA PATTERNS.

```
                %
523             %                       .LIST   BIN,LOC,SEQ
```

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


                        ;CONSOLE SWITCHES*********
                        ;
                        ;SW15:  1=HALT ON ERROR
                        ;       0=CONTINUE
                        ;SW14:  1=LOOP ON ERROR
                        ;       0=CONTINUE
                        ;SW13:  1=DO NOT PRINT ERRORS
                        ;       0=PRINT ERRORS
                        ;SW12:  1=HALT AT END OF PASS
                        ;       0=CONTINOUS CYCLE
                        ;SW11:  1=INHIBIT ITERATIONS
                        ;       0=DO ITERATIONS
                        ;SW10:  1=HALT AT END OF EACH TEST
                        ;       0=CONTINUE
                        ;SW8:   1=NO WRAP DATA CHECK
                        ;       0=DO WRAP DATA CHECK
                        ;SW7:   1=NO WRAP STATUS CHECK
                        ;       0=DO WRAP STATUS CHECK
                        ;SW6:   1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
                        ;       0=AUTO PATTERNS
                        ;SW0-5: SELECT TEST NUMBER :: 00=ALL TESTS
                    ;IF HARDWARE SWR (15::00) = 177777 OR NOT AVAILABLE USE SOFTWARE SWR
```

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

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

```
                                        ;REGISTER EQUIVS**********
                                        R0=%0
                                        R1=%1
                                        R2=%2
                                        R3=%3
                                        R4=%4
                                        R5=%5
                                        SP=%6
                                        PC=%7



                                ;ACT11 HOOK ***********
                                        $SVPC=.                 ;SAVE CURRENT LOCATION CTR
                                        .=46
000046  002310                          .WORD   $ENDAD          ;SET LOCATION 46
                                        .=52
000052  000000                          .WORD   0               ;SET LOCATION 52 = 0
                                        .=$SVPC                 ;RESTORE LOCATION CTR

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

                                        .=60
000060  012250                          .WORD   TTINT   ;TTY INTERRUPT HANDLER ADDRESS
000062  000340                          .WORD   340     ;PRIORITY LEVEL 7

                                        ;SOFTWARE SWITCH REGISTER***********
                                        ;USED IF HARDWARE SWR = 177777, OR NOT AVAIL.
                                        .=176
000176  000000                  SWREG:  .WORD   0


                                        ;START ADDRESS***********
                                        .=200
000200  000137  001200                  JMP     START   ;PROGRAM START

                                ;RESTART ADDRESS**********
                                        .=210
000210  000137  001670                  JMP     ST2

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

                                        .=224
000224  012240                          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

                                                        ;ILLEGAL FUNCTION CODES

000544  005405                         ILFT:   5405
000546  007415                                 7415
000550  016423                                 16423
000552  020437                                 20437
000554  022443                                 22443
000556  025447                                 25447
000560  031455                                 31455
000562  033465                                 33465
000564  036473                                 36473

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

000566  177776                 PSW:    177776          ;PROCESSOR STATUS
000570  177570                 SWR:    177570          ;SWITCH REGISTER
000572  177560                 TKS:    177560          ;TTY READER STATUS
000574  177562                 TKB:    177562          ;TTY READ BUFFER
000576  177564                 TPS:    177564          ;TTY PUNCH STATUS
000600  177566                 TPB:    177566          ;TTY PUNCH BUFFER
000602  177777                 SERNUM: 177777          ;SERIAL NUMBER
000604  000011                 DRVTP:  011             ;DRIVE TYPE
000606  000020                 ITAMT:  20              ;ITERATION AMOUNT
000610  000224                 VECT:   224             ;INTERRUPT VECTOR(RH)
000612  172440                 REGS:   172440          ;STARTING REGISTER ADDRESS
```

```
                                        ;FLAGS AND COUNTERS**********
                                        ;NOTE ALL FLAGS AND COUNTERS ARE CLEARED ON STARTUP. PUT ANY
                                        ;ADDITIONAL FLAGS BETWEEN STFLGS (START OF FLAGS) AND ENDFLG
                                        ;(END OF FLAGS)

000614                                  STFLGS:
000614  000000                          TOB:    0
000616  000000                          TIB:    0
000620  000000                          HDRFL:  0
000622  000000                          EMADDR: 0
000624  000000                          DRVN:   0
000626  000000                          TR00:   0
000630  000000                          TR01:   0
000632  000000                          TR02:   0
000634  000000                          TR03:   0
000636  000000                          TR04:   0
000640  000000                          TR05:   0
000642  000000                          TR06:   0
000644  000000                          TR07:   0
000646  000000                          TR10:   0
000650  000000                          TR11:   0
000652  000000                          TR12:   0
000654  000000                          TR13:   0
000656  000000                          TR14:   0
000660  000000                          TR15:   0
000662  000000                          NRZOF:  0
000664  000000                          SLVN:   0
000666  000000                          PFLG:   0
000670  000000                          RTRN:   0
000672  000000                          ERADD:  0
000674  000000                          TEMP1:  0
000676  000000                          TEMP2:  0
000700  000000                          TEMP3:  0
000702  000000                          ITCNT:  0
000704  000000                          SAV1:   0
000706  000000                          SAV2:   0
000710  000000                          SAV3:   0
000712  000000                          SCOLP:  0
000714  000000                          ITRLP:  0
000716  000000                          EXFL:   0
000720  000000                          ATAF:   0
000722  000000                          SLAF:   0
000724  000000                          SSCF:   0
000726  000000                          ERRF:   0
000730  000000                          ASF:    0
000732  000000                          SCF:    0
000734  000000                          TREF:   0
000736  000000                          PEXFL:  0
000740  000000                          STFLG:  0
000742  000000                          LTADD:  0
000744  000000                          T24FL:  0
000746  000000                          ADDFL:  0
000750  000000                          WAM:    0
000752  000000                          FUN:    0
000754  000000                          DATC:   0
000756  000000                          WTAD:   0
```

```
   749  000760  000000                DATAD:  0
   750  000762  000000                RDAD:   0
   751  000764  000000                W2FLG:  0
   752  000766  000000                DERFL:  0
   753  000770  000000                PREFL:  0
   754  000772  000000                SERFL:  0
   755  000774  000000                CRCNT:  0
   756  000776  000000                UDES:   0
   757  001000  000000                WPGFL:  0
   758  001002  000000                PATRN:  0
   759  001004  000000                STATF:  0
   760  001006  000000                RDRVF:  0
   761  001010  000000                RCDP:   0
   762  001012  000000                STATC:  0
   763  001014  000000                SKAT:   0
   764  001016  000000                PCNTR:  0                       ;PASS COUNTER
   765  001020  000000                DCHKFL: .WORD   0                ;DATA CHECK FLAG 0/1 = CHECK/DO NOT CHECK
   766  001022  000000                CRCFLG: .WORD   0                ;CRC CORRECTION TEST IN PROGRESS
   767  001024                        ENDFLG:
   768
   769                                        ;EXPT WRAP STATUS*******
   770
   771  001024  000000                WCS1:   0
   772  001026  000000                WCS2:   0
   773  001030  000000                WDS:    0
   774  001032  000000                WER:    0
   775
   776                                        ;DATA PATTERN GENERATORS*****
   777
   778  001034                        DATBL:
   779  001034  005076                DATA0:  DAT1    ;ALL ONE BITS
   780  001036  005116                DATA1:  DAT2    ;ALL ZERO BITS
   781  001040  005122                DATA2:  DAT3    ;ALTERNATING ONE/ZERO BITS
   782  001042  005130                DATA3:  DAT4    ;ALTERNATING PARITY CHARACTERS
   783
   784                                        ;CORE DUMP PATTERNS*******
   785
   786  001044  000005                WCDP2:  5
   787  001046  000005                        5
   788  001050  000012                        12
   789  001052  000012                        12
   790  001054  000000                        0
   791  001056  000017                WCDP0:  17
   792  001060  000017                        17
   793  001062  000017                        17
   794  001064  000017                        17
   795  001066  000000                        0
```

```
                                        ;LOGIC TEST ENTRY TABLE**********

001070  000000  TSTTBL: 0
001072  000000          0
001074  002352          LT1
001076  002352          LT1
001100  002464          LT2
001102  002464          LT2
001104  002536          LT3
001106  002536          LT3
001110  002644          LT4
001112  002644          LT4
001114  002716          LT5
001116  002716          LT5
001120  003024          LT6
001122  003024          LT6
001124  003102          LT7
001126  003102          LT7
001130  003210          LT10
001132  003210          LT10
001134  003262          LT11
001136  003262          LT11
001140  003374          LT12
001142  003374          LT12
001144  003522          LT13
001146  003522          LT13
001150  003572          LT14
001152  003572          LT14
001154  003642          LT15
001156  003642          LT15
001160  003724          LT16
001162  003724          LT16
001164  004312          LT17
001166  004312          LT17
001170  004624          LT20
001172  004624          LT20
001174  002244  TADX:   .WORD   TEND
001176  000020  TLAST:  .WORD   20          ;CONTAINS # OF TESTS
```

```
                                                .EVEN
                                                ;PROGRAM START AND HOUSEKEEPING**********
                                                
001200  012706  000500          START:  MOV     #500,SP         ;SET STACK POINTER
001204  013746  000004                  MOV     @#4,-(SP)       ;SAVE ERROR TRAP
001210  013746  000006                  MOV     @#6,-(SP)
001214  012737  001240  000004          MOV     #1$,@#4         ;SET TIME OUT TRAP TO GO TO 1$
001222  005037  000006                  CLR     @#6
001226  022777  177777  177334          CMP     #177777,@SWR    ;USE SOFTARE SWITCH IF SWR = 177777
001234  001402                          BEQ     2$              ;OR TIMES OUT
001236  000404                          BR      3$              ;OTHERWISE USE HARDWARE SWR
001240  022626                  1$:     CMP     (SP)+,(SP)+     ;RESET STACK
001242  012737  000176  000570  2$:     MOV     #SWREG,SWR      ;SET SWR = IO ADDRESS OF SOFTARE SWR
001250  012637  000006          3$:     MOV     (SP)+,@#6       ;RESTORE ERROR TRAP
001254  012637  000004                  MOV     (SP)+,@#4
001260  005027                          CLR     (PC)+           ;;CLEAR CHAIN INDICATOR
001262  000000                  CHNFLG: .WORD   0               ;;CHAIN MODE INDICATOR
                                                                ;;1/0 = CHAIN/NOT CHAIN MODE
001264  022737  002310  000042          CMP     #SENDAD,@#42    ;;BRANCH IF LOADED VIA ACT11 CHAIN MODE
001272  001404                          BEQ     50$
001274  005737  000042                  TST     @#42            ;;BRANCH IF IN DUMP MODE
001300  001413                          BEQ     52$
001302  000406                          BR      51$
001304  012737  000176  000570  50$:     MOV     #SWREG,SWR      ;;INVOKE SOFTWARE SWR
001312  012777  100000  177250          MOV     #100000,@SWR    ;;WITH HALT ON ERROR SET
001320  005237  001262          51$:     INC     CHNFLG          ;;SET CHNFLG = CHAIN MODE
001324  000137  001714                  JMP     TSCD            ;;GO TO CHAIN ADDRESS
001330                          52$:
001330  122737  000006  000041  4$:     CMPB    #6,@#41         ;BRANCH IF NOT LOADED VIA TMDP
001336  001004                          BNE     5$
001340  012704  014433                  MOV     #MSG62,R4       ;ADVISE USER TO REMOVE MEDIA FROM UUT
001344  004737  012714                  JSR     PC,TTOUT
001350  012704  013636          5$:     MOV     #MSG1,R4
001354  004737  012714                  JSR     PC,TTOUT        ;PRINT TITLE
001360  112737  000043  013636          MOVB    #'#,MSG1        ;DO NOT PRINT TITLE ON RESTART
001366  012704  014327                  MOV     #MSG44,R4
001372  004737  012714                  JSR     PC,TTOUT        ;REQUEST REGISTER ADDRESS
001376  013703  000612                  MOV     REGS,R3
001402  004737  013042                  JSR     PC,OCTP         ;PRINT CURRENT ADDRESS
001406  012705  000612                  MOV     #REGS,R5        ;SET ADDRESS SAVE LOC
001412  012701  000007                  MOV     #7,R1           ;SET SIZE OF RESPONSE
001416  012702  176400                  MOV     #176400,R2      ;SET UPPER LIMIT
001422  012703  172300                  MOV     #172300,R3      ;SET LOWER LIMIT
001426  004737  012372                  JSR     PC,TTR          ;GO GET RESPONSE
001432  012704  014351                  MOV     #MSG45,R4
001436  004737  012714                  JSR     PC,TTOUT        ;REQUEST VECTOR
001442  013703  000610                  MOV     VECT,R3
001446  004737  013042                  JSR     PC,OCTP         ;PRINT CURRENT VECTOR
001452  012705  000610                  MOV     #VECT,R5        ;SET ADDRESS SAVE LOC
001456  012701  000004                  MOV     #4,R1           ;SET SIZE OF RESPONSE
001462  012702  000224                  MOV     #224,R2         ;SET UPPER LIMIT
001466  012703  000150                  MOV     #150,R3         ;SET LOWER LIMIT
001472  004737  012372                  JSR     PC,TTR          ;GO GET RESPONSE
001476  013700  000610                  MOV     VECT,R0         ;GET VECTOR
001502  012720  012240                  MOV     #MTINT,(R0)+    ;LOAD INTERRUPT ADDRESS IN VECTOR
001506  012710  000340                  MOV     #340,(R0)       ;LOAD PRIORITY
```

```
  891  001512  013700  000612                MOV     REGS,R0         ;GET START OF REGS
  892  001516  012701  000016                MOV     #16,R1          ;SET NUMBER OF REGS
  893  001522  012702  000510                MOV     #C1,R2          ;GET START OF TABLE
  894  001526  010022                6$:     MOV     R0,(R2)+        ;BUILD TABLE
  895  001530  062700  000002                ADD     #2,R0           ;BUMP ADDRESS
  896  001534  005301                        DEC     R1              ;SEE IF DONE
  897  001536  001373                        BNE     6$              ;IF NOT: BR
  898  001540  012702  000614                MOV     #STFLGS,R2
  899  001544  012700  000210                MOV     #ENDFLG-STFLGS,R0       ;GET # OF FLAGS TO CLEAR
  900  001550  006200                        ASR     R0              ;FORM COUNT
  901  001552  005022                7$:     CLR     (R2)+           ;CLEAR FLAGS + COUNTERS
  902  001554  005300                        DEC     R0
  903  001556  001375                        BNE     7$
  904  001560  012704  014373                MOV     #MSG57,R4       ;REQUEST TM03 DRIVE #
  905  001564  004737  012714                JSR     PC,TTOUT
  906  001570  013703  000624                MOV     DRVN,R3         ;GET CURRENT DRIVE
  907  001574  004737  013042                JSR     PC,OCTP         ;AND TYPE IT
  908  001600  012705  000624                MOV     #DRVN,R5        ;TTR ROUTINE RETURNS DRIVE TO (R5)
  909  001604  012701  000002                MOV     #2,R1           ;LIMIT RESPONSE TO 1 CHARACTER
  910  001610  012702  000007                MOV     #7,R2           ;BETWEEN 0 AND 7
  911  001614  012703  000000                MOV     #0,R3
  912  001620  004737  012372                JSR     PC,TTR          ;GET RESPONSE & PUT IN DRVN
  913  001624  012704  014411                MOV     #MSG58,R4       ;REQUEST SLAVE #
  914  001630  004737  012714                JSR     PC,TTOUT
  915  001634  013703  000664                MOV     SLVN,R3         ;GET CURRENT SLAVE #
  916  001640  004737  013042                JSR     PC,OCTP         ;AND TYPE IT
  917  001644  012705  000664                MOV     #SLVN,R5        ;TTR ROUTINE RETURNS REPONSE TO (R5)
  918  001650  012701  000002                MOV     #2,R1           ;LIMIT RESPONSE TO 1 CHARACTER
  919  001654  012702  000007                MOV     #7,R2           ;BETWEEN 0-7
  920  001660  012703  000000                MOV     #0,R3
  921  001664  004737  012372                JSR     PC,TTR          ;GET RESPONSE & PUT IT IN SLVN
  922
  923                          ;START 210
  924  001670  012706  000500  ST2:    MOV     #500,SP         ;SET STACK PTR
  925  001674  005037  001006                CLR     RDRVF           ;CLEAR READ REVERSE FLAG
  926  001700  005037  001016                CLR     PCNTR
  927  001704  005037  001022                CLR     CRCFLG          ;SET CRC FLAG = CRC NOT IN PROGRESS
  928  001710  004737  013474                JSR     PC,GTSWR        ;GET SOFTWARE SWITCHES
```

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

001714  052777  000100  176650  TSCD:   BIS     #100,@TKS       ;SET KEYBOARD IE BIT
001722  005037  001000          CLR     WPGFL           ;CLEAR WRAP PATRN FLAG
001726  005037  000740          CLR     STFLG           ;CLEAR SINGLE TEST FLAG
001732  017700  176632          MOV     @SWR,R0
001736  042700  177700          BIC     #177700,R0      ;BRANCH IF SINGLE TEST SELECTED
001742  001122                  BNE     STSCD           ;GO SELECT SINGLE TEST
001744  005737  001262          TST     CHNFLG          ;;BRANCH IF NOT IN CHAIN MODE
001750  001457                  BEQ     TSCDA
001752  012737  177777  000624  MOV     #-1,DRVN        ;;INITIALIZE DRIVE #
001760  012737  177777  000664  NXTDRV: MOV    #-1,SLVN        ;;INITIALIZE SLAVE #
001766  012777  000040  176524  1$:     MOV    #40,@CS         ;;INIT CONTROLLER
001774  005237  000624          INC     DRVN            ;;STEP DRIVE #
002000  022737  000010  000624  CMP     #10,DRVN        ;;EXIT IF ALL DRIVES TESTED
002006  001521                  BEQ     $DONE           ;;FOR AVAILABILITY
002010  013777  000624  176502  MOV     DRVN,@CS        ;;LOAD DRIVE #
002016  005777  176466          TST     @CS             ;;ACCESS DRIVE
002022  032777  010000  176470  BIT     #10000,@CS      ;;BRANCH IF DRIVE NON EXISTANT
002030  001356                  BNE     1$              ;;(NED = 1)
002032  005237  000664  NXTSLV: INC     SLVN            ;;STEP SLAVE # AND BRANCH
002036  001011                  BNE     1$              ;;IF NOT SLAVE 0
002040  005737  000624          TST     DRVN            ;;BRANCH IF NOT DRIVE # 0
002044  001006                  BNE     1$
002046  122737  000006  000041  CMPB    #6,@#41         ;;BRANCH IF NOT TMDP
002054  001002                  BNE     1$
002056  005237  000664          INC     SLVN            ;;STEP TO SLAVE # 1
002062  022737  000010  000664  1$:     CMP    #10,SLVN        ;;BRANCH IF ALL SLAVES TESTED
002070  001733                  BEQ     NXTDRV          ;;FOR AVAILABILITY
002072  013777  000664  176442  MOV     SLVN,@TC        ;;LOAD SLAVE UNIT #
002100  032777  002000  176430  BIT     #2000,@DT       ;;BRANCH IF SLAVE NOT
002106  001751                  BEQ     NXTSLV          ;;PRESENT (SPR = 0)
002110  012737  001070  000742  TSCDA:  MOV    #TSTTBL,LTADD
002116  062737  000004  000742  TSCDO:  ADD    #4,LTADD
002124  013737  000742  000714  TSCD1:  MOV    LTADD,ITRLP
002132  062737  000002  000714          ADD    #2,ITRLP        ;SET ITERATION ADDRESS
002140  005037  000620          CLR     HDRFL           ;CLEAR PRINT HEADER FLAG
002144  017700  176572          MOV     @LTADD,R0       ;SET POINTER TO TEST
002150  000110                  JMP     (R0)            ;GO TO TEST
002152  032777  002000  176410  TSCD2:  BIT    #2000,@SWR      ;SEE IF HALT ON TEST
002160  001403                  BEQ     TSCD3           ;IF NOT: BR
002162  000000                  HALT
002164  005037  001000          CLR     WPGFL           ;CLEAR WRAP DATA GENERATOR FLAG
002170  005737  000740  TSCD3:  TST     STFLG           ;SE IF SINGLE TEST
002174  001750                  BEQ     TSCDO           ;IF NOT: BR
002176  017700  176366          MOV     @SWR,R0
002202  042700  177700          BIC     #177700,R0      ;MASK TEST NUMBER
002206  001642                  BEQ     TSCD            ;IF SO: BR
002210  012737  000001  000740  STSCD:  MOV    #1,STFLG        ;SET SINGLE TEST FLAG
002216  023700  001176          CMP     TLAST,R0        ;SEE IF EXCEEDED TESTS
002222  002410                  BLT     TEND            ;IF SO: BR
002224  006300                  ASL     R0
002226  006100                  ROL     R0              ;SET TABLE MODIFIER
002230  012737  001070  000742  MOV     #TSTTBL,LTADD
002236  060037  000742          ADD     R0,LTADD        ;SET TEST POINTER
```

```
  985  002242  000730                          BR      TSCD1
  986  002244  005737  001262          TEND:   TST     CHNFLG          ;BRANCH IF IN CHAIN MODE
  987  002250  001270                          BNE     NXTSLV
  988  002252  012704  014310          $DONE:  MOV     #MSG41,R4
  989  002256  004737  012714                  JSR     PC,TTOUT        ;PRINT END OF PASS
  990  002262  013703  001016                  MOV     PCNTR,R3
  991  002266  004737  013042                  JSR     PC,OCTP         ;PRINT PASS NUMBER
  992  002272  005000                          CLR     R0
  993  002274  005300                  1$:     DEC     R0              ;DELAY WAITING FOR
  994  002276  001376                          BNE     1$              ;TTY TO FINISH
  995  002300  013700  000042                  MOV     @#42,R0         ;GET ACT11 RETURN ADDRESS
  996  002304  001405                          BEQ     HERE            ;BRANCH IF NOT ACT11
  997  002306  000005                          RESET
  998  002310  004710                  $ENDAD: JSR     PC,(R0)
  999  002312  000240                          NOP
 1000  002314  000240                          NOP
 1001  002316  000240                          NOP
 1002  002320  000240                  HERE:   NOP
 1003  002322  005737  001262                  TST     CHNFLG          ;BRANCH IF IN CHAIN MODE
 1004  002326  001005                          BNE     TENDX
 1005  002330  032777  010000  176232          BIT     #10000,@SWR     ;SEE IF HALT ON PASS
 1006  002336  001001                          BNE     TENDX           ;IF NOT: BR
 1007  002340  000000                          HALT
 1008  002342  005237  001016          TENDX:  INC     PCNTR           ;BUMP PASS COUNTER
 1009  002346  000137  001714                  JMP     TSCD            ;RESTART
 1010
```

```
1011                                            ;THESE TESTS CHECK DATA FORMATTING
1012                                            ;AND TRANSFER THROUGH THE TM03 WRAP AROUND MODES
1013
1014                                            ;LOGIC TEST 1: WRAP 3, NRZ, NORMAL ODD *****
1015
1016  002352  012737  004270  001024  LT1:     MOV     #4270,WCS1      ;SET EXPT CS1
1017  002360  012737  000100  001026            MOV     #100,WCS2       ;SET EXPT CS2
1018  002366  012737  010600  001030            MOV     #10600,WDS      ;SET EXPT DS
1019  002374  012737  000000  001032            MOV     #0,WER          ;SET EXPT ER
1020  002402  012737  014527  000622            MOV     #MSLT1,EMADDR   ;SET HEADER
1021  002410  012737  001700  000776            MOV     #1700,UDES      ;SET NRZ,NORMAL, ODD
1022  002416  005037  001002          LT1A:     CLR     PATRN           ;POINT TO PATTERN 0
1023  002422  012737  002430  000712            MOV     #LT1B,SCOLP     ;SET SCOPE ADDRESS
1024  002430  004737  005256          LT1B:     JSR     PC,WRAP3        ;GO DO WRAP 3
1025  002434  005237  001002                    INC     PATRN           ;BUMP PATTERN POINTER
1026  002440  032737  000004  001002            BIT     #4,PATRN        ;SEE IF DONE
1027  002446  001770                            BEQ     LT1B            ;IF NOT: BR
1028  002450  004737  012014                    JSR     PC,ITER         ;GO SEE IF ITERATIONS
1029  002454  005037  001006                    CLR     RDRVF           ;CLEAR READ REVERSE FLAG
1030  002460  000137  002152                    JMP     TSC02           ;RETURN TO SCHEDULAR
1031
1032                                            ;LOGIC TEST 2: WRAP 3, PE, NORMAL, ODD*****
1033
1034  002464  000240          LT2:      NOP
1035  002466  012737  004270  001024  LT2A:     MOV     #4270,WCS1      ;SET EXPT CS1
1036  002474  012737  000100  001026            MOV     #100,WCS2       ;SET EXPT CS2
1037  002502  012737  010640  001030            MOV     #10640,WDS      ;SET EXPT DS
1038  002510  012737  000000  001032            MOV     #0,WER          ;SET EXPT WER
1039  002516  012737  014575  000622            MOV     #MSLT2,EMADDR   ;SET HEADER
1040  002524  012737  002300  000776            MOV     #2300,UDES      ;SET PE, NORMAL, ODD
1041  002532  000137  002416                    JMP     LT1A            ;EXECUTE TEST SEQUENCE
1042
1043                                            ;LOGIC TEST 3: WRAP 2, NRZ, NORMAL, ODD*****
1044
1045  002536  012737  004260  001024  LT3:      MOV     #4260,WCS1      ;SET EXPT CS1
1046  002544  012737  000100  001026            MOV     #100,WCS2       ;SET EXPT CS2
1047  002552  012737  010600  001030            MOV     #10600,WDS      ;SET EXPT DS
1048  002560  012737  000000  001032            MOV     #0,WER          ;SET EXPT WER
1049  002566  012737  014642  000622            MOV     #MSLT3,EMADDR   ;SET HEADER
1050  002574  012737  001700  000776            MOV     #1700,UDES      ;SET TO NRZ,NORMAL, ODD
1051  002602  005037  001002          LT3A:     CLR     PATRN           ;POINT TO PATTERN 0
1052  002606  012737  002614  000712            MOV     #LT3B,SCOLP     ;SET SCOPE ADDRESS
1053  002614  004737  005212          LT3B:     JSR     PC,WRAP2        ;GO DO WRAP 2
1054  002620  005237  001002                    INC     PATRN           ;BUMP POINTER
1055  002624  032737  000004  001002            BIT     #4,PATRN        ;SEE IF DONE
1056  002632  001770                            BEQ     LT3B            ;IF NOT: BR
1057  002634  004737  012014                    JSR     PC,ITER         ;GO SEE IF ITERATIONS
1058  002640  000137  002152                    JMP     TSC02           ;RETURN TO SCHEDULAR
```

```
1059
1060                                                    ;LOGIC TEST 4: WRAP 2, PE, NORMAL, ODD*****
1061
1062  002644  000240                          LT4:      NOP
1063  002646  012737  004260  001024          LT4A:     MOV     #4260,WCS1      ;SET EXPT CS1
1064  002654  012737  000100  001026                    MOV     #100,WCS2       ;SET EXPT CS2
1065  002662  012737  010640  001030                    MOV     #10640,WDS      ;SET EXPT DS
1066  002670  012737  000000  001032                    MOV     #0,WER          ;SET EXPT WER
1067  002676  012737  014710  000622                    MOV     #MSLT4,EMADDR   ;SET HEADER
1068  002704  012737  002300  000776                    MOV     #2300,UDES      ;SET PE, NORMAL, ODD
1069  002712  000137  002602                          JMP     LT3A            ;GO EXECUTE TEST SEQUENCES
1070
1071                                                    ;LOGIC TEST 5: WRAP 1, NRZ, NORMAL, ODD*****
1072
1073  002716  012737  004260  001024  LT5:      MOV     #4260,WCS1      ;SET EXPT CS1
1074  002724  012737  000100  001026                    MOV     #100,WCS2       ;SET EXPT CS2
1075  002732  012737  010600  001030                    MOV     #10600,WDS      ;SET EXPT DS
1076  002740  012737  000000  001032                    MOV     #0,WER          ;SET EXPT WER
1077  002746  012737  014755  000622                    MOV     #MSLT5,EMADDR   ;SET HEADER
1078  002754  012737  001700  000776                    MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
1079  002762  005037  001002                LT5A:     CLR     PATRN           ;POINT TO PATTERN ZERO
1080  002766  012737  002774  000712                    MOV     #LT5B,SCOLP     ;SET SCOPE ADDRESS
1081  002774  004737  005202                LT5B:     JSR     PC,WRAP1        ;GO DO WRAP 1
1082  003000  005237  001002                          INC     PATRN           ;BUMP POINTER
1083  003004  032737  000004  001002                    BIT     #4,PATRN        ;SEE IF DONE
1084  003012  001770                                    BEQ     LT5B            ;IF NOT: BR
1085  003014  004737  012014                          JSR     PC,ITER         ;GO SEE IF ITERATIONS
1086  003020  000137  002152                          JMP     TSCD2           ;RETURN TO SCHEDULAR
1087
1088                                                    ;LOGIC TEST 6: WRAP 1, PE, NORMAL, ODD*****
1089
1090  003024  000240                          LT6:      NOP
1091  003026  004737  011512                LT6A:     JSR     PC,PPGEN        ;GO GENERATE PRE/POSTAMBLE
1092  003032  012737  004260  001024                    MOV     #4260,WCS1      ;SET EXPT CS1
1093  003040  012737  000100  001026                    MOV     #100,WCS2       ;SET EXPT CS2
1094  003046  012737  010640  001030                    MOV     #10640,WDS      ;SET EXPT DS
1095  003054  012737  000000  001032                    MOV     #0,WER          ;SET EXPT WER
1096  003062  012737  015023  000622                    MOV     #MSLT6,EMADDR   ;SET HEADER
1097  003070  012737  002300  000776                    MOV     #2300,UDES      ;SET PE, NORMAL, ODD
1098  003076  000137  002762                          JMP     LT5A            ;GO EXECUTE TEST SEQUENCE
```

```
1099
1100                                                    ;LOGIC TEST 7: WRAP 0, NRZ,NORMAL, ODD*****
1101
1102  003102  012737  144260  001024  LT7:    MOV     #144260,WCS1    ;SET EXPT CS1
1103  003110  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1104  003116  012737  150600  001030          MOV     #150600,WDS     ;SET EXPT DS
1105  003124  012737  000200  001032          MOV     #200,WER        ;SET EXPT ER
1106  003132  012737  015070  000622          MOV     #MSLT7,EMADDR   ;SET HEADER
1107  003140  012737  001700  000776          MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
1108  003146  005037  001002          LT7A:   CLR     PATRN           ;POINT TO PATTERN 0
1109  003152  012737  003160  000712          MOV     #LT7B,SCOLP     ;SET SCOPE ADDRESS
1110  003160  004737  005136          LT7B:   JSR     PC,WRAP0        ;GO DO WRAP 0
1111  003164  005237  001002                  INC     PATRN           ;BUMP POINTER
1112  003170  032737  000004  001002          BIT     #4,PATRN        ;SEE IF DONE
1113  003176  001770                          BEQ     LT7B            ;IF NOT: BR
1114  003200  004737  012014                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
1115  003204  000137  002152                  JMP     TSC02           ;RETURN TO SCHEDULAR
1116
1117                                                    ;LOGIC TEST 10: WRAP 0, PE, NORMAL, ODD*****
1118
1119  003210  000240          LT10:   NOP
1120  003212  012737  004260  001024  LT10A:  MOV     #4260,WCS1      ;SET EXPT CS1
1121  003220  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1122  003226  012737  010640  001030          MOV     #10640,WDS      ;SET EXPT DS
1123  003234  012737  000000  001032          MOV     #0,WER          ;SET EXPT ER
1124  003242  012737  015136  000622          MOV     #MSLT10,EMADDR  ;SET HEADER
1125  003250  012737  002300  000776          MOV     #2300,UDES      ;SET PE, NORMAL, ODD
1126  003256  000137  003146                  JMP     LT7A            ;GO EXECUTE TEST SEQUENCE
```

```
1127                                                    ;LOGIC TEST 11: CORE DUMP WRITE, WAM2*******
1128
1129  003262  012737  004260  001024  LT11:   MOV     #4260,WCS1      ;SET EXPT CS1
1130  003270  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1131  003276  012737  010600  001030          MOV     #10600,WDS      ;SET EXPT DS
1132  003304  012737  000000  001032          MOV     #0,WER          ;SET EXPT ER
1133  003312  012737  015204  000622          MOV     #HSLT11,EMADDR  ;SET HEADER
1134  003320  012737  001720  000776          MOV     #1720,UDES      ;SET NRZ, CORE DUMP, ODD
1135  003326  005037  001002                  CLR     PATRN           ;POINT TO PATTERN 0
1136  003332  012737  003340  000712          MOV     #LT11A,SCOLP    ;SET SCOPE ADDRESS
1137  003340  004737  005212          LT11A:  JSR     PC,WAM2         ;GO DO WAM 2
1138  003344  022737  000002  001002          CMP     #2,PATRN        ;SEE IF DONE
1139  003352  001404                          BEQ     LT11X           ;IF SO: BR
1140  003354  012737  000002  001002          MOV     #2,PATRN        ;SELECT PATTERN 2
1141  003362  000766                          BR      LT11A           ;CONTINUE
1142  003364  004737  012014          LT11X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
1143  003370  000137  002152                  JMP     TSCD2           ;RETURN TO SCHEDULES
1144
1145                                                    ;LOGIC TEST 12: CORE DUMP READ, WAM 3*****
1146
1147  003374  012737  004270  001024  LT12:   MOV     #4270,WCS1      ;SET EXPT CS1
1148  003402  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1149  003410  012737  010600  001030          MOV     #10600,WDS      ;SET EXPT DS
1150  003416  012737  000000  001032          MOV     #0,WER          ;SET EXPT ER
1151  003424  012737  015255  000622          MOV     #HSLT12,EMADDR  ;SET HEADER
1152  003432  012737  001720  000776          MOV     #1720,UDES      ;SELECT NRZ, CORE DUMP, ODD
1153  003440  005037  001002                  CLR     PATRN           ;SELECT PATTERN 0
1154  003444  012737  003460  000712          MOV     #LT12A,SCOLP    ;SET SCOPE ADDRESS
1155  003452  012737  001056  001010          MOV     #WCDP0,RCDP     ;POINT TO PATTERN 0
1156  003460  004737  005256          LT12A:  JSR     PC,WAM3         ;GO DO WAM3
1157  003464  022737  000002  001002          CMP     #2,PATRN        ;SEE IF DONE
1158  003472  001407                          BEQ     LT12X           ;IF SO: BR
1159  003474  012737  000002  001002          MOV     #2,PATRN        ;SELECT PATTERN 2
1160  003502  012737  001044  001010          MOV     #WCDP2,RCDP     ;POINT TO PATTERN 2
1161  003510  000763                          BR      LT12A           ;CONTINUE
1162  003512  004737  012014          LT12X:  JSR     PC,ITER         ;GO SEE IF ITERATION
1163  003516  000137  002152                  JMP     TSCD2           ;RETURN TO SCHEDULE
```

```
1164
1165                                                ;LOGIC TEST 13: EVEN PARITY WRITE: WAM 1(M8903)*****
1166
1167  003522  012737  004260  001024  LT13:   MOV     #4260,WCS1      ;SET EXPT CS1
1168  003530  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1169  003536  012737  010600  001030          MOV     #10600,WDS      ;SET EXPT DS
1170  003544  012737  000000  001032          MOV     #0,WER          ;SET EXPT ER
1171  003552  012737  015325  000622          MOV     #MSLT13,EMADDR  ;SET HEADER
1172  003560  012737  001710  000776          MOV     #1710,UDES      ;SET NRZ, NORMAL, EVEN
1173  003566  000137  002762                  JMP     LT5A            ;GO EXECUTE WAM 1
1174
1175                                                ;LOGIC TEST 14: EVEN PARITY READ: WAM 0(M8903 M8904)*****
1176
1177  003572  012737  144260  001024  LT14:   MOV     #144260,WCS1    ;SET EXPT CS1
1178  003600  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1179  003606  012737  150600  001030          MOV     #150600,WDS     ;SET EXPT DS
1180  003614  012737  000200  001032          MOV     #200,WER        ;SET EXPT ER
1181  003622  012737  015406  000622          MOV     #MSLT14,EMADDR  ;SET HEADER
1182  003630  012737  001710  000776          MOV     #1710,UDES      ;SET NRZ, NORMAL, EVEN
1183  003636  000137  003146                  JMP     LT7A            ;GO DO WAM 0
1184
1185                                                ;LOGIC TEST 15: READ REVERSE: WAM 3(M8906)*****
1186
1187  003642  012737  004276  001024  LT15:   MOV     #4276,WCS1      ;SET EXPT CS1
1188  003650  012737  000100  001026          MOV     #100,WCS2       ;SET EXPT CS2
1189  003656  012737  010640  001030          MOV     #10640,WDS      ;SET EXPT DS
1190  003664  012737  000000  001032          MOV     #0,WER          ;SET EXPT ER
1191  003672  012737  015465  000622          MOV     #MSLT15,EMADDR  ;SET HEADER
1192  003700  012737  002300  000776          MOV     #2300,UDES      ;SELECT PE,NORMAL,ODD
1193  003706  000240                          NOP
1194  003710  000240                          NOP
1195  003712  012737  000001  001006          MOV     #1,RDRVF        ;SET READ REVERSE FLAG
1196  003720  000137  002416                  JMP     LT1A            ;GO DO WAM 3, REVERSE
1197
```

```
 1198
 1199                                   ;LOGIC TEST 16: CRC CORRECTION-SINGLE TRACK,EVERY FRAME
 1200                                   ;THIS IS A TEST OF THE CRC CORRECTION LOGIC. THE TEST WRITES
 1201                                   ;A KNOWN PATTERN (ALL 1'S , ALL 0'S & 125252) WITH A DATA BIT
 1202                                   ;ALTERED IN EACH OF THE DATA TRACKS. THIS TEST INSURES THAT A
 1203                                   ;CRC CORRECTABLE ERROR IS CORRECTED.
 1204                                   ;THE TEST PROCEEDS AS FOLLOWS:
 1205
 1206                           ;       STEP A  WRITE A KNOWN PATTERN USING WRAP AROUND MODE 0
 1207
 1208                           ;       STEP B  REWRITE THE PATTERN ABOVE WITH DATA BIT(S) MODIFIED
 1209                           ;               IN TRACKS SPECIFIED BY CRCPAT USING WRAP AROUND MODE 4
 1210                           ;               THIS WILL GENERATE A CRC ERROR
 1211
 1212                           ;       STEP C  EXECUTE A READ REVERSE USING WRAP AROUND MODE 3
 1213
 1214                           ;       STEP D  REPEAT STEP B ABOVE. UPON COMPLETION THE DATA READ
 1215                           ;               BACK WILL MATCH THE DATA WRITTEN IN STEP A.
 1216
 1217
 1218  003724  005037  001002        LT16:   CLR     PATRN           ;SELECT PATTERN # 0 (ALL 1'S)
 1219  003730  012737  000401  004302        MOV     #401,CRCPAT     ;SELECT BITS TO BE ALTERED (TRACK 1)
 1220  003736  012737  015532  000622        MOV     #MSLT16,EMADDR  ;SET ERROR MESSAGE HEADER
 1221  003744  012737  003752  000712        MOV     #LT16A,SCOLP    ;SET SCOPE LOOP
 1222
 1223  003752  012737  144260  001024 LT16A:  MOV     #144260,WCS1    ;SET EXPECTED VALUES UPON COMPLETION
 1224  003760  012737  000100  001026        MOV     #100,WCS2
 1225  003766  012737  150600  001030        MOV     #150600,WDS
 1226  003774  012737  000200  001032        MOV     #200,WER
 1227  004002  012737  001700  000776        MOV     #1700,UDES      ;SET UNIT DESCRIPTION-NRZ,800BPI,ODD
                                               ;PARITY & PDP11 NORMAL MODE
 1229  004010  005037  001022                CLR     CRCFLG          ;CLEAR CRC CORRECTION FLAG
 1230  004014  004737  005136                JSR     PC,WAM0         ;DO A WRAP 0 --- STEP A
 1231  004020  012737  000001  001022        MOV     #1,CRCFLG       ;SET CRC ERROR CORRECTION IN PROGRESS
 1232  004026  013737  017276  004304        MOV     WBUFF,CRCDAT    ;GET DATA WRITTEN BY WRAP 0
 1233                           ;XOR CRCPAT WITH CRCDAT
 1234  004034  013737  004304  004306        MOV     CRCDAT,XORDAT   ;GET DATA TO BE MODIFIED
 1235  004042  013737  004302  004310        MOV     CRCPAT,XORPAT   ;GET MODIFIER
 1236  004050  043737  004302  004306        BIC     CRCPAT,XORDAT   ;CLEAR SET BITS IN DATA TO BE MODIFIED
 1237  004056  043737  004304  004310        BIC     CRCDAT,XORPAT   ;CLEAR SETTING BITS
 1238  004064  053737  004310  004306        BIS     XORPAT,XORDAT   ;SET CLEAR BITS IN DATA TO BE MODIFIED
 1239  004072  013737  004306  004304        MOV     XORDAT,CRCDAT   ;RESTORE MODIFIED DATA
 1240
 1241  004100  012737  144260  001024        MOV     #144260,WCS1    ;SET EXPECTED VALUES UPON COMPLETION
 1242  004106  012737  000110  001026        MOV     #110,WCS2       ;OF WRAP 4
 1243  004114  012737  150600  001030        MOV     #150600,WDS
 1244  004122  012737  100300  001032        MOV     #100300,WER
 1245  004130  004737  005364                JSR     PC,WAM4         ;DO A WRAP 4 --- STEP B
 1246  004134  000240                        NOP
 1247  004136  012737  000001  001006        MOV     #1,RDRVF        ;SET TO READ REVERSE
 1248  004144  012737  144276  001024        MOV     #144276,WCS1    ;SET EXPECTED VALUES UPON COMPLETION
 1249  004152  012737  000110  001026        MOV     #110,WCS2
 1250  004160  012737  150600  001030        MOV     #150600,WDS
 1251  004166  012737  001000  001032        MOV     #1000,WER
 1252  004174  004737  005256                JSR     PC,WAM3         ;DO A WRAP 3 --- STEP C
 1253  004200  000240                        NOP
```

```
1254  004202  012737  004260  001024          MOV     #4260,WCS1
1255  004210  012737  000110  001026          MOV     #110,WCS2
1256  004216  012737  010600  001030          MOV     #10600,WDS
1257  004224  012737  000000  001032          MOV     #0,WER
1258  004232  005037  001022                  CLR     CRCFLG          ;CLEAR CRC CORRECTION IN PROGRESS FLAG
1259  004236  004737  005364                  JSR     PC,WRAP4        ;GO TO WRAP 4 --- STEP D
1260
1261  004242  006337  004302                  ASL     CRCPAT          ;SELECT NEXT TRACK TO BE ALTERED
1262  004246  103241                          BCC     LT16A           ;CONTINUE FOR ALL TRACKS
1263  004250  012737  000401  004302          MOV     #401,CRCPAT     ;RESET BITS TO TRACK 1
1264  004256  005237  001002                  INC     PATRN           ;SELECT NEXT PATTERN
1265  004262  022737  000003  001002          CMP     #3,PATRN        ;BRANCH IF NOT DONE
1266  004270  001230                          BNE     LT16A
1267  004272  004737  012014                  JSR     PC,ITER         ;ITERATION LOOP
1268  004276  000137  002152                  JMP     TSCD2           ;RETURN TO SCHEDULER
1269
1270
1271  004302  000000          CRCPAT: .WORD   0               ;CONTAINS BITS TO BE ALTERED
1272  004304  000000          CRCDAT: .WORD   0               ;CONTAINS DATA TO BE WRITTEN BY WRAP4
1273  004306  000000          XORDAT: .WORD   0               ;TEMPRARY STORAGE FOR XOR
1274  004310  000000          XORPAT: .WORD   0               ;TEMPOARY STORAGE FOR XOR
1275
```

```
1276
1277
1278                                    ;LOGIC TEST 17:CRC CORRECTION - MULTIPLE BAD TRACKS
1279                                    ;THIS TEST CHECKS THAT CRC ERROR CORRECTION IS NOT PERFORMED WHEN
1280                                    ;MULTIPLE BAD TRACKS ARE DETECTED.
1281
1282  004312  012737  000002  001002  LT17:   MOV     #2,PATRN        ;SELECT PATTERN #2 (125125)
1283  004320  012737  001001  004302          MOV     #1001,CRCPAT    ;SELECT 2 BAD TRACKS
1284  004326  012737  015622  000622          MOV     #MSLT17,EMADDR  ;SET ERROR MESSAGE HEADER
1285  004334  012737  004342  000712          MOV     #LT17A,SCOLP    ;SET SCOPE LOOP ADDRESS
1286  004342  012737  144260  001024  LT17A:  MOV     #144260,WCS1    ;SET EXPECTED VALUES ON COMPLETION
1287  004350  012737  000100  001026          MOV     #100,WCS2       ;OF WRAP 0 BELOW
1288  004356  012737  150600  001030          MOV     #150600,WDS
1289  004364  012737  000200  001032          MOV     #200,WER
1290  004372  012737  001700  000776          MOV     #1700,UDES      ;SET UNIT DESCRIPTION
1291  004400  005037  001022                  CLR     CRCFLG          ;SET CRC CORRECTION NOT IN PROGRESS
1292  004404  004737  005136                  JSR     PC,WAM0         ;DO A WRAP 0 --- STEP A
1293  004410  000240                          NOP
1294  004412  012737  000002  001022          MOV     #2,CRCFLG       ;SET CRC CORRECTION IN PROGRESS
1295  004420  013737  017276  004304          MOV     WBUFF,CRCDAT    ;GET DATA TO BE WRITTEN
1296  004426  043737  004302  004304          BIC     CRCPAT,CRCDAT   ;MODIFY DATA TO BE WRITTEN
1297  004434  012737  144260  001024          MOV     #144260,WCS1    ;SET EXPECTED VALUES ON COMPLETION
1298  004442  012737  000110  001026          MOV     #110,WCS2       ;OF WRAP 4 BELOW
1299  004450  012737  150600  001030          MOV     #150600,WDS
1300  004456  012737  100300  001032          MOV     #100300,WER
1301  004464  004737  005364                  JSR     PC,WAM4         ;DO A WRAP 4 --- STEP B
1302  004470  000240                          NOP
1303  004472  012737  000001  001006          MOV     #1,RDRVF        ;SET READ REVERSE FLAG
1304  004500  012737  144276  001024          MOV     #144276,WCS1    ;SET EXPECTED VALUES ON COMPLETION
1305  004506  012737  000110  001026          MOV     #110,WCS2       ;OF WRAP 3 BELOW
1306  004514  012737  150600  001030          MOV     #150600,WDS
1307  004522  012737  001000  001032          MOV     #1000,WER
1308  004530  004737  005256                  JSR     PC,WAM3         ;DO A WRAP 3 --- STEP C
1309  004534  000240                          NOP
1310  004536  012737  144260  001024          MOV     #144260,WCS1    ;SET EXPECTED VALUES ON COMPLETION
1311  004544  012737  000110  001026          MOV     #110,WCS2       ;OF WRAP 4 BELOW
1312  004552  012737  150600  001030          MOV     #150600,WDS
1313  004560  012737  100100  001032          MOV     #100100,WER
1314  004566  005037  001022                  CLR     CRCFLG          ;CLEAR CRC IN PROGRESS FLAG
1315  004572  013701  004304                  MOV     CRCDAT,R1       ;GET DATA THAT WAS WRITTEN IN STEF B
1316  004576  012703  017276                  MOV     #WBUFF,R3       ;SET START OF WRITE BUFFER
1317  004602  004737  005102                  JSR     PC,DATIA        ;GO SET WRITE BUFFER
1318  004606  004737  005364                  JSR     PC,WAM4         ;GO DO A WRAP 4 --- STEP D
1319  004612  000240                          NOP
1320  004614  004737  012014                  JSR     PC,ITER         ;ITERATE TEST
1321  004620  000137  002152                  JMP     TSCD2           ;RETURN TO SCHEDULER
```

```
1322
1323                                        ;LOGIC TEST 20: READ REVERSE,NRZ,WRAP 3
1324                                        ;THIS TEST TESTS THAT A CRC ERROR OCCURS AFTER A READ REVERSE USING
1325                                        ;WRAP AROUND MODE 3 IN NRZ MODE
1326
1327  004624  005037  001002          LT20:   CLR     PATRN           ;SET PATTERN # 0 (ALL 1'S)
1328  004630  012737  144276  001024          MOV     #144276,WCS1    ;SET EXPECTED VALUES ON COMPLETION
1329  004636  012737  000100  001026          MOV     #100,WCS2
1330  004644  012737  150600  001030          MOV     #150600,WDS
1331  004652  012737  100000  001032          MOV     #100000,WER
1332  004660  012737  015706  000622          MOV     #MSLT20,EMADDR  ;SET ERROR MESSAGE ADDRESS
1333  004666  012737  001700  000776          MOV     #1700,UDES      ;SET UNIT DESCRIPTION
1334  004674  012737  004702  000712          MOV     #LT20A,SCOLP    ;SET SCOPE LOOP ADDRESS
1335  004702  012737  000001  001006  LT20A:  MOV     #1,RDRVF        ;SET READ REVERSE FLAG
1336  004710  012737  000001  001020          MOV     #1,DCHKFL       ;SET DATA CHECK FLAG TO NOT CHACK DATA
1337  004716  004737  005256                  JSR     PC,WAM3
1338  004722  005037  001006                  CLR     RDRVF           ;CLEAR READ REVERSE FLAG
1339  004726  005037  001020                  CLR     DCHKFL          ;CLEAR DATA CHECK FLAG
1340  004732  004737  012014                  JSR     PC,ITER
1341  004736  000137  002152                  JMP     TSCD2           ;RETURN TO SCHEDULER
1342
```

```
                                        ;*****************************************************
                                        ;DATA SETUP ROUTINE:
                                        ;
                                        ;THIS ROUTINE IS USED TO GENERATE THE DATA PATTERNS
                                        ;THE PATTERN TO BE WRITTEN IS SPECIFIED BY:
                                        ;PATRN  =0      ALL 1'S
                                        ;       =1      ALL 0'S
                                        ;       =2      ALTERNATE 1'S & 0'S (125252)
                                        ;       =3      ALTERNATING PARITY (177377)
                                        ;*****************************************************

004742  005737  000740        DSUP:   TST     STFLG           ;SEE IF SINGLE TEST
004746  001434                BEQ     DS0             ;IF NOT: BR
004750  032777  000100  173612        BIT     #100,@SWR       ;SEE IF SELECT PATTERN
004756  001430                BEQ     DS0             ;IF NOT: BR
004760  012704  016416                MOV     #WMSG3,R4
004764  004737  012714                JSR     PC,TTOUT        ;REQUEST PATTERN NUMBER
004770  013703  001002                MOV     PATRN,R3
004774  004737  013042                JSR     PC,OCTP         ;PRINT PATTERN NUMBER
005000  012705  001002                MOV     #PATRN,R5       ;GET ADDRESS OF PATRN ENTRY
005004  012701  000002                MOV     #2,R1           ;SET SIZE OF ENTRY
005010  012702  000003                MOV     #3,R2           ;SET UPPER LIMIT
005014  012703  000000                MOV     #0,R3           ;SET LOWER LIMIT
005020  004737  012372                JSR     PC,TTR          ;GO GET PATTERN NUMBER
005024  112737  000001  001001        MOVB    #1,WPGFL+1      ;SET FLAG
005032  113737  001002  001000        MOVB    PATRN,WPGFL     ;SET PATTERN NUMBER
005040  012703  017276        DS0:    MOV     #WBUFF,R3       ;R3 = ADDRS OF WRITE BUFFER
005044  013701  001002                MOV     PATRN,R1        ;R1 = PATTERN SELECTOR
005050  006301                ASL     R1              ;MAKE PATTERN SELECTOR EVEN
005052  004771  001034                JSR     PC,@DATBL(R1)   ;GO GENERATE PATTERN
005056  012702  000202        DS3:    MOV     #202,R2         ;R2=BUFFER SIZE +2
005062  012701  017710                MOV     #RBUFF,R1       ;R1=READ DATA START
005066  005021        DS4:    CLR     (R1)+           ;CLEAR BUFFER
005070  005302                DEC     R2              ;SEE IF DONE ALL
005072  001375                BNE     DS4             ;IF NOT: BR
005074  000207                RTS     PC              ;EXIT

                                        ;ALL ONES**********

005076  012701  177777        DAT1:   MOV     #-1,R1          ;R1=DATA
005102  012702  000202        DAT1A:  MOV     #202,R2         ;R2=WORD COUNT +2
005106  010123        1$:     MOV     R1,(R3)+        ;LOAD BUFFER
005110  005302                DEC     R2              ;SEE IF DONE
005112  001375                BNE     1$              ;IF NOT: BR
005114  000207                RTS     PC              ;RETURN TO CALLER

                                        ;ALL ZEROS**********

005116  005001        DAT2:   CLR     R1              ;R1=DATA
005120  000770                BR      DAT1A           ;LOAD BUFFER

                                        ;ONE/ZERO IN ALTERNATING CHARACTERS**********

005122  012701  125125        DAT3:   MOV     #125125,R1      ;R1=DATA
```

```
 1399  005126  000765                        BR      DATIA           ;LOAD BUFFER
 1400
 1401                                        ;ALTERNATING PARITY CHARACTERS*********
 1402
 1403  005130  012701  177377        DAT4:   MOV     #177377,R1      ;R1=ALTERNATING PARITY DATA
 1404  005134  000762                        BR      DATIA           ;GO LOAD BUFFER
 1405
```

```
1406
1407                                                    ;WRAP AROUND MODE 0 GLOBAL*****
1408
1409  005136  012737  000006  000750  WAM0:   MOV     #6,WAM          ;SET WAM NUMBER
1410  005144  012737  000060  000752  WAM01:  MOV     #60,FUN
1411  005152  005037  000754          CLR     DATC
1412  005156  012737  017276  000760          MOV     #WBUFF,DATAD    ;SET BUFFER ADDRESS
1413  005164  012737  017710  000762          MOV     #RBUFF,RDAD     ;SET POINTER TO READ BUFFER
1414  005172  004737  005430          JSR     PC,SETUP        ;GO SET UP
1415  005176  000137  006010  *       JMP     EXEC
1416
1417                                                    ;WRAP AROUND MODE 1 WRITE BUFFER**********
1418
1419  005202  012737  000010  000750  WAM1:   MOV     #10,WAM
1420  005210  000755                  BR      WAM01
1421
1422                                                    ;WRAP AROUND MODE 2 BIT FIDDLER WRITE**********
1423
1424  005212  012737  000012  000750  WAM2:   MOV     #12,WAM
1425  005220  012737  000060  000752          MOV     #60,FUN
1426  005226  005037  000754          CLR     DATC
1427  005232  012737  017276  000760          MOV     #WBUFF,DATAD
1428  005240  012737  017710  000762          MOV     #RBUFF,RDAD
1429  005246  004737  005430  WAM2A:  JSR     PC,SETUP
1430  005252  000137  006010          JMP     EXEC
1431
1432                                                    ;WRAP AROUND MODE 3 BIT FIDDLER READ**********
1433
1434  005256  012737  000014  000750  WAM3:   MOV     #14,WAM         ;SET WAM NUMBER
1435  005264  012737  000070  000752          MOV     #70,FUN         ;SET FUNCTION
1436  005272  012737  017710  000760          MOV     #RBUFF,DATAD    ;SET BUFFER ADDRESS
1437  005300  012737  017276  000756          MOV     #WBUFF,WTAD     ;SET POINTER TO WRITE BUFFER
1438  005306  005737  001006          TST     RDRVF
1439  005312  001411                  BEQ     WAM3A
1440  005314  062737  000376  000760          ADD     #376,DATAD
1441  005322  062737  000377  000756          ADD     #377,WTAD
1442  005330  012737  000076  000752          MOV     #76,FUN         ;SET READ REVERSE CODE
1443  005336  032737  000020  000776  WAM3A:  BIT     #20,UDES
1444  005344  001403                  BEQ     WAM3B
1445  005346  013737  001010  000756          MOV     RCDP,WTAD
1446  005354  004737  005430  WAM3B:  JSR     PC,SETUP        ;GO SET UP
1447  005360  000137  006010          JMP     EXEC            ;GO EXECUTE
1448
1449                                                    ;WRAP AROUND MODE 4 CRC CORRECTION
1450                                                    ;CALL:  JSR     PC,WAM4
1451
1452  005364  012737  000030  000750  WAM4:   MOV     #30,WAM         ;SET MAINTENANCE MODE FUNCTION = WRAP 4
1453  005372  012737  000060  000752          MOV     #60,FUN         ;SET TAPE FUNCTION = WRITE FWD
1454  005400  005037  000754          CLR     DATC
1455  005404  012737  004304  000760          MOV     #CRCDAT,DATAD   ;SET ADRS OF WRITE BUFFER
1456  005412  012737  017710  000762          MOV     #RBUFF,RDAD     ;SET READ BUFFER ADDRESS
1457  005420  004737  005430          JSR     PC,SETUP        ;GO SETUP REGISTERS
1458  005424  000137  006010          JMP     EXEC            ;GO EXECUTE
```

```
1459                                                    ;REGISTER SETUP ROUTINE*****
1460
1461  005430  005737  001022          SETUP:  TST     CRCFLG          ;DO NOT DO DATA SETUP NOR INIT
1462  005434  001004                          BNE     1$              ;IF CRC CORRECTION IS IN PROGRESS
1463  005436  022737  000030  000750        CMP     #30,WAM         ;DO NOT INIT IF DOING WAM 4 --- STEP D
1464  005444  001004                          BNE     2$
1465  005446  012777  000011  173034  1$:     MOV     #11,@C1         ;DO DRIVE CLEAR IF WAM4---STEP D
1466  005454  000412                          BR      SETIA
1467  005456  005737  000740          2$:     TST     SIFLG           ;SEE IF SINGLE TEST
1468  005462  001403                          BEQ     SETO            ;IF NOT: BR
1469  005464  005737  001000                  TST     WPGFL           ;SEE IF HAVE SELECTED PATTERN
1470  005470  001002                          BNE     SET1            ;IF SO: BR
1471  005472  004737  004742          SETO:   JSR     PC,DSUP         ;GO DO DATA SETUP
1472  005476  004737  012064          SET1:   JSR     PC,INIT         ;INIT CONTROLLER,SELECT UNIT & DRIVE
1473                                                                  ;LOAD SLAVE DESC AND MOVE OFF BOT
1474  005502  012777  177400  173006  SET1A:  MOV     #-400,@FC       ;SET FC=WCX2
1475  005510  032737  000020  000776          BIT     #20,UDES        ;SEE IF CORE DUMP
1476  005516  001403                          BEQ     SET2            ;IF NOT: BR
1477  005520  012777  177000  172770          MOV     #-1000,@FC      ;SET FC=WCX4
1478  005526  012777  177600  172756  SET2:   MOV     #-200,@WC       ;SET WC
1479  005534  013777  000760  172752          MOV     DATAO,@BA       ;SET BUS ADDRESS
1480  005542  032777  010000  172750          BIT     #10000,@CS      ;ASSURE DRIVE THERE
1481  005550  001417                          BEQ     SP1             ;IF SO: BR
1482  005552  032777  020000  173010          BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
1483  005560  001004                          BNE     SP01            ;IF NOT: BR
1484  005562  012704  016437                  MOV     #WMSG4,R4
1485  005566  004737  012714                  JSR     PC,TTOUT        ;PRINT NON-EXISTANT DRIVE
1486  005572  032777  100000  172770  SP01:   BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
1487  005600  001401                          BEQ     SP0             ;IF NOT: BR
1488  005602  000000                          HALT
1489  005604  000137  005476          SP0:    JMP     SET1            ;RESETUP
1490  005610  022737  000014  000750  SP1:    CMP     #14,WAM         ;SEE IF WAM 3
1491  005616  001031                          BNE     SP1B            ;IF NOT: BR
1492  005620  117737  173132  0C0754          MOVB    @WTAO,DATC      ;GET FIRST CHAR
1493  005626  042737  177400  000754          BIC     #177400,DATC
1494  005634  000337  000754                  SWAB    DATC
1495  005640  052737  000200  000754          BIS     #200,DATC       ;SET PARITY
1496  005646  005737  001006                  TST     RDRVF           ;SEE IF READ REVERSE
1497  005652  001403                          BEQ     SP1A            ;IF NOT: BR
1498  005654  005337  000756                  DEC     WTAO            ;DECREMENT POINTER
1499  005660  000410                          BR      SP1B
1500  005662  005237  000756          SP1A:   INC     WTAO            ;BUMP POINTER
1501  005666  032737  000020  000776          BIT     #20,UDES        ;SEE IF CORE DUMP
1502  005674  001402                          BEQ     SP1B            ;IF NOT: BR
1503  005676  005237  000756                  INC     WTAO            ;BUMP POINTER AGAIN
1504  005702  053777  000776  172632  SP1B:   BIS     UDES,@TC        ;SET UNIT DESCRIPTION (DEN,PAR,FMT)
1505  005710  052777  000001  172616          BIS     #1,@MR          ;SET MAINT MODE
1506  005716  053777  000750  172610          BIS     WAM,@MR         ;SET WAM
1507  005724  053777  000754  172602          BIS     DATC,@MR        ;SET DATA
1508  005732  013777  000752  172550          MOV     FUN,@C1         ;SET FUNCTION
1509  005740  032777  040000  172554          BIT     #40000,@DS      ;ASSURE NO ERROR
1510  005746  001002                          BNE     SP3             ;IF ERROR: BR
1511  005750  000240                          NOP
1512  005752  000207                          RTS     PC              ;RETURN
1513  005754  032777  020000  172606  SP3:    BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
1514  005762  001004                          BNE     SP4             ;IF NOT: BR
```

```
1515  005764  012704  016400                    MOV     #WMSG2,R4
1516  005770  004737  012714                    JSR     PC,TTOUT        ;PRINT SETUP ERROR
1517  005774  032777  100000  172566  SP4:      BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
1518  006002  001401                            BEQ     SP5             ;IF NOT: BR
1519  006004  000000                            HALT
1520  006006  000207            SP5:            RTS     PC              ;RETURN
```

```
1521                                                    ;EXECUTE WAM ROUTINE*****
1522
1523  006010  000240                       EXEC:   NOP
1524  006012  000240                               NOP
1525  006014  032777  000040  172512               BIT     #40,@MR
1526  006022  001403                               BEQ     EX0             ;ASSURE MAINT CLOCK IS ZERO
1527  006024  042777  000040  172502               BIC     #40,@MR         ;IF NOT: CLEAR IT
1528  006032  022737  000010  000750  EX0:        CMP     #10,WAM         ;SEE IF WAM 1 OR 2 OR 3
1529  006040  003402                               BLE     2$
1530  006042  000137  006416          1$:         JMP     EX42            ;GO DO WAM 0
1531  006046  022737  000030  000750  2$:         CMP     #30,WAM         ;BRANCH IF WRAP AROUND MODE 4
1532  006054  001772                               BEQ     1$
1533  006056  052777  000001  172424  EX1:        BIS     #1,@C1          ;SET GO BIT
1534  006064  005000                               CLR     R0
1535  006066  012701  000002                       MOV     #2,R1           ;SET DELAY
1536  006072  032777  100000  172442  EX1A:       BIT     #100000,@TC     ;SEE IF ALPHA
1537  006100  001404                               BEQ     EX2             ;IF SO: BR
1538  006102  005300                               DEC     R0
1539  006104  001372                               BNE     EX1A            ;AWAIT ALPHA
1540  006106  005301                               DEC     R1
1541  006110  001370                               BNE     EX1A
1542  006112  005077  172450          EX2:        CLR     @PSW
1543  006116  012701  000400                       MOV     #400,R1         ;SET NUMBER OF CLKS
1544  006122  032737  000020  000776               BIT     #20,UDES        ;SEE IF CORE DUMP
1545  006130  001402                               BEQ     EX3             ;IF NOT: BR
1546  006132  012701  001000                       MOV     #1000,R1        ;SET CLOCKS LWCX4
1547  006136  022737  000014  000750  EX3:        CMP     #14,WAM         ;SEE IF WAM 3
1548  006144  001412                               BEQ     EX5A            ;IF SO: BR
1549  006146  032737  002000  000776               BIT     #2000,UDES      ;SEE IF PE
1550  006154  001404                               BEQ     EX5             ;IF NOT PE: BR
1551  006156  006301                               ASL     R1
1552  006160  062701  000246                       ADD     #246,R1         ;SET TO ALLOW FOR PRE/POSTAMBLE
1553  006164  000402                               BR      EX5A
1554  006166  062701  000010          EX5:        ADD     #10,R1          ;ADD CLOCKS FOR CRC AND LRC
1555  006172  022737  000014  000750  EX5A:       CMP     #14,WAM         ;SEE IF WAM 3
1556  006200  001053                               BNE     EX5C            ;IF NOT: BR
1557  006202  117700  172550                       MOVB    @WTAD,R0
1558  006206  042700  177400                       BIC     #177400,R0
1559  006212  005737  001006                       TST     RDRVF           ;SEE IF REVERSE
1560  006216  001403                               BEQ     EX5A1           ;IF NOT: BR
1561  006220  005337  000756                       DEC     WTAD            ;DEC POINTER
1562  006224  000416                               BR      EX5B
1563  006226  005237  000756          EX5A1:      INC     WTAD
1564  006232  032737  000020  000776               BIT     #20,UDES        ;SEE IF CORE DUMP
1565  006240  001410                               BEQ     EX5B            ;IF NOT: BR
1566  006242  005237  000756                       INC     WTAD            ;BUMP POINTER
1567  006246  005777  172504                       TST     @WTAD           ;SEE IF END
1568  006252  001003                               BNE     EX5B            ;IF NOT: BR
1569  006254  162737  000010  000756               SUB     #10,WTAD        ;RESTORE POINTER
1570  006262  052777  000040  172244  EX5B:       BIS     #40,@MR         ;CLOCK UP
1571  006270  017702  172240                       MOV     @MR,R2          ;READ MR
1572  006274  042702  177600                       BIC     #177600,R2      ;MASK OUT DATA
1573  006300  000300                               SWAB    R0              ;POSITION DATA
1574  006302  022700  177000                       CMP     #177000,R0      ;SEE IF PATTERN 3
1575  006306  001404                               BEQ     2$              ;IF SO: BR
1576  006310  000240                               NOP
```

```
1577  006312  000240                          NOP
1578  006314  052700  000200          1$:     BIS     #200,R0         ;SET ODD PARITY
1579  006320  050002                  2$:     BIS     R0,R2           ;LOAD NEW DATA
1580  006322  010277  172206                  MOV     R2,@MR          ;CLOCK DOWN AND LOAD NEW DATA
1581  006326  000426                          BR      EX5D
1582  006330  052777  000040  172176  EX5C:   BIS     #40,@MR         ;CLOCK UP
1583  006336  042777  000040  172170          BIC     #40,@MR         ;CLOCK DOWN
1584  006344  017700  172164                  MOV     @MR,R0          ;GET MR
1585  006350  000300                          SWAB    R0
1586  006352  032737  000010  000776          BIT     #10,UDES        ;SEE IF EVEN PAR
1587  006360  001405                          BEQ     EX5C0           ;IF NOT: BR
1588  006362  010077  172374                  MOV     R0,@RDAD
1589  006366  005237  000762                  INC     RDAD
1590  006372  000402                          BR      EX5C1
1591  006374  110077  172362          EX5C0:  MOVB    R0,@RDAD        ;PUT CHAR IN CORE
1592  006400  005237  000762          EX5C1:  INC     RDAD
1593  006404  000240                  EX5D:   NOP
1594  006406  005301                          DEC     R1              ;SEE IF DONE CLKS
1595  006410  001270                          BNE     EX5A            ;IF NOT: BR
1596  006412  000137  011570                  JMP     EORP            ;GO DO EOR
```

```
1597                                                    ;EXECUTE WAM 0******
1598
1599  006416  000240                        EXW2:   NOP
1600  006420  012737  006604  000670                MOV     #EXW2H,RTRN     ;SET INTERRUPT RETURN ADDRESS
1601  006426  012701  000200                MOV     #200,R1         ;SET NUMBER OF CLOCKS = FC/2
1602  006432  032737  002000  000776        BIT     #2000,UDES      ;SEE IF PE
1603  006440  001402                        BEQ     EXW2A           ;IF NOT: BR
1604  006442  012701  000100                MOV     #100,R1         ;ELSE SET CLKS = FC/4
1605  006446  012702  017710        EXW2A:  MOV     #RBUFF,R2               ;SET BUFFER ADDRESS
1606  006452  022737  000030  000750        CMP     #30,WAM         ;BRANCH IF NOT WRAP 4
1607  006460  001003                        BNE     1$
1608  006462  052777  000010  172030        BIS     #10,@CS         ;SET INHIBIT BUS ADDRESS INCREMENT
1609  006470  012777  000161  172012  1$:   MOV     #161,@C1        ;SET WRITE COMMAND  AND GO
1610  006476  005077  172064                CLR     @PSW            ;ALLOW INTERRUPT
1611  006502  032777  000040  172024  EXW2B: BIT     #40,@MR
1612  006510  001774                        BEQ     EXW2B           ;AWAIT CLOCK UP
1613  006512  017722  172016                MOV     @MR,(R2)+       ;GET DATA
1614  006516  032777  000040  172010  EXW2C: BIT     #40,@MR
1615  006524  001374                        BNE     EXW2C           ;AWAIT CLOCK DOWN
1616  006526  017722  172002                MOV     @MR,(R2)+       ;GET DATA
1617  006532  005301                        DEC     R1              ;SEE IF DONE ALL
1618  006534  001362                        BNE     EXW2B           ;IF NOT: BR
1619  006536  012701  000003        EXW2E:  MOV     #3,R1
1620  006542  005000                        CLR     R0              ;SET DELAY
1621  006544  005300                EXW2F:  DEC     R0
1622  006546  001376                        BNE     EXW2F
1623  006550  005301                        DEC     R1
1624  006552  001374                        BNE     EXW2F           ;DELAY
1625  006554  032777  020000  172006        BIT     #20000,@SWR     ;SEE IF ERROR PRINT
1626  006562  001004                        BNE     EXW2G           ;IF NOT: BR
1627  006564  012704  016642                MOV     #WMSG24,R4
1628  006570  004737  012714                JSR     PC,TTOUT        ;PRINT NO INTERUPT
1629  006574  005777  171770        EXW2G:  TST     @SWR            ;SEE IF HALT ON ERROR
1630  006600  100001                        BPL     EXW2H           ;IF NOT: BR
1631  006602  000000                        HALT
1632  006604  000240                EXW2H:  NOP
1633  006606  012701  017710                MOV     #RBUFF,R1       ;GET START OF READ BUFFER
1634  006612  012700  000400                MOV     #400,R0         ;SET SIZE
1635  006616  010102                        MOV     R1,R2
1636  006620  012203                EXW2J:  MOV     (R2)+,R3
1637  006622  000303                        SWAB    R3
1638  006624  032737  000010  000776        BIT     #10,UDES        ;SEE IF EVEN PAR
1639  006632  001402                        BEQ     EXW2JO          ;IF NOT: BR
1640  006634  010321                        MOV     R3,(R1)+        ;SAVE PAR + DATA
1641  006636  000401                        BR      EXW2J1
1642  006640  110321                EXW2JO: MOVB    R3,(R1)+        ;ASSEMBLE DATA IN BYTES
1643  006642  005300                EXW2J1: DEC     R0
1644  006644  001365                        BNE     EXW2J           ;CONTINUE FOR ALL
1645  006646  032777  000200  171714        BIT     #200,@SWR       ;SEE IF STATUS CHECK
1646  006654  001002                        BNE     EXW2K           ;IF NOT: BR
1647  006656  004737  006704                JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
1648  006662  000240                EXW2K:  NOP
1649  006664  032777  000400  171676        BIT     #400,@SWR       ;SEE IF DATA CHECK
1650  006672  001002                        BNE     EXW2X           ;IF NOT: BR
1651  006674  004737  007274                JSR     PC,DCHK         ;ELSE GO CHECK DATA
1652  006700  000240                EXW2X:  NOP
```

```
 1653  006702  000207                        RTS     PC              ;EXIT
```

```
1654
1655                                                    ;WRAP AROUND STATUS CHECK ROUTINE*********
1656
1657  006704  000240                          WSTCK:    NOP
1658  006706  005037  000772                            CLR     SERFL           ;CLEAR ERROR FLAG
1659  006712  005037  000620                            CLR     HDRFL           ;CLEAR HEADER FLAG
1660  006716  022737  014575  000622                    CMP     #MSLT2,EMADDR   ;SEE IF TEST 2
1661  006724  001404                                    BEQ     2$              ;IF SO: BR
1662  006726  022737  015465  000622                    CMP     #MSLT15,EMADDR  ;SEE IF TEST 15
1663  006734  001025                                    BNE     5$              ;IF NOT: BR
1664  006736  005737  001000                  2$:       TST     WPGFL           ;SEE IF SINGLE PATTERN
1665  006742  001405                                    BEQ     3$              ;IF NOT: BR
1666  006744  122737  000003  001000                    CMPB    #3,WPGFL        ;SEE IF PATTERN 3
1667  006752  001016                                    BNE     5$              ;IF NOT: BR
1668  006754  000404                                    BR      4$              ;ELSE GO DO EXPT CHANGE
1669  006756  022737  000003  001002  3$:       CMP     #3,PATRN        ;SEE IF PATTERN 3
1670  006764  001011                                    BNE     5$              ;IF NOT: BR
1671  006766  052737  140000  001024  4$:       BIS     #140000,WCS1
1672  006774  052737  140000  001030                    BIS     #140000,WDS
1673  007002  052737  000100  001032                    BIS     #100,WER        ;SET EXPT PARITY ERROR
1674  007010  012737  016464  000672  5$:       MOV     #WMSG6,ERADD    ;SET CODE=CS1
1675  007016  017702  171466                          MOV     @CS1,R2         ;GET RCVD CS1
1676  007022  013705  001024                          MOV     WCS1,R5         ;GET EXPT CS1
1677  007026  004737  007150                          JSR     PC,WSTG         ;GO CHK
1678  007032  012737  016511  000672                  MOV     #WMSG6D,ERADD   ;SET CODE=CS2
1679  007040  017702  171454                          MOV     @CS2,R2         ;SET RCVD CS2
1680  007044  013705  001026                          MOV     WCS2,R5         ;GET EXPT CS2
1681  007050  053705  000624                          BIS     DRVN,R5         ;SET DRIVE NUMBER IN EXPT CS2
1682  007054  004737  007150                          JSR     PC,WSTG         ;GO CHK
1683  007060  012737  016517  000672                  MOV     #WMSG6E,ERADD   ;SET CODE=DS
1684  007066  017702  171430                          MOV     @DS,R2          ;SET RCVD DS
1685  007072  013705  001030                          MOV     WDS,R5          ;GET EXPT DS
1686  007076  004737  007150                  1$:     JSR     PC,WSTG         ;GO CHK
1687  007102  012737  016524  000672                  MOV     #WMSG6F,ERADD   ;SET CODE=ER
1688  007110  017702  171410                          MOV     @ER,R2          ;GET RCVD ER
1689  007114  000240                                    NOP
1690  007116  000240                                    NOP
1691  007120  013705  001032                          MOV     WER,R5          ;GET EXPT ER
1692  007124  004737  007150                          JSR     PC,WSTG         ;GO CHK
1693  007130  005737  000772                          TST     SERFL           ;SEE IF ANY ERRORS
1694  007134  001456                                    BEQ     WSTX            ;IF NOT: BR
1695  007136  005777  171426                          TST     @SWR            ;SEE IF HALT ON ERROR
1696  007142  100053                                    BPL     WSTX            ;IF NOT: BR
1697  007144  000000                                    HALT
1698  007146  000451                                    BR      WSTX            ;CONTINUE
1699  007150  000240                          WSTG:     NOP
1700  007152  020205                                    CMP     R2,R5           ;SEE IF EXPT=RCVD
1701  007154  001446                                    BEQ     WSTX            ;IF SO: BR
1702  007156  005237  000772                          INC     SERFL           ;SET ERROR FLAG
1703  007162  032777  020000  171400                    BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
1704  007170  001040                                    BNE     WSTX            ;IF NOT: BR
1705  007172  005737  000620                          TST     HDRFL           ;SEE IF DONE HEADER
1706  007176  001010                                    BNE     WSTGO           ;IF SO: BR
1707  007200  013704  000622                          MOV     EMADDR,R4
1708  007204  004737  012714                          JSR     PC,TTOUT        ;PRINT TEST HEADER
1709  007210  012704  016626                          MOV     #WMSG23,R4
```

```
 1710  007214  004737  012714                      JSR     PC,TTOUT        ;PRINT STATUS TAG
 1711  007220  012737  000001  000620  WSTGO:     MOV     #1,HDRFL        ;SET HEADER FLAG
 1712  007226  013704  000672                      MOV     ERADD,R4
 1713  007232  004737  012714                      JSR     PC,TTOUT        ;PRINT CODE
 1714  007236  012704  014165                      MOV     #MSG12,R4
 1715  007242  004737  012714                      JSR     PC,TTOUT        ;PRINT EXPT TAG
 1716  007246  010503                             MOV     R5,R3
 1717  007250  004737  013042                      JSR     PC,OCTP         ;PRINT EXPT STATUS
 1718  007254  012704  014174                      MOV     #MSG13,R4
 1719  007260  004737  012714                      JSR     PC,TTOUT        ;PRINT RCVD TAG
 1720  007264  010203                             MOV     R2,R3
 1721  007266  004737  013042                      JSR     PC,OCTP         ;PRINT RCVD STATUS
 1722  007272  000207                  WSTX:      RTS     PC              ;RETURN
 1723
```

```
1724
1725                                        ;DATA CHECK ROUTINE*****
1726
1727  007274  000240                DCHK:   NOP
1728  007276  005737  001022                TST     CRCFLG          ;DO NOT DO A DATA CHACK
1729  007302  001402                        BEQ     2$              ;IF CRC CORRECTION IN PROGRESS
1730  007304  000137  010134        1$:     JMP     DCHKX1
1731  007310  005737  001020        2$:     TST     DCHKFL          ;BRANCH IF DATA IS NOT TO BE CHECKED
1732  007314  001373                        BNE     1$
1733  007316  005037  000620                CLR     HDREL           ;CLEAR HEADER FLAG
1734  007322  005037  000766                CLR     DERFL           ;CLEAR DATA ERROR FLAG
1735  007326  005037  000774                CLR     CRCNT           ;CLEAR CHAR CNTR
1736  007332  032737  000010  000776        BIT     #10,UDES        ;SEE IF EVEN PARITY
1737  007340  001402                        BEQ     DCHKA0          ;IF NOT: BR
1738  007342  000137  010156                JMP     DCHKE           ;ELSE GO CHECK EVEN
1739  007346  022737  000010  000750  DCHKA0: CMP    #10,WAM         ;SEE IF WAM 1
1740  007354  001006                        BNE     DCHKA           ;IF NOT: BR
1741  007356  032737  002000  000776        BIT     #2000,UDES      ;SEE IF PE
1742  007364  001402                        BEQ     DCHKA           ;IF NOT: BR
1743  007366  000137  010660                JMP     PRCHK           ;GO CHK DATA
1744  007372  012700  177400  DCHKA:  MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
1745  007376  022737  000012  000750        CMP     #12,WAM
1746  007404  001006                        BNE     DCHKA1          ;IF NOT WRAP 2: BR
1747  007406  032737  000020  000776        BIT     #20,UDES
1748  007414  001402                        BEQ     DCHKA1          ;IF NOT CORE DUMP: BR
1749  007416  012700  177000                MOV     #-1000,R0
1750  007422  022737  000030  000750  DCHKA1: CMP    #30,WAM         ;BRANCH IF WRAP 4
1751  007430  001404                        BEQ     1$
1752  007432  022737  000006  000750        CMP     #6,WAM          ;SEE IF WRAP 0
1753  007440  001007                        BNE     DCHKA2          ;IF NOT: BR
1754  007442  012700  177744        1$:     MOV     #-34,R0         ;SET NUMBER OF CHARACTERS READ
1755  007446  012701  017306                MOV     #WBUFF+10,R1    ;SET POINTER
1756  007452  005037  000766                CLR     DERFL           ;CLEAR DATA ERROR FLAG
1757  007456  000431                        BR      DCHKB0
1758  007460  022737  000012  000750  DCHKA2: CMP    #12,WAM         ;SEE IF WRAP 2
1759  007466  001021                        BNE     DCHKB           ;IF NOT: BR
1760  007470  032737  002000  000776        BIT     #2000,UDES      ;SEE IF PE
1761  007476  001415                        BEQ     DCHKB           ;IF NOT: BR
1762  007500  012700  177653                MOV     #-125,R0        ;POINT TO START OF DATA
1763  007504  012737  000001  000764        MOV     #1,W2FLG        ;SET WRAP 2 FLAG
1764  007512  004737  007532                JSR     PC,DCHKB        ;GO CHECK DATA
1765  007516  004737  011160                JSR     PC,W1DCHK       ;GO CHECK WRAP 1 DATA
1766  007522  005037  000764                CLR     W2FLG
1767  007526  000137  010116                JMP     DCHKX
1768  007532  005037  000766        DCHKB:  CLR     DERFL
1769  007536  012701  017276                MOV     #WBUFF,R1       ;SET GOOD POINTER
1770  007542  012702  017710        DCHKB0: MOV     #RBUFF,R2       ;SET READ POINTER
1771  007546  032737  000020  000776        BIT     #20,UDES        ;SEE IF CORE DUMP
1772  007554  001416                        BEQ     DCHKD           ;IF NOT: BR
1773  007556  022737  000012  000750        CMP     #12,WAM         ;SEE IF WAM 2
1774  007564  001011                        BNE     DCHKD           ;IF NOT: BR
1775  007566  005737  001002                TST     PATRN           ;SEE IF PATTERN 0
1776  007572  001003                        BNE     DCHKC           ;IF NOT: BR
1777  007574  012701  001056                MOV     #WCDP0,R1       ;SET CORE DUMP PATTERN 0
1778  007600  000404                        BR      DCHKD           ;GO CHECK DATA
1779  007602  012701  001044        DCHKC:  MOV     #WCDP2,R1       ;SET CORE DUMP WRITE PATTERN 2
```

```
1780  007606  000401                          BR      DCHK0           ;GO CHECK DATA
1781  007610  000240                  DCHK0:  NOP
1782  007612  121112                  DCHK0:  CMPB    (R1),(R2)       ;SEE IF DATA OK
1783  007614  001466                          BEQ     DCHK2           ;IF SO: BR
1784  007616  032777  020000  170744          BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
1785  007624  001062                          BNE     DCHK2           ;IF NOT: BR
1786  007626  005737  000620                  TST     HDRFL           ;SEE IF DONE HEADER
1787  007632  001004                          BNE     DCHK1           ;IF SO: BR
1788  007634  013704  000622                  MOV     EMADDR,R4
1789  007640  004737  012714                  JSR     PC,TTOUT        ;PRINT HEADER
1790  007644  005737  000766          DCHK1:  TST     DERFL           ;SEE IF FIRST ERROR
1791  007650  001014                          BNE     DCHK1A          ;IF NOT: BR
1792  007652  012704  016574                  MOV     #MSG16,R4
1793  007656  004737  012714                  JSR     PC,TTOUT        ;PRINT DATA ERROR TAG
1794  007662  012704  017021                  MOV     #MSG32,R4
1795  007666  004737  012714                  JSR     PC,TTOUT        ;PRINT PATRN TAG
1796  007672  013703  001002                  MOV     PATRN,R3
1797  007676  004737  013042                  JSR     PC,OCTP         ;PRINT PATTERN NUMBER
1798  007702  012737  000001  000620  DCHK1A: MOV     #1,HDRFL        ;SET HEADER FLAG
1799  007710  012737  000001  000766          MOV     #1,DERFL        ;SET DATA ERROR FLAG
1800  007716  012704  016620                  MOV     #MSG21,R4
1801  007722  004737  012714                  JSR     PC,TTOUT        ;PRINT CHARACTER NUMBER TAG
1802  007726  013703  000774                  MOV     CRCNT,R3
1803  007732  004737  013042                  JSR     PC,OCTP         ;PRINT CHARACTER NUMBER
1804  007736  012704  016606                  MOV     #MSG17,R4
1805  007742  004737  012714                  JSR     PC,TTOUT        ;PRINT GOOD TAG
1806  007746  111103                          MOVB    (R1),R3
1807  007750  004737  013270                  JSR     PC,DOUT         ;PRINT GOOD DATA
1808  007754  012704  016613                  MOV     #MSG20,R4
1809  007760  004737  012714                  JSR     PC,TTOUT        ;PRINT BAD TAG
1810  007764  111203                          MOVB    (R2),R3
1811  007766  004737  013270                  JSR     PC,DOUT         ;PRINT BAD DATA
1812  007772  005737  000764          DCHK2:  TST     W2FLG           ;SEE IF WRAP 2 NRZ
1813  007776  001020                          BNE     DCHK2B          ;IF SO: BR
1814  010000  005201                          INC     R1              ;BUMP POINTER
1815  010002  032737  000020  000776          BIT     #20,UDES        ;SEE IF CORE DUMP
1816  010010  001413                          BEQ     DCHK2B          ;IF NOT: BR
1817  010012  022737  000012  000750          CMP     #12,WAM         ;SEE IF WAM 2
1818  010020  001006                          BNE     DCHK2A          ;IF NOT: BR
1819  010022  005201                          INC     R1              ;BUMP POINTER
1820  010024  005711                          TST     (R1)            ;SEE IF END OF PATTERN
1821  010026  001004                          BNE     DCHK2B          ;IF NOT: BR
1822  010030  162701  000010                  SUB     #10,R1          ;RESET POINTER TO START OF PATTERN
1823  010034  000401                          BR      DCHK2B          ;CONTINUE CHECK
1824  010036  000240                  DCHK2A: NOP
1825  010040  005202                  DCHK2B: INC     R2
1826  010042  022737  000030  000750          CMP     #30,WAM         ;BRANCH IF WAM 4
1827  010050  001404                          BEQ     1$
1828  010052  022737  000006  000750          CMP     #6,WAM          ;SEE IF WAM 0
1829  010060  001002                          BNE     DCHK3           ;IF NOT: BR
1830  010062  062701  000010          1$:     ADD     #10,R1          ;BUMP POINTER
1831  010066  005237  000774          DCHK3:  INC     CRCNT           ;BUMP CHAR CNTR
1832  010072  032777  000400  170470          BIT     #400,@SWR       ;SEE IF CONT DATA CHK
1833  010100  001006                          BNE     DCHKX           ;IF NOT: BR
1834  010102  005200                          INC     R0              ;SEE IF DONE
1835  010104  001242                          BNE     DCHK0           ;IF NOT: BR
```

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  1836  010106  005737  000764            TST     W2FLG
  1837  010112  001401                    BEQ     DCHKX
  1838  010114  000207                    RTS     PC
  1839  010116  005777  170446  DCHKX:    TST     @SWR            ;SEE IF HALT ON ERROR
  1840  010122  100004                    BPL     DCHKX1          ;IF NOT: BR
  1841  010124  005737  000766            TST     DERFL           ;SEE IF DATA ERROR OCCURED
  1842  010130  001401                    BEQ     DCHKX1          ;IF NOT: BR
  1843  010132  000000                    HALT
  1844  010134  005037  000774  DCHKX1:   CLR     CRCNT           ;CLEAR CHAR CNTR
  1845  010140  005037  000620            CLR     HDRFL           ;CLEAR HEADER FLAG
  1846  010144  005037  000756            CLR     DERFL           ;CLEAR DATA ERROR FLAG
  1847  010150  005037  000770            CLR     PREFL           ;CLEAR PREAMBLE FLAG
  1848  010154  000207                    RTS     PC              ;RETURN
```

```
 1849
 1850                                          ;EVEN PARITY DATA CHECK*****
 1851
 1852  010156  000240          DCHKE:  NOP
 1853  010160  022737  000006  000750          CMP     #6,WAM          ;SEE IF WRAP 0
 1854  010166  001005                          BNE     1$              ;IF NOT: BR
 1855  010170  012700  177744                  MOV     #-34,R0         ;SET NUMBER OF CHARACTERS READ
 1856  010174  012701  017306                  MOV     #WBUFF+10,R1    ;SET POINTER
 1857  010200  000404                          BR      2$
 1858  010202  012700  177400          1$:     MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
 1859  010206  012701  017276                  MOV     #WBUFF,R1       ;R1=START OF WRITE BUFFER
 1860  010212  012702  017710          2$:     MOV     #RBUFF,R2       ;R2=START OF READ BUFFER
 1861  010216  111105                  DCKE0:  MOVB    (R1),R5         ;GET EXPT DATA
 1862  010220  005003                          CLR     R3
 1863  010222  012704  000010                  MOV     #10,R4          ;SET NUMBER OF BITS
 1864  010226  032705  000001          DCKE1:  BIT     #1,R5           ;SEE IF ONE BIT
 1865  010232  001401                          BEQ     DCKE2           ;IF NOT: BR
 1866  010234  005203                          INC     R3              ;COUNT ONE BITS FOR PARITY CHECK
 1867  010236  005304                  DCKE2:  DEC     R4              ;SEE IF DONE
 1868  010240  001402                          BEQ     DCKE3           ;IF SO: BR
 1869  010242  006005                          ROR     R5              ;POINT TO NEXT BIT
 1870  010244  000770                          BR      DCKE1
 1871  010246  000240                  DCKE3:  NOP
 1872  010250  111105                          MOVB    (R1),R5         ;GET EXPT DATA
 1873  010252  042705  177400                  BIC     #177400,R5      ;MASK DATA FIELD
 1874  010256  005703                          TST     R3
 1875  010260  001003                          BNE     DCKE4           ;IF NO ONE BITS SET: BR
 1876  010262  012705  100020                  MOV     #100020,R5
 1877  010266  000405                          BR      DCKE5
 1878  010270  032703  000001          DCKE4:  BIT     #1,R3           ;SEE IF ODD NUMBER OF ONE BITS
 1879  010274  001402                          BEQ     DCKE5           ;IF NOT: BR
 1880  010276  052705  100000                  BIS     #100000,R5      ;SET EVEN PARITY BIT=1
 1881  010302  042712  077400          DCKE5:  BIC     #77400,(R2)     ;MASK DATA FIELD
 1882  010306  020512                          CMP     R5,(R2)         ;SEE IF DATA + PARITY GOOD
 1883  010310  001477                          BEQ     DCKE10          ;IF SO: BR
 1884  010312  032777  020000  170250          BIT     #20000,@SWR     ;SEE IF ERROR PRINT
 1885  010320  001073                          BNE     DCKE10          ;IF NOT: BR
 1886  010322  005737  000620                  TST     HDRFL           ;SEE IF DONE HEADER
 1887  010326  001004                          BNE     DCKE6           ;IF SO: BR
 1888  010330  013704  000622                  MOV     EHADDR,R4
 1889  010334  004737  012714                  JSR     PC,TTOUT        ;PRINT HEADER
 1890  010340  005737  000766          DCKE6:  TST     DERFL           ;SEE IF FIRST BAD CHAR
 1891  010344  001014                          BNE     DCKE7           ;IF NOT: BR
 1892  010346  012704  016574                  MOV     #WMSG16,R4
 1893  010352  004737  012714                  JSR     PC,TTOUT        ;PRINT BAD DATA TAG
 1894  010356  012704  017021                  MOV     #WMSG32,R4
 1895  010362  004737  012714                  JSR     PC,TTOUT        ;PRINT PATTERN TAG
 1896  010366  013703  001002                  MOV     PATRN,R3
 1897  010372  004737  013042                  JSR     PC,OCTP         ;PRINT PATTERN NUMBER
 1898  010376  000240                  DCKE7:  NOP
 1899  010400  012737  000001  000766          MOV     #1,DERFL        ;SET DATA ERROR FLAG
 1900  010406  012737  000001  000620          MOV     #1,HDRFL        ;SET HEADER FLAG
 1901  010414  012704  016620                  MOV     #WMSG21,R4
 1902  010420  004737  012714                  JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
 1903  010424  013703  000774                  MOV     CRCNT,R3
 1904  010430  004737  013042                  JSR     PC,OCTP         ;ORINT CHAR NUMBER
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 1905  010434  012704  016606                    MOV     #WMSG17,R4
 1906  010440  004737  012714                    JSR     PC,TTOUT        ;PRINT GOOD DATA TAG
 1907  010444  110503                           MOVB    R5,R3
 1908  010446  004737  013270                    JSR     PC,DOUT         ;PRINT EXPT DATA
 1909  010452  010503                           MOV     R5,R3
 1910  010454  004737  010564                    JSR     PC,DCKEP        ;GO PRINT PARITY BIT
 1911  010460  000240                           NOP
 1912  010462  012704  016613                    MOV     #WMSG20,R4
 1913  010466  004737  012714                    JSR     PC,TTOUT        ;PRINT BAD TAG
 1914  010472  111203                           MOVB    (R2),R3
 1915  010474  004737  013270                    JSR     PC,DOUT         ;PRINT BAD DATA
 1916  010500  011203                           MOV     (R2),R3
 1917  010502  004737  010564                    JSR     PC,DCKEP        ;GO PRINT PARITY BIT
 1918  010506  000240                           NOP
 1919  010510  005201                 DCKE10:   INC     R1
 1920  010512  022737  000006  000750          CMP     #6,WAM          ;SEE IF WRAP 0
 1921  010520  001002                           BNE     1$              ;IF NOT: BR
 1922  010522  062701  000010                    ADD     #10,R1          ;BUMP POINTER
 1923  010526  005722                 1$:       TST     (R2)+           ;BUMP POINTERS
 1924  010530  005237  000774                    INC     CRCNT           ;BUMP CHAR CNTR
 1925  010534  032777  000400  170026          BIT     #400,@SWR       ;SEE IF CONTINUE DATA CHECK
 1926  010542  001402                           BEQ     DCKE11          ;IF SO: BR
 1927  010544  000137  010116                    JMP     DCHKX           ;GO TO END OF DATA CHECK
 1928  010550  005200                 DCKE11:   INC     R0              ;SEE IF DONE
 1929  010552  001402                           BEQ     DCKE12          ;IF SO: BR
 1930  010554  000137  010216                    JMP     DCKE0           ;ELSE CONTINUE
 1931  010560  000137  010116          DCKE12:  JMP     DCHKX           ;GO TO END OF DATA CHECK
 1932  010564  000240                 DCKEP:    NOP
 1933  010566  012737  000240  000614          MOV     #240,T0B
 1934  010574  004737  013014                    JSR     PC,TOG          ;SPACE
 1935  010600  012737  000260  000614          MOV     #260,T0B        ;SET PAR=0
 1936  010606  005703                           TST     R3              ;SEE IF PARITY REALLY=0
 1937  010610  100002                           BPL     DCKEP0          ;IF SO: BR
 1938  010612  005237  000614                    INC     T0B             ;ELSE SET TO 1
 1939  010616  004737  013014          DCKEP0:  JSR     PC,TOG          ;PRINT PARITY BIT
 1940  010622  000207                           RTS     PC              ;RETURN
 1941
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1942
1943                                        ;PREAMBLE/POSTAMBLE CHECK*******
1944
1945  010624  012700  000051        PSCHK:  MOV     #51,R0          ;SET SIZE OF POSTAMBLE
1946  010630  012701  017154                MOV     #POST,R1        ;SET POINTER TO POSTAMBLE
1947  010634  005037  000620                CLR     HDRFL           ;CLEAR HEADER FLAG
1948  010640  005037  000774                CLR     CRCNT           ;CLEAR CHAR CNTR
1949  010644  005037  000766                CLR     DERFL           ;CLEAR DATA ERROR FLAG
1950  010650  000240                        NOP
1951  010652  000240                        NOP
1952  010654  000137  010676                JMP     PDO             ;GO CHECK POSTAMPLE
1953
1954  010660  012700  000051        PRCHK:  MOV     #51,R0          ;SET SIZE OF P  AMBLE
1955  010664  012701  012032                MOV     #PRE,R1         ;SET POINTER TO PREAMBLE
1956  010670  012702  017710                MOV     #RBUFF,R2       ;SET POINTER TO START OF READ BUFFER
1957  010674  022122                        CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
1958  010676  121112          PDO:  CMPB    (R1),(R2)       ;CHECK DATA
1959  010700  001004                BNE     PD1             ;IF NOT GOOD: BR
1960  010702  126162  000001  000001        CMPB    1(R1),1(R2)     ;COMPARE COMPLIMENT BYTE
1961  010710  001477                BEQ     PD5             ;IF GOOD: BR
1962  010712  032777  020000  167650  PD1:  BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
1963  010720  001073                BNE     PD5             ;IF SO: BR
1964  010722  005737  000620                TST     HDRFL           ;SEE IF DONE HEADER
1965  010726  001020                BNE     PD4             ;IF SO: BR
1966  010730  013704  000622                MOV     EMADDR,R4
1967  010734  004737  012714                JSR     PC,TTOUT        ;PRINT TEST HEADER
1968  010740  005737  000770                TST     PREFL           ;SEE IF PREAMBLE CHECK
1969  010744  001403                BEQ     PD2             ;IF NOT: BR
1970  010746  012704  016745                MOV     #WMSG29,R4      ;SET POSTAMBLE HEADER
1971  010752  000402                BR      PD3
1972  010754  012704  016727        PD2:    MOV     #WMSG28,R4      ;SET PREAMBLE HEADER
1973  010760  004737  012714        PD3:    JSR     PC,TTOUT        ;PRINT HEADER
1974  010764  005237  000620                INC     HDRFL
1975  010770  012704  016620        PD4:    MOV     #WMSG21,R4
1976  010774  004737  012714                JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
1977  011000  013703  000774                MOV     CRCNT,R3
1978  011004  004737  013042                JSR     PC,OCTP         ;PRINT CHAR NUMBER
1979  011010  012704  016606                MOV     #WMSG17,R4
1980  011014  004737  012714                JSR     PC,TTOUT        ;PRINT GOOD TAG
1981  011020  116103  000001                MOVB    1(R1),R3
1982  011024  004737  013270                JSR     PC,DOUT         ;PRINT GOOD CHAR
1983  011030  012737  000240  000614        MOV     #240,TOB
1984  011036  004737  013014                JSR     PC,TOG
1985  011042  111103                MOVB    (R1),R3
1986  011044  004737  013270                JSR     PC,DOUT         ;PRINT COMPLEMENT
1987  011050  012704  016613                MOV     #WMSG20,R4
1988  011054  004737  012714                JSR     PC,TTOUT        ;PRINT BAD TAG
1989  011060  116203  000001                MOVB    1(R2),R3
1990  011064  004737  013270                JSR     PC,DOUT         ;PRINT BAD CHAR
1991  011070  012737  000240  000614        MOV     #240,TOB
1992  011076  004737  013014                JSR     PC,TOG
1993  011102  111203                MOVB    (R2),R3
1994  011104  004737  013270                JSR     PC,DOUT         ;PRINT COMPLEMENT
1995  011110  022122          PD5:  CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
1996  011112  005237  000774                INC     CRCNT           ;BUMP CHAR NUMBER
1997  011116  005300                DEC     R0              ;SEE IF DONE
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 1998  011120  001266                      BNE     PD0             ;IF NOT: BR
 1999  011122  005737  000770              TST     PREFL           ;SEE IF PREAMBLE
 2000  011126  001402                      BEQ     PD6             ;IF SO: BR
 2001  011130  000137  010116              JMP     DCHKX           ;GO TO EXIT ROUTINE
 2002  011134  005237  000770    PD6:      INC     PREFL           ;SET PREAMBLE FLAG
 2003  011140  005037  000620              CLR     HDRFL           ;CLEAR HEADER FLAG
 2004  011144  005037  000774              CLR     CRCNT           ;CLEAR CHAR CNTR
 2005  011150  005037  000766              CLR     DERFL           ;CLEAR DATA ERROR FLAG
 2006  011154  000137  011160              JMP     W1DCHK          ;GO CHECK WRAP 1 DATA
 2007
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2008
2009                                            ;WAM 1 PE DATA CHECK*****
2010
2011  011160  012700  177400          W1DCHK: MOV     #-400,R0        ;SET NUMBER OF CHAR TO CHECK
2012  011164  012701  017276                  MOV     #WBUFF,R1       ;SET WRITE DATA POINTER
2013  011170  012702  017710                  MOV     #RBUFF,R2       ;SET READ DATA POINTER
2014  011174  062702  000124                  ADD     #124,R2         ;POINT TO START OF DATA
2015  011200  005737  000764                  TST     W2FLG           ;SEE IF WRAP 2
2016  011204  001401                          BEQ     W1D0            ;IF NOT WAM 2: BR
2017  011206  005302                          DEC     R2              ;RESET POINTER
2018  011210  111105          W1D0:   MOVB    (R1),R5
2019  011212  120512                  CMPB    R5,(R2)         ;CHECK DATA
2020  011214  001007                          BNE     W1D1            ;IF NOT GOOD:BR
2021  011216  005737  000764                  TST     W2FLG           ;SEE IF WRAP 2
2022  011222  001001                          BNE     W1D0A           ;IF SO: BR
2023  011224  105105                          COMB    R5              ;COMPLIMENT EXPT DATA
2024  011226  120562  000001          W1D0A:  CMPB    R5,1(R2)        ;CHECK COMPLIMENT DATA
2025  011232  001510                          BEQ     W1D3            ;IF GOOD: BR
2026  011234  032777  020000  167326  W1D1:   BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
2027  011242  001104                          BNE     W1D3            ;IF SO: BR
2028  011244  005737  000620                  TST     HDRFL           ;SEE IF DONE HEADER
2029  011250  001020                          BNE     W1D2            ;IF SO: BR
2030  011252  013704  000622                  MOV     EMADDR,R4
2031  011256  004737  012714                  JSR     PC,TTOUT        ;PRINT TEST HEADER
2032  011262  012704  016574                  MOV     #WMSG16,R4
2033  011266  004737  012714                  JSR     PC,TTOUT        ;PRINT BAD DATA TAG
2034  011272  012704  017021                  MOV     #WMSG32,R4
2035  011276  004737  012714                  JSR     PC,TTOUT        ;PRINT PATRN TAG
2036  011302  013703  001002                  MOV     PATRN,R3
2037  011306  004737  013042                  JSR     PC,OCTP         ;PRINT PATTERN NUMBER
2038  011312  012737  000001  000620  W1D2:   MOV     #1,HDRFL        ;SET HEADER FLAG
2039  011320  012704  016620                  MOV     #WMSG21,R4
2040  011324  004737  012714                  JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
2041  011330  013703  000774                  MOV     CRCNT,R3
2042  011334  004737  013042                  JSR     PC,OCTP         ;PRINT CHAR NUMBER
2043  011340  012704  016606                  MOV     #WMSG17,R4
2044  011344  004737  012714                  JSR     PC,TTOUT        ;PRNT GOOD TAG
2045  011350  111105                          MOVB    (R1),R5
2046  011352  110503                          MOVB    R5,R3           ;GET GOOD CHAR
2047  011354  005737  000764                  TST     W2FLG           ;SEE IF WRAP 2
2048  011360  001001                          BNE     W1D2A           ;IF SO: BR
2049  011362  105103                          COMB    R3              ;ELSE COMPLIMENT CHAR
2050  011364  004737  013270          W1D2A:  JSR     PC,DOUT         ;PRINT CHARACTER
2051  011370  012737  000240  000614          MOV     #240,TOB
2052  011376  004737  013014                  JSR     PC,TOG          ;SPACE
2053  011402  110503                          MOVB    R5,R3
2054  011404  004737  013270                  JSR     PC,DOUT         ;PRINT CHAR
2055  011410  012704  016613                  MOV     #WMSG20,R4
2056  011414  004737  012714                  JSR     PC,TTOUT        ;PRINT BAD TAG
2057  011420  116203  000001                  MOVB    1(R2),R3
2058  011424  004737  013270                  JSR     PC,DOUT         ;PRINT BAD CHAR
2059  011430  012737  000240  000614          MOV     #240,TOB
2060  011436  004737  013014                  JSR     PC,TOG          ;SPACE
2061  011442  111203                          MOVB    (R2),R3
2062  011444  004737  013270                  JSR     PC,DOUT         ;PRINT CHAR
2063  011450  005237  000766                  INC     DERFL           ;SET DATA ERROR FLAG
```

```
2064  011454  122122                  W1D3:   CMPB    (R1)+,(R2)+     ;BUMP ADDRESS
2065  011456  105722                          TSTB    (R2)+          ;BUMP ADDRESS
2066  011460  005237  000774                  INC     CRCNT          ;BUMP CHAR CNTR
2067  011464  000406                          BR      W1D5
2068  011466  005737  000764          W1D4:   TST     W2FLG          ;SEE IF WRAP 2
2069  011472  001401                          BEQ     W1D4A          ;IF NOT: BR
2070  011474  000207                          RTS     PC             ;ELSE RETURN
2071  011476  000137  010624          W1D4A:  JMP     PSCHK          ;GO CHECK POSTAMBLE
2072  011502  005200                  W1D5:   INC     R0
2073  011504  001770                          BEQ     W1D4
2074  011506  000137  011210                  JMP     W1D0
2075
2076                                          ;PREAMBLE/POSTAMBLE GENERATE SUBROUTINE**********
2077
2078  011512  000240                  PPGEN:  NOP
2079  011514  012700  000050                  MOV     #50,R0         ;SET SIZE OF PREAMBLE
2080  011520  012701  017032                  MOV     #PRE,R1
2081  011524  005721                          TST     (R1)+          ;SET ADDRESS OF PRE
2082  011526  012721  177400          1$:     MOV     #177400,(R1)+  ;FILL TABLE
2083  011532  005300                          DEC     R0             ;SEE IF DONE
2084  011534  001374                          BNE     1$             ;IF NOT: BR
2085  011536  012701  017154                  MOV     #POST,R1       ;SET ADDRESS OF POST
2086  011542  012700  000050                  MOV     #50,R0         ;SET SIZE OF POST
2087  011546  012721  000377                  MOV     #377,(R1)+     ;SET SYNC CHAR
2088  011552  012721  177400          2$:     MOV     #177400,(R1)+  ;FILL TABLE
2089  011556  005300                          DEC     R0             ;SEE IF DONE
2090  011560  001374                          BNE     2$             ;IF NOT: BR
2091  011562  000207                          RTS     PC             ;RETURN
```

```
2092
2093                                            ;END OF RECORD FORCE SUBROUTINE*****
2094
2095  011564  005237  000676          EORPA:  INC     TEMP2           ;SET WRAP FLAG
2096  011570  017700  166740          EORP:   MOV     @MR,R0          ;GET MAINT REG
2097  011574  042700  000036                  BIC     #36,R0          ;CLEAR CURRENT OP CODE
2098  011600  052700  000024                  BIS     #24,R0          ;SET EOR CLEAR OP CODE
2099  011604  010077  166724                  MOV     R0,@MR          ;DO EOR
2100  011610  042777  000037  166716          BIC     #37,@MR         ;CLEAR EOR AND MM
2101  011616  005000                          CLR     R0
2102  011620  012701  000002                  MOV     #2,R1
2103  011624  032777  000001  166656  EORP1:  BIT     #1,@C1          ;SEE IF GO GONE
2104  011632  001427                          BEQ     EORP2           ;IF SO: BR
2105  011634  005300                          DEC     R0
2106  011636  001372                          BNE     EORP1           ;AWAIT GO RESET
2107  011640  005301                          DEC     R1
2108  011642  001370                          BNE     EORP1
2109  011644  032777  020000  166716          BIT     #20000,@SWR     ;SEE IF ERROR PRINT INHIBIT
2110  011652  001017                          BNE     EORP2           ;IF SO: BR
2111  011654  005737  000620                  TST     HDRFL           ;SEE IF DONE HEADER
2112  011660  001004                          BNE     EORP1A          ;IF SO: BR
2113  011662  013704  000622                  MOV     EMADDR,R4
2114  011666  004737  012714                  JSR     PC,TTOUT        ;PRINT HEADER
2115  011672  012704  016764          EORP1A: MOV     #MMSG31,R4
2116  011676  004737  012714                  JSR     PC,TTOUT        ;PRINT EOR GO BIT ERROR
2117  011702  005777  166662                  TST     @SWR            ;SEE IF HALT ON ERROR
2118  011706  100001                          BPL     EORP2           ;IF NOT: BR
2119  011710  000000                          HALT
2120  011712  000240          EORP2:  NOP
2121  011714  005737  000676                  TST     TEMP2           ;SEE IF WRAM
2122  011720  001015                          BNE     EORPX           ;IF NOT: BR
2123  011722  032777  000200  166640          BIT     #200,@SWR       ;SEE IF STATUS CHECK
2124  011730  001002                          BNE     EORP3           ;IF NOT: BR
2125  011732  004737  006704                  JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
2126  011736  000240          EORP3:  NOP
2127  011740  032777  000400  166622          BIT     #400,@SWR       ;SEE IF DATA CHECK
2128  011746  001002                          BNE     EORPX           ;IF NOT: BR
2129  011750  004737  007274                  JSR     PC,DCHK         ;ELSE GO CHECK DATA
2130  011754  000240          EORPX:  NOP
2131  011756  005037  000676                  CLR     TEMP2           ;CLEAR FLAG
2132  011762  000207                          RTS     PC              ;RETURN
2133
```

```
2134
2135                                        ;SCOPE LOOP ON ERROR SUBROUTINE**********
2136
2137  011764  000240                SCOPE:  NOP
2138  011766  032777  040000  166574        BIT     #40000,@SWR     ;SEE IF LOOP ON ERROR
2139  011774  001001                        BNE     1$              ;IF SO: BR
2140  011776  000207                        RTS     PC              ;ELSE EXIT
2141  012000  000240                1$:     NOP
2142  012002  005726                        TST     (SP)+           ;RESET STACK
2143  012004  000240                        NOP
2144  012006  000240                        NOP
2145  012010  000177  166676                JMP     @SCOLP          ;LOOP ON ERROR
2146
2147                                        ;TEST ITERATION SUBROUTINE**********
2148
2149  012014  032777  004000  166546  ITER:  BIT     #4000,@SWR      ;SEE IF ITERATIONS
2150  012022  001403                        BEQ     2$              ;IF SO: BR
2151  012024  005037  000702        1$:     CLR     ITCNT           ;CLEAR ITERATION COUNTER
2152  012030  000207                        RTS     PC              ;ELSE EXIT
2153  012032  005737  001016        2$:     TST     @#PCNTR         ;DO SINGLE SUBTEST ITERATION
2154  012036  001772                        BEQ     1$              ;ON FIRST PASS
2155  012040  005237  000702                INC     ITCNT           ;BUMP COUNTER
2156  012044  023737  000702  000606        CMP     ITCNT,ITAMT     ;SEE IF DONE ALL
2157  012052  001764                        BEQ     1$              ;IF SO: BR
2158  012054  005726                        TST     (SP)+           ;RESET STACK
2159  012056  017700  166632                MOV     @ITRLP,R0       ;SET ITERATION POINTER
2160  012062  000110                        JMP     (R0)            ;GO ITERATE
2161
```

```
                                        ;INITIALIZE SUBROUTINE**********

012064  012777  000040  166426  INIT:   MOV     #40,@CS         ;INIT
012072  013777  000624  166420          MOV     DRVN,@CS        ;SELECT DRIVE
012100  013777  000664  166434          MOV     SLVN,@TC        ;SELECT SLAVE
012106  013746  000776                  MOV     UDES,-(SP)      ;GET TEST'S UNIT DESCRIPTION
012112  042716  174377                  BIC     #174377,(SP)    ;CLEAR ALL BUT DENSITY SELECT BITS
012116  022726  001400                  CMP     #1400,(SP)+     ;BRANCH IF NOT NRZ (800 BPI)
012122  001005                          BNE     1$
012124  032777  000040  166370          BIT     #40,@DS         ;BRANCH IF SLAVE IS IN NRZ MODE
012132  001420                          BEQ     4$              ;(PES = 0)
012134  000404                          BR      2$              ;GO CHANGE DENSITY
012136  032777  000040  166356  1$:     BIT     #40,@DS         ;BRANCH IF SLAVE IS IN PE MODE
012144  001013                          BNE     4$              ;(PES = 1)
012146  012777  000007  166334  2$:     MOV     #7,@C1          ;REWIND SLAVE
012154  032777  000200  166340  20$:    BIT     #200,@DS        ;WAIT FOR READY
012162  001774                          BEQ     20$
012164  032777  020000  166330  3$:     BIT     #20000,@DS      ;LOOP UNTIL REWIND IS COMPLETE
012172  001374                          BNE     3$              ;(PIP = 0)
012174  053777  000776  166340  4$:     BIS     UDES,@TC        ;LOAD UNIT DESCRIPTION
012202  032777  000002  166312          BIT     #2,@DS          ;BRANCH IF NOT AT BOT
012210  001407                          BEQ     6$
012212  012777  000025  166270          MOV     #25,@C1         ;ERASE TO GET OFF BOT
012220  032777  000200  166274  5$:     BIT     #200,@DS        ;LOOP UNTIL DONE
012226  001774                          BEQ     5$
012230  012777  000011  166252  6$:     MOV     #11,@C1         ;DO A DRIVE CLEAR
012236  000207                          RTS     PC              ;RETURN TO CALLER

                                        ;MAG TAPE INTERRUPT HANDLER**********

012240  000240          MTINT:          NOP
012242  013716  000670                  MOV     RTRN,(SP)       ;SET RETURN TO (RTRN)
012246  000002                          RTI                     ;RETURN

                                        ;TTY INTERRUPT HANDLER**********

012250  017746  166320  TTINT:          MOV     @TKB,-(SP)      ;GET CHARACTER
012254  042716  000200                  BIC     #200,(SP)       ;CLEAR PARITY BIT
012260  122716  000003                  CMPB    #3,(SP) ;BRANCH IF NOT CONTROL C
012264  001006                          BNE     1$
012266  005737  001262                  TST     CHNFLG          ;INHIBIT ^C IF CHAIN MODE
012272  001003                          BNE     1$
012274  000005                          RESET
012276  000137  000200                  JMP     @#200           ;RESTART PROGRAM
012302  122716  000001          1$:     CMPB    #1,(SP)         ;BRANCH IF NOT ^A
012306  001017                          BNE     2$
012310  022737  000176  000570          CMP     #SWREG,SWR      ;BRANCH IF HARDWARE SWR INVOKED
012316  001016                          BNE     3$
012320  012737  177570  000570          MOV     #177570,SWR     ;INVOKE HARDWARE SWR
012326  004737  013572                  JSR     PC,.SAVE        ;SAVE REGISTERS ON THE STACK
012332  012704  014501                  MOV     #MSG63,R4       ;TYPE 'HARDWARE SWR IN USE'
012336  004737  012714                  JSR     PC,TTOUT
012342  004737  013614                  JSR     PC,.RESTORE     ;RESTORE REGISTERS
012346  022716  000007          2$:     CMP     #7,(SP)         ;BRANCH IF NOT ^G
012352  001005                          BNE     4$
```

```
 2218  012354  012737  000176  000570  3$:     MOV     #SWREG,SWR      ;INVOKE SOFTWARE SWR
 2219  012362  004737  013474                  JSR     PC,GTSWR        ;GET SOFTWARE SWITCHES
 2220  012366  005726                  4$:     TST     (SP)+           ;POP CHARACTER OFF THE STACK
 2221  012370  000002                          RTI                     ;RETURN
 2222
```

```
                                        ;*********************************************************
                                        ;TTY ENTRY SUBROUTINE:
                                        ;
                                        ;THIS SUBROUTINE IS USED BY THE TEST CONDITION
                                        ;ENTRY ROUTINE TO READ THE RESPONSE ENTERED
                                        ;AT THE TTY AND CHECK THEM FOR LEGALITY AND
                                        ;LIMITS.  ALL RESPONSE MUST BE TYPED IN OCTAL
                                        ;(0-7) AND MUST FALL WITHIN THE LIMITS SET BY
                                        ;THE CALLING ROUTINE.
                                        ;IF AN ENTRY IS ILLEGAL OR OUTSIDE THE LIMITS,
                                        ;A QUESTION MARK IS TYPED (?) AND THE RESPONSE
                                        ;MAY BE REENTERED.
                                        ;ENTRIES MAY NOT EXCEED SIX (6) CHARACTERS AND
                                        ;MAY BE TERMINATED AT LESS THAN SIX BY TYPING A
                                        ;CARRIAGE RETURN
                                        ;*********************************************************

012372  010146              TTR:    MOV     R1,-(SP)        ;SAVE CHAR COUNT
012374  011601              10$:    MOV     (SP),R1         ;RESET CHAR COUNT (FOR ↑U)
012376  005037  000674              CLR     TEMP1           ;CLEAR FIRST CHARACTER FLAG
012402  005000                      CLR     R0
012404  004737  012652      1$:     JSR     PC,TTIN         ;GO READ CHARACTER
012410  122737  000003  000616      CMPB    #3,TIB          ;BRANCH IF NOT ↑C
012416  001003                      BNE     11$
012420  000005                      RESET
012422  000137  000200              JMP     @#200           ;RESTART AT 200
012426  122737  000015  000616  11$:  CMPB    #15,TIB         ;SEE IF CR
012434  001004                      BNE     2$              ;IF NOT: BR
012436  005737  000674              TST     TEMP1           ;SEE IF FIRST CHARACTER
012442  001471                      BEQ     9$              ;IF SO: BR
012444  000457                      BR      6$              ;ELSE GO LOAD VALUE
012446  122737  000025  000616  2$:  CMPB    #25,TIB         ;BRANCH IF NOT CONTROL U
012454  001005                      BNE     21$
012456  012704  014427              MOV     #MSG59,R4       ;TYPE<CR><LF>
012462  004737  012714              JSR     PC,TTOUT
012466  000742                      BR      10$
012470  122737  000177  000616  21$:  CMPB    #177,TIB                ;BRANCH IF NOT 'RUBOUT'
012476  001012                      BNE     3$
012500  000241                      CLC                     ;REMOVE LAST TYPED CHAR
012502  006000                      ROR     R0
012504  006200                      ASR     R0
012506  006200                      ASR     R0
012510  012704  014431              MOV     #MSG60,R4       ;TYPE '\'
012514  004737  012714              JSR     PC,TTOUT
012520  005201                      INC     R1              ;DECREMENT CHAR RECEIVED COUNT
012522  000730                      BR      1$              ;GET NEXT CHAR
012524  122737  000060  000616  3$:  CMPB    #60,TIB         ;SEE IF CHAR IS LESS THAN 0
012532  101402                      BLOS    4$              ;IF NOT: BR
012534  000137  012632              JMP     TINER           ;ELSE GO TO ERROR
012540  122737  000070  000616  4$:  CMPB    #70,TIB         ;SEE IF CHAR IS GREATER THAN 7
012546  10.002                      BHI     5$              ;IF NOT: BR
012550  000137  012632              JMP     TINER           ;ELSE GO TO ERROR
012554  005237  000674          5$:  INC     TEMP1           ;SET FIRST CHARACTER FLAG
012560  006300                      ASL     R0
012562  006300                      ASL     R0              ;SHIFT 3 LEFT
012564  006300                      ASL     R0
```

```
 2279  012566  042737  177770  000616          BIC     #177770,TIB     ;STRIP ASCII
 2280  012574  053700  000616                  BIS     TIB,R0          ;LOAD CHARACTER
 2281  012600  005301                          DEC     R1              ;SEE IF DONE
 2282  012602  001300                          BNE     1$              ;IF NOT: BR
 2283  012604  020002                  6$:     CMP     R0,R2           ;SEE IF EXCEEDED MAXIMUM LIMIT
 2284  012606  101402                          BLOS    7$              ;IF NOT: BR
 2285  012610  000137  012632                  JMP     TIMER           ;ELSE GO TO ERROR
 2286  012614  020300                  7$:     CMP     R3,R0           ;SEE IF BELOW MINIMUM LIMIT
 2287  012616  101402                          BLOS    8$              ;IF NOT: BR
 2288  012620  000137  012632                  JMP     TIMER           ;ELSE GO TO ERROR
 2289  012624  010015                  8$:     MOV     R0,(R5)         ;LOAD VALUE
 2290  012626  005726                  9$:     TST     (SP)+           ;POP CHAR COUNT OFF STACK
 2291  012630  000207                          RTS     PC              ;EXIT
```

```
2292
2293                                        ;TTY ENTRY ERROR SUBROUTINE**********
2294
2295  012632  012704  014304      TINER:  MOV     #MSG40,R4
2296  012636  004737  012714              JSR     PC,TTOUT        ;PRINT?
2297  012642  005726                      TST     (SP)+           ;POP CHAR COUNT OFF STACK
2298  012644  162716  000020              SUB     #20,(SP)        ;RESET SP TO START OF VALUE ROUTINE
2299  012650  000207                      RTS     PC              ;REDO VALUE ENTRY
2300
2301                                        ;TTY READ SUBROUTINE**********
2302
2303  012652  005277  165714      TTIN:   INC     @TKS
2304  012656  105777  165710      1$:     TSTB    @TKS
2305  012662  100375                      BPL     1$
2306  012664  017737  165704  000616      MOV     @TKB,TIB
2307  012672  042737  000200  000616      BIC     #200,TIB
2308  012700  013737  000616  000614      MOV     TIB,@TOB        ;MOVE CHAR TO TTY OUPUT BFR
2309  012706  004737  013014              JSR     PC,TOG          ;ECHO CHARACTER
2310  012712  000207                      RTS     PC
2311
2312                                        ;TTY OUTPUT SUBROUTINE***********
2313
2314  012714  112437  000614      TTOUT:  MOVB    (R4)+,TOB
2315  012720  122737  000043  000614      CMPB    #43,@TOB
2316  012726  001440                      BEQ     TEX
2317  012730  122737  000045  000614      CMPB    #45,@TOB
2318  012736  001403                      BEQ     1$
2319  012740  004737  013014              JSR     PC,TOG
2320  012744  000763                      BR      TTOUT
2321  012746  112737  000015  000614  1$: MOVB    #15,@TOB
2322  012754  004737  013014              JSR     PC,@TOG
2323  012760  012703  000004              MOV     #4,R3
2324  012764  005037  000614      2$:     CLR     @TOB
2325  012770  004737  013014              JSR     PC,@TOG
2326  012774  005303                      DEC     R3
2327  012776  001372                      BNE     2$                      ;DO FILLERS
2328  013000  112737  000012  000614      MOVB    #12,@TOB
2329  013006  004737  013014              JSR     PC,@TOG
2330  013012  000740                      BR      TTOUT
2331  013014  105777  165556      TOG:    TSTB    @TPS
2332  013020  100375                      BPL     TOG
2333  013022  113777  000614  165550      MOVB    @TOB,@TPB
2334  013030  000207              TEX:    RTS     PC
2335
2336
2337                                        ;OCTAL OUTPUT SUBROUTINE**********
2338
2339  013032  012737  000001  013266  OCTPE:  MOV     #1,OFL
2340  013040  000402                      BR      OCTPE1
2341  013042  005037  013266      OCTP:   CLR     OFL             ;CLEAR FLAG FOR LEADING ZERO
2342  013046  010304              OCTPE1: MOV     R3,R4           ;SEE IF NUMBER IS ZERO
2343  013050  001007                      BNE     OCTP0           ;IF NOT ZERO: BR
2344  013052  005737  013266              TST     OFL             ;SEE IF PRINT ALL 0
2345  013056  001004                      BNE     OCTP0           ;IF SO: BR
2346  013060  004737  013246              JSR     PC,OCTPG1       ;ELSE PRINT ZERO
2347  013064  000137  013210              JMP     OCTP3           ;SPACE AND EXIT
```

```
  2348  013070  032704  100000          OCTP0:  BIT     #100000,R4      ;SEE IF MSD = 1
  2349  013074  001406                          BEQ     OCTP1           ;IF NOT: BR
  2350  013076  012704  000001                  MOV     #1,R4
  2351  013102  004737  013224                  JSR     PC,OCTPG        ;PRINT 1
  2352  013106  000137  013120                  JMP     OCTP2
  2353  013112  005004                  OCTP1:  CLR     R4
  2354  013114  004737  013224                  JSR     PC,OCTPG        ;PRINT 0
  2355  013120  010304                  OCTP2:  MOV     R3,R4
  2356  013122  006004                          ROR     R4
  2357  013124  006004                          ROR     R4
  2358  013126  006004                          ROR     R4              ;POSITION DIGIT
  2359  013130  006004                          ROR     R4
  2360  013132  000304                          SWAB    R4
  2361  013134  004737  013224                  JSR     PC,OCTPG        ;PRINT DIGIT 2
  2362  013140  010304                          MOV     R3,R4
  2363  013142  006004                          ROR     R4
  2364  013144  000304                          SWAB    R4
  2365  013146  004737  013224                  JSR     PC,OCTPG        ;PRINT DIGIT 3
  2366  013152  010304                          MOV     R3,R4
  2367  013154  006104                          ROL     R4
  2368  013156  006104                          ROL     R4
  2369  013160  000304                          SWAB    R4
  2370  013162  004737  013224                  JSR     PC OCTPG        ;PRINT DIGIT 4
  2371  013166  010304                          MOV     R3,R4
  2372  013170  006004                          ROR     R4
  2373  013172  006004                          ROR     R4
  2374  013174  006004                          ROR     R4
  2375  013176  004737  013224                  JSR     PC,OCTPG
  2376  013202  010304                          MOV     R3,R4
  2377  013204  004737  013224                  JSR     PC,OCTPG        ;PRINT DIGIT 5
  2378  013210  012737  000240  000614  OCTP3:  MOV     #240,TOB
  2379  013216  004737  013014                  JSR     PC,TOG          ;PRINT SPACE
  2380  013222  000207                          RTS     PC              ;EXIT
  2381  013224  042704  177770          OCTPG:  BIC     #177770,R4
  2382  013230  001004                          BNE     OCTPGO
  2383  013232  005737  013266                  TST     OFL
  2384  013236  001001                          BNE     OCTPGO
  2385  013240  000207                          RTS     PC
  2386
  2387  013242  005237  013266          OCTPGO: INC     OFL
  2388  013246  052704  000260          OCTPG1: BIS     #260,R4
  2389  013252  010437  000614                  MOV     R4,TOB
  2390  013256  004737  013014                  JSR     PC,TOG
  2391  013262  010304                          MOV     R3,R4
  2392  013264  000207                          RTS     PC
  2393  013266  000000                  OFL:    0                       ;FIRST CHAR FLAG
  2394
```

```
                                        ;DATA CHARACTER OUTPUT SUBROUTINE***********
                                        ;
013270  012704  000010        DOUT:   MOV     #10,R4          ;SET NUMBER TO PRINT
013274  110337  000614                MOVB    R3,TOB
013300  105777  165272        1$:     TSTB    @TPS
013304  100375                        BPL     1$
013306  132737  000200  000614        BITB    #200,TOB
013314  001404                        BEQ     2$
013316  012777  000061  165254        MOV     #061,@TPB
013324  000403                        BR      3$
013326  012777  000060  165244  2$:   MOV     #060,@TPB
013334  006337  000614        3$:     ASL     TOB
013340  005304                        DEC     R4
013342  001356                        BNE     1$
013344  000207                        RTS     PC
                                        ;
013346  013703  000700        DOUTD:  MOV     TEMP3,R3
013352  000303                        SWAB    R3
013354  004737  013270                JSR     PC,DOUT
013360  013703  000700                MOV     TEMP3,R3
013364  004737  013270                JSR     PC,DOUT
013370  000207                        RTS     PC
                                        ;
                                        ;TE16 SERIAL NUMBER PRINT SUBROUTINE**********
                                        ;
013372  010304                SNPT:   MOV     R3,R4
013374  000304                        SWAB    R4
013376  006004                        ROR     R4
013400  006004                        ROR     R4
013402  006004                        ROR     R4
013404  006004                        ROR     R4              ;GET FIRST DIGIT
013406  004737  013450                JSR     PC,SNPG         ;PRINT
013412  010304                        MOV     R3,R4
013414  000304                        SWAB    R4              ;GET SECOND DIGIT
013416  004737  013450                JSR     PC,SNPG         ;PRINT
013422  010304                        MOV     R3,R4
013424  006004                        ROR     R4
013426  006004                        ROR     R4
013430  006004                        ROR     R4
013432  006004                        ROR     R4
013434  004737  013450                JSR     PC,SNPG         ;PRINT THIRD DIGIT
013440  010304                        MOV     R3,R4
013442  004737  013450                JSR     PC,SNPG         ;PRINT FOURTH DIGIT
013446  000207                        RTS     PC              ;EXIT
013450  012737  000260  000614  SNPG:  MOV     #260,TOB        ;SET BASE = 0
013456  042704  177760                BIC     #177760,R4      ;MASK DIGIT
013462  050437  000614                BIS     R4,TOB          ;SET ASCII
013466  004737  013014                JSR     PC,TOG          ;TYPE DIGIT
013472  000207                        RTS     PC              ;RETURN
```

```
2445
2446                                    ;THIS ROUTINE GETS THE NEW VALUE FOR THE SOFTWARE SWITCH REG
2447
2448  013474  022737  000176  000570 GTSWR:  CMP     #SWREG,SWR      ;BRANCH IF SOFTWARE SWR NOT
2449  013502  001032                        BNE     1$              ;INVOKED
2450  013504  004737  013572               JSR     PC,.SAVE        ;SAVE REGISTERS ON THE STACK
2451  013510  012704  015757               MOV     #$MSWR,R4       ;TYPE 'SWR = '
2452  013514  004737  012714               JSR     PC,TTOUT
2453  013520  017703  165044               MOV     @SWR,R3         ;GET CURRENT SETTING
2454  013524  004737  013032               JSR     PC,OCTPE        ;AND TYPE THEM,
2455  013530  012704  015767               MOV     #$MNEW,R4       ;TYPE ' NEW = '
2456  013534  004737  012714               JSR     PC,TTOUT
2457  013540  013705  000570               MOV     SWR,R5          ;TTR ROUTINE RETURN NEW VALUE TO (R5)
2458  013544  012701  000007               MOV     #7,R1           ;LIMIT RESPONSE TO 7 CHARS
2459  013550  012702  177777               MOV     #177777,R2      ;BETWEEN 0 AND 177777
2460  013554  012703  000000               MOV     #0,R3
2461  013560  004737  012372               JSR     PC,TTR          ;GET RESPONSE
2462  013564  004737  013614               JSR     PC,.RESTORE     ;RESTORE REGISTERS
2463  013570  000207                 1$:    RTS     PC              ;RETURN TO CALLER
2464
2465                                    ;;ROUTINE TO SAVE REGISTERS ON THE STACK
2466  013572  010546                 .SAVE: MOV     %5,-(SP)        ;;R5 IS SAVED AT 12(SP)
2467  013574  010446                        MOV     %4,-(SP)        ;;R4 IS SAVED AT 10(SP)
2468  013576  010346                        MOV     %3,-(SP)        ;;R3 IS SAVED AT 6(SP)
2469  013600  010246                        MOV     %2,-(SP)        ;;R2 IS SAVED AT 4(SP)
2470  013602  010146                        MOV     %1,-(SP)        ;;R1 IS SAVED AT 2(SP)
2471  013604  010046                        MOV     %0,-(SP)        ;;R0 IS SAVED AT (SP)
2472  013606  016646  000014               MOV     14(SP),-(SP)    ;;PUSH RETURN PC ON THE STACK
2473  013612  000207                        RTS     PC              ;;RETURN TO CALLER
2474
2475                                    ;;ROUTINE TO RESTORE REGISTERS SAVED ON THE STACK
2476  013614  012666  000014        .RESTORE:MOV    (SP)+,14(SP)    ;;STORE RETURN PC ON STACK
2477  013620  012600                        MOV     (SP)+,%0
2478  013622  012601                        MOV     (SP)+,%1
2479  013624  012602                        MOV     (SP)+,%2
2480  013626  012603                        MOV     (SP)+,%3
2481  013630  012604                        MOV     (SP)+,%4
2482  013632  012605                        MOV     (SP)+,%5
2483  013634  000207                        RTS     PC              ;;RETURN
2484
```

```
2485
2486                                                    ;MESSAGE TABLE**********
2487
2488  013636  022445  046524  031460  MSG1:   .ASCII/%%TM03-TE16 CONTROL LOGIC TEST PART II  (DZTEB-A)/
2489  013644  052055  030505  020066
2490  013652  047503  052116  047522
2491  013660  020114  047514  044507
2492  013666  020103  042524  052123
2493  013674  050040  051101  020124
2494  013702  044511  020040  042050
2495  013710  052132  041105  040455
2496  013716     051
2497  013717     045  025052  040452          .ASCII  /%***ASSURE TAPE IS AT BOT***/
2498  013724  051523  051125  020105                  '
2499  013732  040524  042520  044440
2500  013740  020123  052101  041040
2501  013746  052117  025052     052
2502  013753     045  054524  042520          .ASCII  /%TYPE <CR> TO TERMINATE RESPONSE & ↑C TO RESTART%*/
2503  013760  036040  051103  020076
2504  013766  047524  052040  051105
2505  013774  [illegible]  040516  042524
2506  014002  051040  051[illegible]  047520
2507  014010  041516  020105  020046
2508  014016  04[illegible]  052040  020117
2509  014024  042[illegible]  052123  051101
2510  014032  02[illegible]     043
2511  014035     105  050130  026524  MSG6:   .ASCII  /EXPT-NOT RECVD*/
2512  014042  047516  020124  042522
2513  014050  053103  021504
2514  014054  041522  042126  047055  MSG7:   .ASCII  /RCVD-NOT EXPT*/
2515  014062  052117  042440  050130
2516  014070  021524
2517  014072  047045  047117  042455  MSG9:   .ASCII  /%NON-EXIST SLAVE */
2518  014100  044530  052123  051440
2519  014106  040514  042526  021440
2520  014114  051045  040505  020104  MSG10:  .ASCII  /%READ CONT BUS PAR */
2521  014122  047503  052116  041040
2522  014130  051525  050040  051101
2523  014136  021440
2524  014140  053445  044522  042524  MSG11:  .ASCII  /%WRITE CONT BUS PAR */
2525  014146  041440  047117  020124
2526  014154  052502  020123  040520
2527  014162  020122     043
2528  014165     040  054105  052120  MSG12:  .ASCII  / EXPT */
2529  014172  021440
2530  014174  051040  053103  020104  MSG13:  .ASCII  / RCVD */
2531  014202     043
2532  01[illegible]  033     045  051115  041040  MSG14:  .ASCII  /%MR BITS 4-0*/
2533  014210  052111  020123  026464
2534  014216  021460
2535  014220  046445  020122  044502  MSG15:  .ASCII  /%MR BITS 15-7*/
2536  014226  051524  030440  026465
2537  014234  021467
2538  014236  044445  042524  035122  MSG16:  .ASCII  /%ITER: */
2539  014244  021440
2540  014246  052045  020103  044502  MSG18:  .ASCII  /%TC BITS 12-0 */
```

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2541  014254  051524  030440  026462
2542  014262  020060     043
2543  014265     045  041506  041040  MSG19:  .ASCII  /%FC BITS 15-0 #/
2544  014272  052111  020123  032461
2545  014300  030055  021440
2546  014304  037440  021440          MSG40:  .ASCII  / ? #/
2547  014310  022445  047105  020104  MSG41:  .ASCII  /%%END OF PASS #/
2548  014316  043117  050040  051501
2549  014324  020123     043
2550  014327     045  042522  044507  MSG44:  .ASCII  /%REGISTER START: #/
2551  014334  052123  051105  051440
2552  014342  040524  052122  020072
2553  014350     043
2554  014351     045  042526  052103  MSG45:  .ASCII  /%VECTOR ADDRESS: #/
2555  014356  051117  040440  042104
2556  014364  042522  051523  020072
2557  014372     043
2558  014373     045  046524  031460  MSG57:  .ASCII  /%TM03 DRIVE: #/
2559  014400  042040  044522  042526
2560  014406  020072     043
2561  014411     045  042524  033061  MSG58:  .ASCII  /%TE16 SLAVE: #/
2562  014416  051440  040514  042526
2563  014424  020072     043
2564  014427     045     043          MSG59:  .ASCII  /%#/
2565  014431     134     043          MSG60:  .ASCII  /\#/
2566  014433     045  042522  047515  MSG62:  .ASCII  /%REMOVE TMDP FROM SLAVE TO BE TESTED%#/
2567  014440  042526  052040  042115
2568  014446  020120  051106  046517
2569  014454  051440  040514  042526
2570  014462  052040  020117  042502
2571  014470  052040  051505  042524
2572  014476  022504     043
2573  014501     045  040510  042122  MSG63:  .ASCII  /%HARDWARE SWR IN USE%#/
2574  014506  040527  042522  051440
2575  014514  051127  044440  020116
2576  014522  051525  022505     043
```

```
                                                        ;TEST HEADER**********

014527    045   046045  043517  MSLT1:  .ASCII  /%%LOGIC TEST 1: WRAP 3,NRZ,NORMAL,ODD#/
014534  041511  052040  051505
014542  020124  035061  053440
014550  040522  020120  026063
014556  051116  026132  047516
014564  046522  046101  047454
014572  042104    043
014575    045   046045  043517  MSLT2:  .ASCII  /%%LOGIC TEST 2: WRAP 3,PE,NORMAL,ODD#/
014602  041511  052040  051505
014610  020124  035062  053440
014616  040522  020120  026063
014624  042520  047054  051117
014632  040515  026114  042117
014640  021504
014642  022445  047514  044507  MSLT3:  .ASCII  /%%LOGIC TEST 3: WRAP 2,NRZ,NORMAL,ODD#/
014650  020103  042524  052123
014656  031440  020072  051127
014664  050101  031040  047054
014672  055122  047054  051117
014700  040515  026114  042117
014706  021504
014710  022445  047514  044507  MSLT4:  .ASCII  /%%LOGIC TEST 4: WRAP 2,PE,NORMAL,ODD#/
014716  020103  042524  052123
014724  032040  020072  051127
014732  050101  031040  050054
014740  026105  047516  046522
014746  046101  047454  042104
014754    043
014755    045   046045  043517  MSLT5:  .ASCII  /%%LOGIC TEST 5: WRAP 1,NRZ,NORMAL,ODD#/
014762  041511  052040  051505
014770  020124  035065  053440
014776  040522  020120  026061
015004  051116  026132  047516
015012  046522  046101  047454
015020  042104    043
015023    045   046045  043517  MSLT6:  .ASCII  /%%LOGIC TEST 6: WRAP 1,PE,NORMAL,ODD#/
015030  041511  052040  051505
015036  020124  035066  053440
015044  040522  020120  026061
015052  042520  047054  051117
015060  040515  026114  042117
015066  021504
015070  022445  047514  044507  MSLT7:  .ASCII  /%%LOGIC TEST 7: WRAP 0,NRZ,NORMAL,ODD#/
015076  020103  042524  052123
015104  033440  020072  051127
015112  050101  030040  047054
015120  055122  047054  051117
015126  040515  026114  042117
015134  021504
015136  022445  047514  044507  MSLT10: .ASCII  /%%LOGIC TEST 10: WRAP 0,PE,NORMAL,ODD#/
015144  020103  042524  052123
015152  030440  035060  053440
015160  040522  020120  026060
015166  042520  047054  051117
```

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 2633  015174  040515  026114  042117
 2634  015202  021504
 2635  015204  022445  047514  044507  MSLT11: .ASCII  /%%LOGIC TEST 11: CORE DUMP WRITE (M8906)#/
 2636  015212  020103  042524  052123
 2637  015220  030440  035061  041440
 2638  015226  051117  020105  052504
 2639  015234  050115  053440  044522
 2640  015242  042524  024040  034115
 2641  015250  030071  024466     043
 2642  015255     045  046045  043517  MSLT12: .ASCII  /%%LOGIC TEST 12: CORE DUMP READ (M8906)#/
 2643  015262  041511  052040  051505
 2644  015270  020124  031061  020072
 2645  015276  047503  042522  042040
 2646  015304  046525  020120  042522
 2647  015312  042101  024040  034115
 2648  015320  030071  024466     043
 2649  015325     045  046045  043517  MSLT13: .ASCII  /%%LOGIC TEST 13: EVEN PARITY WRITE (M8903 M8904)#/
 2650  015332  041511  052040  051505
 2651  015340  020124  031461  020072
 2652  015346  053105  047105  050040
 2653  015354  051101  052111  020131
 2654  015362  051127  052111  020135
 2655  015370  046450  034470  031460
 2656  015376  046440  034470  032060
 2657  015404  021451
 2658  015406  022445  047514  044507  MSLT14: .ASCII  /%%LOGIC TEST 14: EVEN PARITY READ(M8903 M8904)#/
 2659  015414  020103  042524  052123
 2660  015422  030440  035064  042440
 2661  015430  042526  020116  040520
 2662  015436  044522  054524  051040
 2663  015444  040505  024104  034115
 2664  015452  030071  020063  034115
 2665  015460  030071  024464     043
 2666  015465     045  046045  043517  MSLT15: .ASCII  /%%LOGIC TEST 15: READ REVERSE(M8906)#/
 2667  015472  041511  052040  051505
 2668  015500  020124  032461  020072
 2669  015506  042522  042101  051040
 2670  015514  053105  051105  042523
 2671  015522  046450  034470  033060
 2672  015530  021451
 2673  015532  022445  047514  044507  MSLT16: .ASCII  /%%LOGIC TEST 16: CRC CORRECTION SINGLE TRACK,ALL FRAMES#/
 2674  015540  020103  042524  052123
 2675  015546  030440  035066  041440
 2676  015554  041522  041440  051117
 2677  015562  042522  052103  047511
 2678  015570  020116  044523  043516
 2679  015576  042514  052040  040522
 2680  015604  045503  040454  046114
 2681  015612  043040  040522  042515
 2682  015620  021523
 2683  015622  022445  047514  044507  MSLT17: .ASCII  /%%LOGIC TEST 17: CRC CORRECTION MULTIPLE BAD TRACKS#/
 2684  015630  020103  042524  052123
 2685  015636  030440  035067  041440
 2686  015644  041522  041440  051117
 2687  015652  042522  052103  047511
 2688  015660  020116  052515  052114
```

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 2689  015666  050111  042514  041040
 2690  015674  042101  052040  040522
 2691  015702  045503  021523
 2692  015706  022445  047514  044507  MSLT20: .ASCII  /%%LOGIC TEST 20: READ REVERSE,NRZ,WRAP 3*/
 2693  015714  020103  042524  052123
 2694  015722  031040  035060  051040
 2695  015730  040505  020104  042522
 2696  015736  042526  051522  026105
 2697  015744  051116  026132  051127
 2698  015752  050101  031440     043
```

```
2699
2700                                                    ;TAG MESSAGE
2701
2702  015757     045  053523  020122  SMSWR:   .ASCII  /%SWR = #/
2703  015764  020075     043
2704  015767     040  042516  020127  SMNEW:   .ASCII  / NEW = #/
2705  015774  020075     043
2706
2707          016000                             .EVEN
2708                                             ;WRITE BUFFER
2709
2710  016000  000100                  WDATA:
2711  016000  177777                             -1
2712  016002  177777                             -1
2713  016004  177777                             -1
2714  016006  177777                             -1
2715  016010  177777                             -1
2716  016012  177777                             -1
2717  016014  177777                             -1
2718  016016  177777                             -1
2719  016020  177777                             -1
2720  016022  177777                             -1
2721  016024  177777                             -1
2722  016026  177777                             -1
2723  016030  177777                             -1
2724  016032  177777                             -1
2725  016034  177777                             -1
2726  016036  177777                             -1
2727  016040  177777                             -1
2728  016042  177777                             -1
2729  016044  177777                             -1
2730  016046  177777                             -1
2731  016050  177777                             -1
2732  016052  177777                             -1
2733  016054  177777                             -1
2734  016056  177777                             -1
2735  016060  177777                             -1
2736  016062  177777                             -1
2737  016064  177777                             -1
2738  016066  177777                             -1
2739  016070  177777                             -1
2740  016072  177777                             -1
2741  016074  177777                             -1
2742  016076  177777                             -1
2743  016100  177777                             -1
2744  016102  177777                             -1
2745  016104  177777                             -1
2746  016106  177777                             -1
2747  016110  177777                             -1
2748  016112  177777                             -1
2749  016114  177777                             -1
2750  016116  177777                             -1
2751  016120  177777                             -1
2752  016122  177777                             -1
2753  016124  177777                             -1
2754  016126  177777                             -1
```

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2755  016130  177777                          -1
2756  016132  177777                          -1
2757  016134  177777                          -1
2758  016136  177777                          -1
2759  016140  177777                          -1
2760  016142  177777                          -1
2761  016144  177777                          -1
2762  016146  177777                          -1
2763  016150  177777                          -1
2764  016152  177777                          -1
2765  016154  177777                          -1
2766  016156  177777                          -1
2767  016160  177777                          -1
2768  016162  177777                          -1
2769  016164  177777                          -1
2770  016166  177777                          -1
2771  016170  177777                          -1
2772  016172  177777                          -1
2773  016174  177777                          -1
2774  016176  177777                          -1
2775
2776
2777                                          ;READ BUFFER
2778
2779  016200  000100                  RDATA:
2780  016200  000000                          0
2781  016202  000000                          0
2782  016204  000000                          0
2783  016206  000000                          0
2784  016210  000000                          0
2785  016212  000000                          0
2786  016214  000000                          0
2787  016216  000000                          0
2788  016220  000000                          0
2789  016222  000000                          0
2790  016224  000000                          0
2791  016226  000000                          0
2792  016230  000000                          0
2793  016232  000000                          0
2794  016234  000000                          0
2795  016236  000000                          0
2796  016240  000000                          0
2797  016242  000000                          0
2798  016244  000000                          0
2799  016246  000000                          0
2800  016250  000000                          0
2801  016252  000000                          0
2802  016254  000000                          0
2803  016256  000000                          0
2804  016260  000000                          0
2805  016262  000000                          0
2806  016264  000000                          0
2807  016266  000000                          0
2808  016270  000000                          0
2809  016272  000000                          0
2810  016274  000000                          0
```

```
2811  016276  000000                                  0
2812  016300  000000                                  0
2813  016302  000000                                  0
2814  016304  000000                                  0
2815  016306  000000                                  0
2816  016310  000000                                  0
2817  016312  000000                                  0
2818  016314  000000                                  0
2819  016316  000000                                  0
2820  016320  000000                                  0
2821  016322  000000                                  0
2822  016324  000000                                  0
2823  016326  000000                                  0
2824  016330  000000                                  0
2825  016332  000000                                  0
2826  016334  000000                                  0
2827  016336  000000                                  0
2828  016340  000000                                  0
2829  016342  000000                                  0
2830  016344  000000                                  0
2831  016346  000000                                  0
2832  016350  000000                                  0
2833  016352  000000                                  0
2834  016354  000000                                  0
2835  016356  000000                                  0
2836  016360  000000                                  0
2837  016362  000000                                  0
2838  016364  000000                                  0
2839  016366  000000                                  0
2840  016370  000000                                  0
2841  016372  000000                                  0
2842  016374  000000                                  0
2843  016376  000000                                  0
2844
2845                                                  ;WRAP AROUND MESSAGES******
2846
2847  016400  051445  052105  050125  WMSG2:  .ASCII  /%SETUP ERROR%#/
2848  016406  042440  051122  051117
2849  016414  021445
2850  016416  050045  052101  047122  WMSG3:  .ASCII  /%PATRN NUMBER = #/
2851  016424  047040  046525  042502
2852  016432  020122  020075     043
2853  016437     045  047516  026516  WMSG4:  .ASCII  /%NON-EXISTANT DRIVE%#/
2854  016444  054105  051511  040524
2855  016452  052116  042040  044522
2856  016460  042526  021445
2857  016464  041445  030523  021440  WMSG6:  .ASCII  /%CS1 #/
2858  016472  053445  020103     043  WMSG6A: .ASCII  /%WC #/
2859  016477     045  040502  021440  WMSG6B: .ASCII  /%BA #/
2860  016504  043045  020103     043  WMSG6C: .ASCII  /%FC #/
2861  016511     045  051503  020062  WMSG6D: .ASCII  /%CS2 #/
2862  016516     043
2863  016517     045  051504  021440  WMSG6E: .ASCII  /%DS #/
2864  016524  042445  020122     043  WMSG6F: .ASCII  /%ER #/
2865  016531     045  051501  021440  WMSG6G: .ASCII  /%AS #/
2866  016536  041445  020103     043  WMSG6H: .ASCII  /%CC #/
```

```
2867  016543    045  041104  021440  WMSG6I: .ASCII  /%DB #/
2868  016550  046445  020122     043  WMSG6J: .ASCII  /%MR #/
2869  016555    045  052104  021440  WMSG6K: .ASCII  /%DI #/
2870  016562  052045  020103     043  WMSG6L: .ASCII  /%TC #/
2871  016567    045  047123  021440  WMSG6M: .ASCII  /%SN #/
2872  016574  041045  042101  042040  WMSG16: .ASCII  /%BAD DATA#/
2873  016602  052101  021501
2874  016606  043445  020072     043  WMSG17: .ASCII  /%G: #/
2875  016613    045  035102  021440  WMSG20: .ASCII  /%B: #/
2876  016620  041445  035116  021440  WMSG21: .ASCII  /%CN: #/
2877  016626  041045  042101  051440  WMSG23: .ASCII  /%BAD STATUS#/
2878  016634  040524  052524  021523
2879  016642  047045  020117  047111  WMSG24: .ASCII  /%NO INTERRUPT#/
2880  016650  042524  051122  050125
2881  016656  021524
2882  016660  047045  020117  046103  WMSG25: .ASCII  /%NO CLOCK UP#/
2883  016666  041517  020113  050125
2884  016674     043
2885  016675    045  047516  041440  WMSG26: .ASCII  /%NO CLOCK DOWN#/
2886  016702  047514  045503  042040
2887  016710  053517  021516
2888  016714  042045  052101  020101  WMSG27: .ASCII  /%DATA PAT:#/
2889  016722  040520  035124     043
2890  016727    045  040502  020104  WMSG28: .ASCII  /%BAD PREAMBLE#/
2891  016734  051120  040505  041115
2892  016742  042514     043
2893  016745    045  040502  020104  WMSG29: .ASCII  /%BAD POSTAMBLE#/
2894  016752  047520  052123  046501
2895  016760  046102  021505
2896  016764  042445  051117  041440  WMSG31: .ASCII  /%EOR CLEAR DID NOT CLEAR GO%#/
2897  016772  042514  051101  042040
2898  017000  042111  047040  052117
2899  017006  041440  042514  051101
2900  017014  043440  022517     043
2901  017021     040  040520  051124  WMSG32: .ASCII  / PATRN #/
2902  017026  020116     043
2903
2904          017032                  .EVEN
2905  017032  000000          PRE:    0
2906  017034  000000                  0
2907  017036  000000                  0
2908  017040  000000                  0
2909  017042  000000                  0
2910  017044  000000                  0
2911  017046  000000                  0
2912  017050  000000                  0
2913  017052  000000                  0
2914  017054  000000                  0
2915  017056  000000                  0
2916  017060  000000                  0
2917  017062  000000                  0
2918  017064  000000                  0
2919  017066  000000                  0
2920  017070  000000                  0
2921  017072  000000                  0
2922  017074  000000                  0
```

```
 2923  017076  000000                    0
 2924  017100  000000                    0
 2925  017102  000000                    0
 2926  017104  000000                    0
 2927  017106  000000                    0
 2928  017110  000000                    0
 2929  017112  000000                    0
 2930  017114  000000                    0
 2931  017116  000000                    0
 2932  017120  000000                    0
 2933  017122  000000                    0
 2934  017124  000000                    0
 2935  017126  000000                    0
 2936  017130  000000                    0
 2937  017132  000000                    0
 2938  017134  000000                    0
 2939  017136  000000                    0
 2940  017140  000000                    0
 2941  017142  000000                    0
 2942  017144  000000                    0
 2943  017146  000000                    0
 2944  017150  000000                    0
 2945  017152  000000                    0
 2946  017154  000000              POST: 0
 2947  017156  000000                    0
 2948  017160  000000                    0
 2949  017162  000000                    0
 2950  017164  000000                    0
 2951  017166  000000                    0
 2952  017170  000000                    0
 2953  017172  000000                    0
 2954  017174  000000                    0
 2955  017176  000000                    0
 2956  017200  000000                    0
 2957  017202  000000                    0
 2958  017204  000000                    0
 2959  017206  000000                    0
 2960  017210  000000                    0
 2961  017212  000000                    0
 2962  017214  000000                    0
 2963  017216  000000                    0
 2964  017220  000000                    0
 2965  017222  000000                    0
 2966  017224  000000                    0
 2967  017226  000000                    0
 2968  017230  000000                    0
 2969  017232  000000                    0
 2970  017234  000000                    0
 2971  017236  000000                    0
 2972  017240  000000                    0
 2973  017242  000000                    0
 2974  017244  000000                    0
 2975  017246  000000                    0
 2976  017250  000000                    0
 2977  017252  000000                    0
 2978  017254  000000                    0
```

```
2979  017256  000000                          0
2980  017260  000000                          0
2981  017262  000000                          0
2982  017264  000000                          0
2983  017266  000000                          0
2984  017270  000000                          0
2985  017272  000000                          0
2986  017274  000000                          0
2987  017276  000000          WBUFF:  0
2988          017710                  .=.+410
2989  017710  000000          RBUFF:  0
2990
2991          000001                  .END
```

```
ADDFL   000746
AS      000526
ASF     000730
ATAF    000720
BA      000514
CC      000530
CHNFLG  001262
CRCDAT  004304
CRCFLG  001022
CRCNT   000774
CRCPAT  004302
CS      000520
C1      000510
DATAD   000760
DATAO   001034
DATA1   001036
DATA2   001040
DATA3   001042
DATBL   001034
DATC    000754
DAT1    005076
DAT1A   005102
DAT2    005116
DAT3    005122
DAT4    005130
DB      000532
DCHK    007274
DCHKA   007372
DCHKAO  007346
DCHKA1  007422
DCHKA2  007460
DCHKB   007532
DCHKBO  007542
DCHKC   007602
DCHKD   007610
DCHKE   010156
DCHKFL  001020
DCHKX   010116
DCHKX1  010134
DCHKO   007612
DCHK1   007644
DCHK1A  007702
DCHK2   007772
DCHK2A  010036
DCHK2B  010040
DCHK3   010066
DCKEP   010564
DCKEPO  010616
DCKEO   010216
DCKE1   010226
DCKE10  010510
DCKE11  010550
DCKE12  010560
DCKE2   010236
DCKE3   010246
DCKE4   010270
DCKE5   010302
DCKE6   010340
DCKE7   010376
DERFL   000766
DOUT    013270
DOUTD   013346
DRVN    000624
DRVTP   000604
DS      000522
DSUP    004742
DSO     005040
DS3     005056
DS4     005066
DT      000536
EMADDR  000622
ENDFLG  001024
EORP    011570
EORPA   011564
EORPX   011754
EORP1   011624
EORP1A  011672
EORP2   011712
EORP3   011736
ER      000524
ERADD   000672
ERRF    000726
EXEC    006010
EXFL    000716
EX42    006416
EX42A   006446
EX42B   006502
EX42C   006516
EX42E   006536
EX42F   006544
EX42G   006574
EX42H   006604
EX42J   006620
EX42JO  006640
EX42J1  006642
EX42K   006662
EX42X   006700
EXO     006032
EX1     006056
EX1A    006072
EX2     006112
EX3     006136
EX5     006166
EX5A    006172
EX5A1   006226
EX5B    006262
EXSC    006330
EXSCO   006374
EXSC1   006400
EXSO    006404
FC      000516
FUN     000752
GTSWR   013474
HDRFL   000620
HERE    002320
ILFT    000544
INIT    012064
ITAMT   000606
ITCNT   000702
ITER    012014
ITRLP   000714
LTADD   000742
LT1     002352
LT1A    002416
LT1B    002430
LT10    003210
LT10A   003212
LT11    003262
LT11A   003340
LT11X   003364
LT12    003374
LT12A   003460
LT12X   003512
LT13    003522
LT14    003572
LT15    003642
LT16    003724
LT16A   003752
LT17    004312
LT17A   004342
LT2     002464
LT2A    002466
LT20    004624
LT20A   004702
LT3     002536
LT3A    002602
LT3B    002614
LT4     002644
LT4A    002646
LT5     002716
LT5A    002762
LT5B    002774
LT6     003024
LT6A    003026
LT7     003102
LT7A    003146
LT7B    003160
MR      000534
MSG1    013636
MSG10   014114
MSG11   014140
MSG12   014165
MSG13   014174
MSG14   014203
MSG15   014220
MSG16   014236
MSG18   014246
MSG19   014265
MSG40   014304
MSG41   014310
MSG44   014327
MSG45   014351
MSG57   014373
MSG59   014411
MSG59   014427
MSG6    014035
MSG60   014431
MSG62   014433
MSG63   014501
MSG7    014054
MSG9    014072
MSLT1   014527
MSLT10  015136
MSLT11  015204
MSLT12  015255
MSLT13  015325
MSLT14  015406
MSLT15  015465
MSLT16  015532
MSLT17  015622
MSLT2   014575
MSLT20  015706
MSLT3   014642
MSLT4   014710
MSLT5   014755
MSLT6   015023
MSLT7   015070
MTINT   012240
NRZOF   000662
NXTDRV  001760
NXTSLV  002032
OCTP    013042
OCTPE   013032
OCTPE1  013046
OCTPG   013224
OCTPGO  013242
OCTPG1  013246
OCTPO   013070
OCTP1   013112
OCTP2   013120
OCTP3   013210
OFL     013266
PATRN   001002
PCNTR   001016
PDO     010676
PD1     010712
PD2     010754
PD3     010760
PD4     010770
PD5     011110
PD6     011134
PEXFL   000736
PFLG    000666
POST    017154
PPGEN   011512
PRCHK   010660
PRE     017032
PREFL   000770
PSCHK   010624
PSW     000566
RBUFF   017710
RCDP    001010
RDAD    000762
RDATA   016200
RDRVF   001006
REGS    000612
RTRN    000670
SAV1    000704
SAV2    000706
SAV3    000710
SCF     000732
SCOLP   000712
SCOPE   011764
SERFL   000772
SERNUM  000602
SETUP   005430
SETO    005472
SET1    005476
SET1A   005502
SET2    005526
SKAT    001014
SLAF    000722
SLVN    000664
SN      000540
SNPG    013450
SNPT    013372
SPO     005604
SPO1    005572
SP1     005610
SP1A    005662
SP1B    005702
SP3     005754
SP4     005774
SP5     006006
SSCF    000724
```

TM03/TE16 CONTROL LOGIC TEST-PART II MACY11 27(1006) 31-MAR-77 17:30 PAGE 77
DZTEBA.P11 31-MAR-77 17:30 SYMBOL TABLE

```
START   001200          TR00    000626          VECT    000610          WMSG25  016660          WSTX    007272
STATC   001012          TR01    000630          WAM     000750          WMSG26  016675          WTAD    000756
STATF   001004          TR02    000632          WAM0    005136          WMSG27  016714          W1DCHK  011160
STFLG   000740          TR03    000634          WAM01   005144          WMSG28  016727          W1DO    011210
STFLGS  000614          TR04    000636          WAM1    005202          WMSG29  016745          W1DOA   011226
STSCO   002210          TR05    000640          WAM2    005212          WMSG3   016416          W1D1    011234
ST2     001670          TR06    000642          WAM2A   005246          WMSG31  016764          W1D2    011312
SWR     000570          TR07    000644          WAM3    005256          WMSG32  017021          W1D2A   011364
SWREG   000176          TR10    000646          WAM3A   005336          WMSG4   016437          W1D3    011454
TADX    001174          TR11    000650          WAM3B   005354          WMSG6   016464          W1D4    011466
TC      000542          TR12    000652          WAM4    005364          WMSG6A  016472          W1D4A   011476
TEMP1   000674          TR13    000654          WBUFF   017276          WMSG6B  016477          W1D5    011502
TEMP2   000676          TR14    000656          WC      000512          WMSG6C  016504          W2FLG   000764
TEMP3   000700          TR15    000660          WCDP0   001056          WMSG6D  016511          XORDAT  004306
TEND    002244          TSCO    001714          WCDP2   001044          WMSG6E  016517          XORPAT  004310
TENDX   002342          TSCOA   002110          WCS1    001024          WMSG6F  016524          $DONE   002252
TEX     013030          TSCOO   002116          WCS2    001026          WMSG6G  016531          $ENDAD  002310
TIB     000616          TSCO1   002124          WDATA   016000          WMSG6H  016536          $MNEM   015767
TIMER   012632          TSCO2   002152          WDS     001030          WMSG6I  016543          $MSWR   015757
TKB     000574          TSCO3   002170          WER     001032          WMSG6J  016550          $SVPC =  000764
TKS     000572          TSTTBL  001070          WMSG16  016574          WMSG6K  016555          .  =  017712
TLAST   001176          TTIN    012652          WMSG17  016606          WMSG6L  016562          .RESTO  013614
TOB     000614          TTINT   012250          WMSG2   016400          WMSG6M  016567          .SAVE   013572
TOG     013014          TTOUT   012714          WMSG20  016613          WPGFL   001000
TPB     000600          TTR     012372          WMSG21  016620          WSTCK   006704
TPS     000576          T24FL   000744          WMSG23  016626          WSTG    007150
TREF    000734          UDES    000776          WMSG24  016642          WSTGO   007220

. ABS.  017712      000
```

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

DZTEBA,DZTEBA/SOL=DZTEBA.P11
RUN-TIME: 3 5 .4 SECONDS
RUN-TIME RATIO: 33/9=3.6
CORE USED: 6K (11 PAGES)