TM02,TU16 TM02/TU16 CTRL LGC AH-9456G-MC OCT 1983
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IDENTIFICATION

PRODUCT CODE:	AC-9455G-MC
PRODUCT NAME:	CZTUCG0 TM02/TU16 CTRL LGC
DATE CREATED:	21 APRIL 76
MAINTAINER:	TAPE DIAGNOSTIC ENGINEERING
AUTHOR:	R. B. BARNES
REVISED:	11 NOV 1977 BY CLEM WALSH 11 JUL 1983 BY B. LEBLANC

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1. ABSTRACT

THIS PROGRAM IS DESIGNED TO SEQUENTIALLY TEST ALL
CONTROL LOGIC AND DATA FORMATTING WITHIN THE TM02
FORMATTER. EACH TEST WILL ATTEMPT TO ISOLATE FAILURES
TO THE MODULE LEVEL AND PROVIDE PRINTOUT INFORMATION
WHICH WILL IDENTIFY THE FAILING MODULE.
THERE ARE TWO (2) MAJOR AREAS OF TESTING: CONTROL LOGIC
AND DATA FORMATTING. THE CONTROL LOGIC SECTION (TEST 1-41 & 57-64)
WILL TEST ALL ERROR AND STATUS CONDITIONS AS WELL AS
ADDRESSING PROTOCOL AND OPERATIONAL LOGIC SEQUENCES.
THE DATA FORMATTING SECTION (TESTS 42-56) WILL TEST
ALL DATA FORMATS AND TRANSFER PATHS IN ALL POSSIBLE
COMBINATIONS.
THE LEVEL OF FAULT ISOLATION IS POSSIBLE BECAUSE OF
TM02 THE STRUCTURE AND ITS MAINTAINENCE MODES.

2. REQUIREMENTS (HARDWARE)

A. ANY PDP-11 PROCESSOR - WITH OR WITHOUT A HARDWARE SWITCH REGISTER
B. 8K OF CORE
C. CONSOLE TTY
D. TM02 MAGTAPE CONTROLLER
E. MASSBUS CONTROLLER (RH)
F. TU16 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

***IF THE SOFTWARE SWITCH REGISTER IS USED THEN THE FOLLOWING MESSAGE
WILL BE TYPED FIRST ; SWR=XXXXXX NEW= THIS WILL ALLOW THE LOADING OF
THE SOFTWARE SWITCH REGISTER LOC. 176 BEFORE THE TESTING IS STARTED.
(REFER TO SECTION 5 FOR OPERATOR OPTION)

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5. CONSOLE SWITCH SETTINGS

IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH REGISTER THEN A SOFTWAPE SWITCH REGISTER IS USED WHICH ALLOWS THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH REGISTER (LOC. 176) IS USED.

CONTROL:

THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY DOING THE FOLLOWING:

1) TYPE CONTROL G <^G>; THIS WILL ALLOW THE TTY TO ENTER DATA INTO LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.

2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWITCH REGISTER.)

3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE OF THE FOLLOWING AT THE TTY:

   A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>. (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS WILL BE ALLOWED)
   IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH REGISTER CONTENTS WILL NOT BE CHANGED.

   B) IF A CONTROL U <^U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU BACK TO STEP 2.

```
                        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.

                        ***BUT, THE SOFTWARE SWITCH REGISTER CAN ONLY BE  LOADED DYNAMICALLY
                           AS STATED ABOVE UNDER CONTROL HEADING.
                        SW15(100000):    1=HALT ON ERROR
                                         0=CONTINUE
                        SW14(040000):    1=LOOP ON ERROR (SCOPE)
                                         0=CONTINUE
                        SW13(020000):    1=DO NOT PRINT ERRORS
                                         0=PRINT ALL ERRORS
                        SW12(010000):    1=INHIBIT ITERATIONS
                                         0=ITERATE EACH TEST ITS ASSIGNED AMOUNT
                        SW11(004000):    1=DO CONTINUOUS CYCLE
                                         0=HALT AT END OF PASS
                        SW10(002000):    1=HALT AT END OF CURRENT TEST
                                         0=CONTINUE TO NEXT TEST
                        SW9(001000):     1=DO MANUAL ITERVENTION TESTS
                                         0=INHIBIT MANUAL INTERVENTION
                        SW8(000400):     1=INHIBIT WRAP AROUND DATA CHECK
                                         0=DO DATA CHECKS
                        SW7(000200):     1=INHIBIT WRAP AROUND STATUS CHECK
                                         0=DO STATUS CHECK
                        SW6(000100):     1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
                                         0=AUTO PATTERN
                        SW5-0:           SELECT INDIVIDUAL TEST (1-64)** 00=DO ALL TESTS
```

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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.

EXAMPLES:

1. THE FOLLOWING EXAMPLE SHOWS A TYPICAL ERROR PRINTOUT FOR THE ADDRESS TESTS (LT1-LT3).

```
LOGIC TEST 1: DRIVE ADDRESSING (M8909 OR RH)
NON-EXIST DRIVE 3 EXPT-NOT RECVD
ITER: 3
```

THIS PRINTOUT SHOWS THAT THE DRIVE ADDRESS (CS2 BITS 2,1,0) RESULTED IN THE DETECTION OF NED (BIT 12 OF CS2) FOR DRIVE THREE (3) WHEN THAT DRIVE SHOULD BE THERE. THIS ERROR OCCURRED ON ITERATION THREE (3).

2. THIS EXAMPLE WILL SHOW A TYPICAL PRINTOUT OF ONE OF THE REGISTER BIT TESTS.

```
LOGIC TEST 7: FC BIT TEST (M8705)
FC BITS 15-0 EXPT 177777 RECVD 177577
```

THIS PRINTOUT SHOWS THAT FRAME COUNT BIT SEVEN (7) WAS NOT SET WHEN IT SHOULD HAVE BEEN. NO ITERATION NUMBER IS DISPLAYED WHEN RUNNING WITH CONSOLE SWITCH TWELVE (12) SET TO A ONE (1).

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                    3.  THE FOLLOWING IS A TYPICAL PRINTOUT RESULTING FROM BAD
                        STATUS DETECTION DURING A MANUAL INTERVENTION TEST (LT14-LT17)

                    LOGIC TEST 15: MANUAL STATUS TEST 2
                    BAD STATUS EXPT 100700 RCVD 000700
                    ITER: 0

                            THIS SHOWS THAT ON THE FIRST TRY (ITER: 0) THE ACTION TAKEN
                            BY THE OPERATOR DID NOT RESULT IN THE PROPER STATUS DETECTION
                            BY THE HARDWARE (ATA IS NOT SET).

                    4.  THE FOLLOWING FOUR (4) EXAMPLES SHOW EACH OF THE ERROR TYPES THAT
                        CAN BE DETECTED BY ANY OF THE ERROR FORCING TESTS.  NOTE THAT ONE OR
                        MORE OF THE ERROR TYPES COULD BE DETECTED ON A SINGLE EXECUTION OF
                        THE TEST.

                    LOGIC TEST 24: DPAR (M8906 RH)
                    DPAR EXPT EXPT-NOT RCVD
                    CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
                    004260 000000 033726 000000 000100 010600 000000 000000 177712 140300

                            THIS MESSAGE SHOWS THAT DPAR (BIT 5 OF ER) DID NOT SET.

                    LOGIC TEST 26: FCE (M8909)
                    ERR NOT SET
                    CS1     WC      BA      FC      CS2     DS      ER      AS      MR      TC
                    004260 000000 001376 000000 000100 110600 001000 000001 000000 100300

                            THIS MESSAGE SHOWS THAT WHILE FCE (BIT 9 OF ER) WAS INDEED
                            SET, THE COMPOSITE ERROR BIT (BIT 14 OF DS) WAS NOT.
```

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LOGIC TEST 30: DTE (M8906 RH)
UNEXPTECTED ERROR BITS
CS1    WC     BA     FC     CS2    DS     ER     AS     MR     TC
144260 002006 006600 000000 001300 150600 030000 000001 000017 100300

        THIS MESSAGE SHOWS THAT WHILE THE PROPER ERROR BIT (DTE: BIT 12 OF ER) I
        SET, OPI (BIT 13 OF ER) IS ALSO SET AND SHOULD NOT BE.

LOGIC TEST 32: UNS (M8909)
NOT RESET BY DRIVE CLEAR

CS1    WC     BA     FC     CS2    DS     ER     AS     MR     TC
144210 002006 006600 000000 001300 150000 040000 000001 000000 140307

        THIS MESSAGE SHOWS THAT WHILE THE PROPER ERROR BITS WERE SET, THEY
        WERE NOT CLEARED BY A DRIVE CLEAR OPERATION.
```

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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 42: 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 44: 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)

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7. OPERATION

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

1. LOAD ADDRESS 200 OR 210
2. SET SWITCHES FOR DESIRED TEST CYCLE

   ***REFER TO SECTION 5 FOR DYNAMIC LOADING
   OF SOFTWARE SWITCH REGISTER.***

3. PRESS START

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 (SW12=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.
***FOR THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER
REFER TO SECTION 5.****

SINGLE TEST SELECTION: (SW0-SW5)

WHEN SW0-SW5 ARE SET TO ZERO (00), THE SCHEDULAR WILL
EXECUTE ALL TESTS (1-64) IN SEQUENCE. IF SW0-SW5 ARE SET
TO SOME SPECIFIC TEST NUMBER (1-64) 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.

PROGRAM HALTS***

***IF THE SOFTWARE SWITCH REGISTER IS USED AND THE PROGRAM
HALTS THEN THE OPERATOR CAN PRESS A <^G> CONTROL G BEFORE HITTING
CONTINUE. THIS WILL ALLOW THE OPERATOR TO ENTER DATA INTO
LOC. 176 (SWREG). THE FOLLOWING MESSAGE WILL BE TYPED OUT :
SWR=XXXXXX NEW= (REFER TO SECTION 5 FOR OPERATOR OPTIONS).

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8. TEST DESCRIPTION

LOGIC TEST #1: DRIVE ADDRESSING

PURPOSE: VERIFY THE PRESENCE OF TM02 AT THE ADDRESSES SPECIFIED BY THE OPERATOR. TEST OCCURS IMMEDIATELY AFTER DRIVE SELECTION.

PROGRAMMED SEQUENCE: FOR EACH TM02 ADDRESS (0-7) THE C1 REGISTER IS READ, AND THE NON-EXISTANT DRIVE (NED) BIT IS CHECKED. NED IS SET WHEN THE TM02 DOES NOT RESPOND TO DEM BY ISSUING TRA. IN THIS TEST, NED IS EXPECTED FOR EACH ADDRESS NOT TYPED BY THE OPERATOR.

LIKELY FAULT LOCATIONS: M5904,CABLE,M5903,M8909

CIRCUITS	PRINT REFERENCES
RH-DS BITS	(CSRB)
RH-NED BIT	(CSRB)
MASSBUS CABLE C(DEM,TRA,DS BITS)	(MB3)
DRIVE ADDRESS	(MBI2)
DEM-TRA HANDSHAKE	

LOGIC TEST #2: REGISTER ADDRESSING

PURPOSE: CHECK THE REGISTER SELECT LINES

PROGRAMMED SEQUENCE: READ ALL 14 MASSBUS REGISTERS WHICH MAKE UP THE TAPE SYSTEM CHECKING FOR (1) CONTROL BUS PARITY ERROR AND (2) ILR BIT

LIKELY FAULT LOCATIONS: M5904,CABLE,M5903,M8909,M8905,M8903

CIRCUITS	PRINT REFERENCE
C-LINES	(MB1,2,3),(MBI3),(MBI4),(MBI5)
RH REGISTER SELECT	(BCTA)
TM02 REGISTER SELECT	(MBI2)
MASSBUS REGISTER SELECT LINES	(MB1,2)
PARITY TREE	(MBI4)
CPAR,ILR BITS	(MBI11)

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LOGIC TEST #3: CONTROL BUS

PURPOSE: VERIFY THAT ALL CONTROL LINES PROPERLY TRANSMIT ONES AND ZEROS.

PROGRAMMED SEQUENCE: WRITE FC REGISTER AND CHECK CPAR, READ FC AND CHECK MCPE, UPDATE DATA, REPEAT. DATA IS ALL 0'S, WALKING '1' BIT, ALL '0'S, 2 WALKING '1' BITS BEGINNING WITH BIT 0 AND 8 DATA IS CHECKED ALONG WITH ERROR BITS.

LIKELY FAULT LOCATIONS: M5904,CABLES,M5903YA,M8909,M8905,M8903

CIRCUITS	PRINT REFERENCE
C-LINES	(MB1,2,3)
C-BUS MULTIPLEXERS	(MBI3,4,5,8)(TCCM7)(MR)
ERROR BIT	(MBI11)
MCPE BIT	(PACA)

LOGIC TEST #4: SLAVE ADDRESSING

PURPOSE: VERIFY THE FUNCTIONING OF THE SLAVE ADDRESS BITS IN THE TAPE CONTROL REGISTER THE SLAVE ADDRESS BUS LINES, THE ADDRESS DECODE CIRCUIT IN THE TU16 AND THE SPR BIT.

****
IT IS REQUIRED THAT ONLY ONE SLAVE BE POWERED UP WHEN
*THIS TEST IS RUN. *
****

PROGRAMMED SEQUENCE: THE SLAVE ADDRESS BITS IN THE TAPE CONTROL REGISTER ARE LOADED WITH ALL 8 COMBINATIONS AND SPR IS CHECKED FOR EACH ADDRESS.

LIKELY FAULTS LOCATIONS: M8905,M8907,CABLE,M9001,M8910,M9001YA,M8903

CIRCUITS	PRINT REFERENCE
REGISTER SELECT	(MBI2)
SLAVE ADDRESS BITS	(MR6)
SLAVE ADDRESS LINES	(M8907,2-2),(LAW6)
TU16 ADDRESS DECODE	(LAW6)
SPR BIT	(LAW6)(M9001YA)(TCCM7)

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LOGIC TEST #5: MAINTENANCE REGISTER BITS

PURPOSE: TO VERIFY THAT THE VARIOUS BITS OF THE MAINTENANCE REGISTER CAN BE WRITTEN INTO AND READ AND OTHERWISE BEHAVE AS EXPECTED.

PROGRAMMED SEQUENCE: IN THE FIRST SEQUENCE AN INCREMENTING DATA WORD (0-37) IS WRITTEN INTO THE MR. WITH THE CONTENTS OF BITS 0-4 BEING CHECKED AFTER EACH OPERATION. THEN 15(OCTAL) IS WRITTEN INTO THE REGISTER WHICH SHOULD PERMIT BITS 7-15 TO BE WRITTEN FROM THE CONTROL BUS. THEN THE DATA WRITTEN INTO BITS 7-15 IS INCREMENTED AND CHECKED.

LIKELY FAULT LOCATIONS: M8905

CIRCUITS	PRINT REFERENCE
C-LINES	
MAINTENANCE REGISTER	(MR2,3,5)
M.R. FUNCTION DECODE	(MR5)
M.R. MULTIPLEXOR	(MR4)

LOGIC TEST #6: TAPE CONTROL REGISTER BITS

PURPOSE: TO VERIFY THAT TAPE CONTROL BITS 0-11 CAN BE WRITTEN INTO AND READ AND THAT TCW BEHAVES AS EXPECTED:

PROGRAMMED SEQUENCE: ALL 0'S DATA PATTERN IS WRITTEN TO AND READ FROM THE TAPE CONTROL REGISTER. TCW IS CHECKED FOR A "ONE". THIS SEQUENCE IS REPEATED WITH ALL "1" DATA AND AGAIN WITH ALL "0"S.

LIKELY FAULT LOCATIONS: M8909,M8905

CURCUITS	PRINT REFERENCE
TM02 REGISTER SELECT	(MBI2)
TC FLIP-FLOPS, MULTIPLEXERS	(MR6)

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LOGIC TEST #7: FRAME COUNT BIT TEST

PURPOSE: TO VERIFY THAT THE FRAME COUNT BITS CAN BE WRITTEN INTO AND READ FROM AND ARE NEITHER STUCK AT 0 NOR STUCK AT 1.

PROGRAMMED SEQUENCE: DATA IS WRITTEN INTO THE FRAME COUNT REGISTER AND READ FROM IT. THE DATA PATTERN IS ALL ZEROS FOLLOWED BY ALL ONES FOLLOWED BY ALL ZEROS.

LIKELY FAULT LOCATIONS: M8909

CIRCUITS	PRINT REFERENCE
TM02 REGISTER SELECT	(MBI2)
FRAME COUNT REGISTER	(MBI8)
FRAME COUNT MULTIPLEXERS	(MBI10)

LOGIC TEST #10: FUNCTION CODE BIT TEST

PURPOSE: TO VERIFY THAT THE FUNCTION CODE BITS CAN BE WRITTEN INTO AND READ FROM AND ARE NEITHER STUCK AT 0 NOR STUCK AT 1.

PROGRAMMED SEQUENCE: THE C1 REGISTER IS WRITTEN WITH ALL ZEROS. DATA IS CHECKED ON THE 5 FUNCTION CODE BITS (BITS 1-5). BITS 1-5 ARE WRITTEN WITH ONES, CHECK AND REPEAT WITH ALL ZEROS.

LIKELY FAULT LOCATION: M8909, M8905

CIRCUITS	PRINT REFERENCE
TM02 REGISTER SELECTION	(MBI2)
FUNCTION CODE FLOPS	(MBI5)
FUNCTION CODE MULTIPLEXERS	(MR6)

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LOGIC TEST #11: GO BIT SET, RESET

PURPOSE: TO VERIFY THAT THE GO BIT CAN BE SET IN A SIMULATED READ OPERATION AND CLEARED WITH AN INIT.

PROGRAMMED SEQUENCE: INIT AND CHECK THAT GO=0. SET UP A SIMULATED READ OPERATION BY LOADING A WAM3 15(OCTAL) INTO THE MAINTENANCE REGISTER, CLEARING THE FRAME COUNT REGISTER TO SET FCS, LOAD 1700 (FORMAT) INTO THE TAPE CONTROL REGISTER, SETTING READ COMMAND AND GO BIT. CHECK FOR GO=1. INIT AND CHECK THAT GO BIT=0.

LIKELY FAULT LOCATION: MASSBUS CABLE B(INIT),M8909,M8905

CIRCUIT	PRINT REFERENCE
FCS	MBI8
SET ILF	MBI7
SET NEF	MBI7
GO BIT	MBI5
GO BIT MULTIPLEXER	MR6
SET ILR	MBI2

LOGIC TEST #12: DRIVE READY BIT

TEST 12 IS AN EXACT REPEAT OF TEST 11 EXCEPT THAT DRIVE READY (DRY) IS CHECKED INSTEAD OF THE GO BIT. DRY IS SIMPLY GO L MULTIPLEXED ONTO THE C-LINES AS BIT SEVEN OF THE STATUS REGISTER.

PRINT REF TCCM7

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LOGIC TEST #13: INTERRUPT TEST

PURPOSE: TO VERIFY THE OPERATION OF THE RH INTERRUPT LOGIC.

PROGRAMMED SEQUENCE: THE C1 REGISTER IS CLEARED, PRIORITY IS SET, THE INTERRUPT ENABLE BIT IS SET AND THE INTERRUPT IS AWAITED.

LIKELY FAULT LOCATION:

CIRCUITS	PRINT REFERENCE
INTERRUPT CONTROL	BCTF

MANUAL INTERVENTION TESTS 14,15,16,17

LOGIC TEST #14· STATUS AT BOT, ON LINE, LOADED, NO WRITE RING

PURPOSE: TO TEST FOR THE PRESENCE OF MOL,WRL,DPR,DRY,BOT.

PROGRAMMED SEQUENCE: THE OPERATOR IS INSTRUCTED TO LOAD THE DRIVE WITH A TAPE MINUS THE WRITE ENABLE RING AND PLACE THE DRIVE ON LINE AT BOT MOL,WRL,DPR,DRY,BOT ARE CHECKED.

LIKELY FAULT LOCATION: M8910,SLAVE CABLE, M8903

CIRCUIT	PRINT REFERENCE
MOL	LAW6,TCCM7,M8908,M9001YA,YC
WRL	LAW8,TCCM7,M8908,M9001YA,YC
DPR	TCCM7
DRY	TCCM7
BOT	LAW6,TCCM7,M8908YA,M8913,YA

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LOGIC TEST #15: STATUS AT BOT,OFFLINE,LOADED, NO WRITE RING

PURPOSE: TO TEST ATA,DPR,DRY,SSC

PROGRAMMED SEQUENCE: OPERATOR IS INSTRUCTED TO TAKE DRIVE OFFLINE: ATA,SSC,DPR,DRY ARE CHECKED.

LIKELY FAULT LOCATION: M8910,M8903,M8909,SLAVE CABLE

CIRCUIT	PRINT REFERENCE
SSC	LAW8,M8913,M8913YA,TCCM7
ATA	MBI3

LOGIC TEST #16: STATUS AT EOT,ON LINE, LOADED, NO WRITE RING

PURPOSE: TO TEST EOT,SSC,SLA

PROGRAMMED SEQUENCE: THE OPERATOR IS INSTRUCTED TO MOVE TO EOT AND PLACE THE DRIVE ON LINE. EOT,SSC,SLA ARE CHECKED IN ADDITION TO ATA,MOL,WEL,DPR,DRY

LIKELY FAULT LOCATION: M8910,SLAVE CABLE,M8903

CIRCUIT	PRINT REFERENCE
SSC	LAW8,M8913,M8913YA,TCCM7
EOT	LAW6,TCCM7,M8908YA,M8913YA
SLA	LAW8,TCCM7,M9001YA,YC,M8908

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LOGIC TEST #17: STATUS AT ONLINE LOADED

TEST 17 IS EXACTLY LIKE TEST 16 EXCEPT THAT THE DRIVE IS REVERSED OFF OF EOT AND THE WRITE ENABLE RING IS INSTALLED.

****
EACH OF THE NEXT 11 TESTS ARE DESIGNED TO VERIFY
THE ABILITY TO SET SPECIFIC ERROR BITS.
****

LOGIC TEST #20: ILLEGAL FUNCTION

PROGRAMMED SEQUENCE: THE WORD COUNT IS SET TO -1. ALL CODES STORED IN THE ILLEGAL FUNCTION TABLE ARE LOADED AND ILF IS CHECKED FOR EACH ONE. THEN UNEXPECTED ERRORS ARE CHECKED.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
SET ILF DECODE	MBI5,MBI7
ILF FLOP	MBI11
ILF MULTIPLEXER	MBI10

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LOGIC TEST #21: REGISTER MODIFICATION REFUSED

PROGRAMMED SEQUENCE: INIT, SELECT SLAVE AND DRIVE. LOAD 300
@ TAPE CONTROL REGISTER LOAD WAM3 IN THE MAINTENANCE
REGISTER. LOAD THE C1 REGISTER WITH A READ COMMAND AND GO
BIT. ATTEMPT TO WRITE THE FRAME COUNT REGISTER. READ
ERROR REGISTER. CHECKING FOR RMR. CHECK FOR UNEXPECTED ERRORS
WAIT FOR ACCL. DELAY. DO EOP CLEAR.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
RMR DECODE	MBI2
RMR FLOP	MBI11
RMR MULTIPLEXER	MBI10

LOGIC TEST #22: CONTROL BUS PARITY (CPAR)

PROGRAMMED SEQUENCE: WRITE 20(8) INTO CS2. ENABLING THE
WRITING OF EVEN PARITY ON MASSBUS. WRITE ALL ONES TO
FRAME COUNT. RESET PAT. CHECK ERROR REGISTER FOR CPAR CHECK
FOR OTHER UNEXPECTED ERRORS.

LIKELY FAULT LOCATIONS: M8909

CIRCUIT	PRINT REFERENCE
MASSBUS PARITY TREE	MBI4
CPAR FLOP	MBI11
CPAR MULTIPLEXER	MBI10

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LOGIC TEST #23: FORMAT ERROR (FMT)

PROGRAMMED SEQUENCE: AN ILLEGAL FORMAT CODE IS LOADED INTO THE TAPE CONTROL REGISTER. WAM3 IS LOADED INTO THE MR READ COMMAND AND THE GO BIT IS SET. THE ERROR REGISTER IS CHECKED FOR FORMAT ERROR AND UNEXPECTED ERROR BITS. THIS SEQUENCE IS REPEATED FOR ALL ILLEGAL FORMAT CODES

LIKELY FAULT LOCATIONS: M8905,M8906,M8909

CIRCUIT	PRINT REFERENCE
FORMAT BITS	MR6
ILF DECODE	BF3
ILF FLOP	MBI11
ILF MULTIPLEXERS	MBI10

LOGIC TEST #24: DATA BUS PARITY ERROR (DPAR)

PROGRAMMED SEQUENCE: SET UP A WRAP 2 AS FOLLOWS: NORMAL FORMAT ----> TAPE CONTROL REGISTER, -10 ----> WORD COUNT, -20 ----> FRAME COUNT, WAM2 ----> MAINTENANCE REGISTER,. LOAD WRITE COMMAND AND GO BIT. SET PAT BIT IN CS2. AFTER A DELAY MR IS LOADED 4 TIMES CAUSING 2 DATA BUS TRANSFERS. DPAR AND CPAR ARE CHECKED. THEN A CHECK FOR UNEXPECTED ERRORS IS MADE MASKING OPI.

LIKELY FAULT LOCATIONS: DBUS LINES, M8905, M8906

CIRCUIT	PRINT REFERENCE
MM CLK	MR5
WRT CLK GENERATION	TCCM4
DPAR FLOP	MBI11
DATA BUS PARITY TREE	BF3

LOGIC TEST #25: NON-EXECUTABLE FUNCTION (NEF)

PROGRAMMED SEQUENCE: LOAD FC WITH -1. SET WAM 2. SET WRITE AND GO. ILF SHOULD SET DUE TO TOO SMALL INITIAL FRAME COUNT. CHECK ILF. CHECK FOR UNEXPECTED ERRORS.

LIKELY FAULT LOCATION: M8909

CIRCUIT	PRINT REFERENCE
NEF FLOP	MBI11
NEF MULTIPLEXER	MBI10
SET NEF	MBI7

LOGIC TEST #26: FRAME COUNT ERROR

PROGRAMMED SEQUENCE: SET WC TO -10, FC TO -20 WAM3 IN MAINTENANCE REGISTER, LOAD WRITE AND GO, DELAY ISSUE MM OR CLEAR. CHECK FCE AND CHECK FOR UNEXPECTED ERRORS. FRAME COUNT ERROR SHOULD BE SET BECAUSE A WRITE OPERATION WAS TERMINATED PRIOR TO A WORD COUNT OVERFLOW.

LIKELY FAULT LOCATIONS: M8909, MB CABLE, M8903, M8905

CIRCUITS	PRINT REFERENCE
RUN LINE	MB1
EBL PLS	MBI9
FCE FLOP	MBI11
SHUTDOWN LOGIC	TCCM5
MAINT. FUNCTION DECODE	MR5

LOGIC TEST #27: ILLEGAL REGISTER

PROGRAMMED SEQUENCE: IF THE RH HAS ALL MASSBUS REGISTER OPEN (MOST SYSTEM IN THE FIELD DON'T), ALL THE ILLEGAL REGISTER ADDRESSES ARE READ, CHECKING THE ILR BIT AFTER EACH ATTEMPT.

LIKELY FAULT LOCATIONS: MASSBUSS, M8909

CIRCUITS	PRINT REFERENCE
REGISTER SELECT LINES	MB1, MB2
REGISTER SELECT DECODE	MBI2
ILR FLOP	MBI11

LOGIC TEST #30: DRIVE TIMING ERROR

PROGRAMMED SEQUENCE:

THE MAINTENANCE REGISTER IS LOADED WITH A FUNCTION THAT IS DESIGNED TO CRIPPLE OCCUPIED. FRAME COUNT REGISTER IS CLEARED TO SET FCS LOAD WRITE COMMAND AND GO BIT. CHECK FOR DTE. THEN DRIVE IS INITIALIZED. FCS IS SET AND WRP 3 CODE IS LOADED INTO MR. WRITE COMMAND AND GO BIT ARE SET. AFTER DELAY FOR ACCELERATION, THE MR CLOCK IS GENERATED AND ANOTHER CHECK IS MADE FOR DTE. FINAL CHECK IS MADE FOR ERRORS OTHER THAN OPI. THE FIRST MAINTENANCE REGISTER CODE WHICH CRIPPLES THE OCCUPIED RECEIVER CAUSES OCCUPIED TO BE ASSERTED AND TESTS THE CIRCUITRY WHICH CHECKS FOR OCCUPIED WHEN A DATA TRANSFER COMMAND IS INITIATED. THE SECOND TEST UTILIZES THE FACT THAT THE WRP 3 CODE INHIBITS THE MASSBUS WCLK RECEIVER CREATING A SITUATION WHERE SCLK IS NOT FOLLOWED BY A WRITE CLOCK.

LIKELY FAULT LOCATIONS: M8909, M8905, M8906, MB CABLES

CIRCUITS	PRINT REFERENCES
DTE FLOP	MBI11
CRIPPLE OCCUPIED FUNCTION	MR5
WRP 3 FUNCTION	MR5
PREVIOUS OCCUPIED CHECK	MBI7
CHECK FOR WCLK	BF2
MM CLK	MR5

LOGIC TEST 31: OPERATION INCOMPLETE (OPI)

PROGRAMMED SEQUENCE:

SET UP INCLUDES FORMAT, WRP 2 (BIT FIDDLER WRITE), FCS. WRITE COMMAND AND GO BIT ARE SET AND THE PROGRAM DELAYS FOR OPI. A SECOND TEST INVOLVES SETTING UP WRP 3 AND ISSUING A READ COMMAND. ESSENTIALLY THIS TEST UTILIZES THE WRAPAROUND CODES TO PREVENT ANY RECORDS BEING DETECTED AFTER A READ OR A WRITE COMMAND IS ISSUED.

LIKELY FAULT LOCATIONS: M8903, M8909

CIRCUITS	PRINT REFERENCES
OPI TIMER	TCCM5
OPI FLOP	MBI11
OPI TIMER CONTROL	MBI7

LOGIC TEST 32: UNSAFE (UNS)

PROGRAMMED SEQUENCE:

A NON-EXISTANT SLAVE IS SELECTED AND A READ COMMAND IS ISSUED. UNSAFE ERROR IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8910, SLAVE CABLE

CIRCUITS	PRINT REFERENCES
UNSAFE FLOP	MBI11
SET UNSAFE	MBI7
MOL GENERATION	LAW6

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LOGIC TEST 33: POSITIONING IN PROGRESS (PIP)

PROGRAMMED SEQUENCE:

SET UP DRIVE AND SLAVE ARE SELECTED, FCS IS SET. A SPACE COMMAND IS ISSUED AND PIP IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8903

CIRCUITS	PRINT REFERENCES
SPACE FUNCTION DECODE	M8I5
PIP GENERATION	TCCM7
STATUS REGISTER	TCCM7

LOGIC TEST 34: PHASE-ENCODED STATUS (PES)

PROGRAMMED SEQUENCE:

DENSITY CODES 0 - 4 ARE LOADED AND PES IS CHECKED FOR EACH CODE. IT IS EXPECTED ONLY FOR DENSITY 4.

LIKELY FAULT LOCATIONS: M8905, SLAVE BUS, M8911, M8903

CIRCUITS	PRINT REFERENCES
DENSITY BITS	MR6
DENSITY LINES	SBC
PES CIRCUIT	SC3
PES STATUS BIT	TCCM7

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LOGIC TEST 35: TAPE CONTROL WRITE (TCW)

PROGRAMMED SEQUENCE:

SETUP FORMAT AND WRP-3 ARE SET, READ COMMAND IS ISSUED. TCW IS CHECKED. DRIVE IS INITIALIZED, TAPE CONTROL REGISTER IS WRITTEN TO AND TCW IS CHECKED.

LIKELY FAULT LOCATION: M8905

CIRCUIT	PRINT REFERENCES
TCW	MR6

LOGIC TEST 36: FRAME COUNTER STATUS (FCS)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, FCS IS CHECKED, DRIVE IS INITIALIZED, FRAME COUNTER IS WRITTEN TO, AND FCS IS CHECKED.

LIKELY FAULT LOCATIONS: M8909, M8903

CIRCUITS	PRINT REFERENCES
FCS BIT	MBI8
FCS MULTIPLEXER	TCCM7

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LOGIC TEST 37: ACCELERATION (ACCL)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, FORMAT IS SET AND ACCL IS CHECKED
FOR ONE. WAM 3 CODE IS LOADED, READ COMMAND IS ISSUED.
AFTER A DELAY ACCL IS CHECKED FOR ZERO.

LIKELY FAULT LOCATIONS: M8903, M8911

CIRCUITS	PRINT REFERENCES
ACCL BIT, MOTION DELAY COUNTER	TCCM3
CLOCK	SC2

LOGIC TEST 40: PE TAPE MARK (TM)

PROGRAMMED SEQUENCE:

DRIVE IS INITIALIZED, WAM0 IS SET, WRITE TAPE MARK IS SET.
AFTER DELAY TAPE MARK BIT IS CHECKED. WAM0 MULTIPLEXES
THE OUTPUT OF THE WRITE DATA GENERATOR ONTO THE RDA LINES.
THE DATA SYNC MODULES SYNC ON THE DATA AND SEND ENVELOPE
INFORMATION TO THE TAPE MARK DETECTOR ON M8902.

LIKELY FAULT LOCATIONS: M8902, M8901, M8903, M8905

CIRCUITS	PRINT REFERENCES
TAPE MARK DETECTOR	TCPE4, TCPE5
TAPE MARK MULTIPLEXER	TCCM7
ENVELOPE SIGNALS	DS 3, 5, 7
WRITE DATA BUFFER	TCCM2
RDA MULTIPLEXERS	TCCM6
WRITE TAPE MARK FUNCTION	MBI5
WAM0 SIGNAL	MR5

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LOGIC TEST 41: NRZ TAPE MARK (TM VPE, ITM)

PROGRAMMED SEQUENCE:

SAME AS TEST 40 EXCEPT NRZ DENSITY IS SELECTED.

LIKELY FAULT LOCATIONS: M8903, M8904

CIRCUITS	PRINT REFERENCES
WRITE DATA BUFFER	TCCM2
RSDO MULTIPLEXER	TCCM6
RDA MULTIPLEXERS	TCCM6
TM DETECTOR	CNRZ4
ILLEGAL TAPE MARK FLOP	CNRZ4

SEE NOTE ON PAGE 22 FOR TESTS 42-56

LOGIC TEST 42: 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 N 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

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LOGIC TEST 43: WARP3, PE, NORMAL, ODD

JUST LIKE TEST 42 EXCEPT FOR DENSITY BITS.

LOGIC TEST 44: 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 MAINTENANCE 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. SEQUENCE 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

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LOGIC TEST 45: WRP2, PE, NORMAL, ODD

THE TEST IS EXACTLY LIKE TEST 44 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 46: WRP1, NRZ, NORMAL, ODD

THIS TEST IS EXACTLY LIKE TEST 44 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 47: 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

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LOGIC TEST 50: WRAP0, NORMAL, ODD

WRAP 0 IS THE MOST COMPLETE OF THE TM02 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 TM02 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	MR5
CRC READ TIMING	CNRZ4
SHUTDOWN CIRCUITRY	TCCM5

LOGIC TEST 51: WRP0, PE, NORMAL. ODD

REPEAT OF TEST 50 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

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LOGIC TEST 52: CORE DUMP WRITE, WAM2

REPEAT OF TEST 44 EXCEPT BIT FIDDLER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 53: CORE DUMP READ, WAM3

REPEAT OF TEST 42 EXCEPT BIT FIDD_ER OPERATES IN CORE DUMP MODE!

LIKELY FAULT LOCATION: M8906

LOGIC TEST 54: EVEN PARITY WRITE - WAM1

REPEAT OF TEST 46 EXCEPT EVEN PARITY IS SPECIFIED.

LIKELY FAULT LOCATION: M8903

LOGIC TEST 55: EVEN PARITY READ: WAM0,

REPEAT OF TEST 50 EXCEPT EVEN PARITY IS USED.

LIKELY FAULT LOCATIONS: M8903, M8904

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LOGIC TEST 56: READ REVERSE, WAM3 (M8906)

REPEAT OF TEST 42 EXCEPT READ REVERSE COMMAND IS ISSUED.

LIKELY FAULT LOCATIONS: M8908, M8909

NOTE: FOR TESTS 42-56

FOR THE MOST PART, THIS DIAGNOSTIC TESTS PARTICULAR
AREAS OF THE TM02 LOGIC INDEPENDENT OF THE TU16. HOWEVER
THERE ARE A FEW SIGNALS WHICH ARE REQUIRED FROM THE TU16
TO COMPLETE THE TESTS, AND AT LEAST ONE CASE WHERE TU16
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 WAM0 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 G056.

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THE NEXT 5 TESTS CONSISTS OF WRITING ON TAPE USING MAINTENANCE MODE FUNCTIONS TO FORCE ERROR CONDITIONS TO CHECK THE ERROR CHECKING CAPABILITIES. OCCASIONAL ERRORS MAY RESULT FROM TAPE DEFECTS. CONSTANT ERROR MAY BE THE RESULT OF PROBLEMS WITH ERROR CHECKING CIRCUITRY OR PROBLEMS WITH THE DRIVE. DEBUG OF THE PROBLEMS MAY BE EASIER USING DATA RELIABILITY OF UTILITY DRIVER.

LOGIC TEST 57: CYCLIC REDUNDANCY ERROR

PROGRAMMED SEQUENCE:

FIRST THE DIAGNOSTIC PERFORMS A WRAPO DESIGNED TO LOAD THE CRC CHECKER IN A KNOWN MANNER. CHECK ARE MADE FOR LRC ERROR AND THE CONTENT OF CRC REGISTER. THEN A WRITE OPERATION IS PERFORMED USING A MAINT. MODE (IICC) WHICH INHIBITS THE INITIALIZATION OF THE CRC CHECKER. THE CRC CHECKER LOGIC WHICH HAS NOT BEEN CLEARED SHOULD DETECT A CRC ERROR. UNEXPECTED ERROR BITS MAY INDICATE PROBLEMS WITH THE WRITE OPERATION.

LIKELY FAULT LOCATIONS: M8905, M8904, G056, SLAVE CABLE, M8910

CIRCUITS	PRINT REFERENCES
MM FUNCTION DECODE	MR5
CRC CHECK CIRCUIT	CNRZ3

```
1362                                    LOGIC TEST 60:  LRC
1363                                    -------------
1364
1365                                    PROGRAMMED SEQUENCE:
1366                                    -------------------
1367
1368                                    A WRITE OPERATION IS PERFORMED WITH A MM FUNCTION (INC TMRL)
1369                                    WHICH ASSERTS WD(SB) 5L THROUGHOUT THE RECORD.  ALL ONES
1370                                    DATA IS USED SO THAT THE FUNCTION ONLY INTERFERES WITH
1371                                    THE WRITING OF THE LRC CHARACTER WHEN NONE OF THE TM02
1372                                    WRITE DATA LINES SHOULD BE ASSERTED.
1373
1374                                    LIKELY FAULT LOCATIONS:  M8505, M8903, M8910, M8904
1375                                    ----------------------
1376
1377                                    CIRCUITS                        PRINT REFERENCES
1378                                    --------                        ----------------
1379
1380                                    MM FUNCTION DECODE                MR5
1381                                    WRITE LINE DRIVERS                TCCM2
1382                                    WRITE HEAD DRIVERS                LAW3, 4
1383                                    LRC CHECKING                      CNRZ3
1384
1385
1386
```

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LOGIC TEST 61: PE CORRECTABLE DATA

PROGRAMMED SEQUENCE:

A PE WRITE OPERATION IS PERFORMED USING A FUNCTION WHICH WILL GROUND THE BIT STROBE LINE ON BIT 1. THIS SHOULD CAUSE THE BIT1 DEAD TRACK FLOP TO ASSERT AND CAUSE CORRECTABLE DATA ERROR. THE DEAD TRACK REGISTER IS CHECKED FOR BIT 1.

LIKELY FAULT LOCATIONS: M8905, M8901, M8902

CIRCUITS	PRINT REFERENCES
MM FUNCTION DECODE	MR5
BIT STROBE CIRCUIT	DS4
DEAD TRACK FLOP	DS5, TCPE2
DEAD TRACK REGISTER	MR4

LOGIC TEST 62: PE INCORRECTABLE DATA

REPEAT OF TEST 61, EXCEPT THAT THE MAINT. MODE FUNCTION GROUNDS BITS STROBE FOR BITS 1, 2 AND THE WD LINE FOR BIT 5 IN HELD ASSERTED. INC. DATA AND PCF ERRORS ARE EXPECTED.

LIKELY FAULT LOCATIONS: M8902, M8901

CIRCUIT	PRINT REFERENCE
INC ERROR, PEF,	TCPE2

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LOGIC TEST 63: PE FORMAT

THE MM FUNCTION USED IN THIS TEST INVERTS THE DATA USED IN PREAMBLE AND POSTAMBLE OF BIT ONE.

LIKELY FAULT LOCATIONS: M8902, M8903, M8905

CIRCUITS	PRINT REFERENCES
PEF.	TCPE2
WRITE BUFFER	TCCM2
MM DECODE	MR5

LOGIC TEST 64: FRAME COUNT OVERFLOW

THIS TEST USES A WRAP2 TO CHECK THE OVERFLOW OF FRAME COUNT REGISTER.

LIKELY FAULT LOCATION: M8909

FRAME COUNT REGISTER MB18

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```
1466
1467
1468                    9.      LISTING
1469                            -------
1470
1471                    %
1472
1473                            .TITLE CZTUG0 TM02/TU16 CTRL LGC
1474                            ;ZZ - CZTUC-G-0
1475                            ;21 OCT 75
1476                            ;R. BARNES
1477                            ;REVISED 21 APR 76 BY S. CARPENTER
1478                            ;REVISED 11 NOV 77 BY CLEM WALSH
1479                            ;REVISED 11 JUL 83 BY B. LEBLANC
1480
1481                            ;       TO SUPPORT THE DYNAMIC LOADING OF THE
1482                            ;       SOFTWARE SWITCH REGISTER
1483                            .ABS
1484
1485
1486                            ;CONSOLE SWITCHES*********
1487                            ;
1488                            ;SW15:  1=HALT ON ERROR
1489                            ;       0=CONTINUE
1490                            ;SW14:  1=LOOP ON ERROR
1491                            ;       0=CONTINUE
1492                            ;SW13:  1=DO NOT PRINT ERRORS
1493                            ;       0=PRINT ERRORS
1494                            ;SW12:  1=INHIBIT ITERATIONS
1495                            ;       0=DO ITERATIONS
1496                            ;SW11:  1=CONTINUOUS CYCLE
1497                            ;       0=HALT AT END OF PASS
1498                            ;SW10:  1=HALT AT END OF EACH TEST
1499                            ;       0=CONTINUE
1500                            ;SW9:   11=DO MANUAL INTERVENTION TESTS
1501                            ;       0=INHIBIT MANUAL INTERVENTION
1502                            ;SW8:   1=NO WRAP DATA CHECK
1503                            ;       0=DO WRAP DATA CHECK
1504                            ;SW7:   1=NO WRAP STATUS CHECK
1505                            ;       0=DO WRAP STATUS CHECK
1506                            ;SW6:   1=SELECTABLE WRAP DATA PATTERN (IN SINGLE TEST)
1507                            ;       0=AUTO PATTERNS
1508                            ;SW0-5: SELECT TEST NUMBER :: 00=ALL TESTS
```

```
                        ;TU16 REGISTER BITS**********

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

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

                                        R0=%0
                                        R1=%1
                                        R2=%2
                                        R3=%3
                                        R4=%4
                                        R5=%5
                                        SP=%6
                                        PC=%7

                                        ;TRAP CATCHERS**********

                                        .=0
                                        .REPT 200
                                        .+2
                                        HALT
                                        .ENDR

                                ;       ********************************************************************
                                ;                               ACT11 HOOKS
                                ;       ********************************************************************

                                                $SVPC=.

                                                .=40
                                DRIVE:          .BYTE   0               ;DRIVE # FOR XXDP LOAD MEDIUM
                                                                        ;ASSEMBLE AS A 0

                                                .=41
                                MEDIUM:         .BYTE   0               ;XXDP LOAD MEDIUM
                                                                        ;ASSEMBLE AS A 0

                                                .=42
                                                .WORD   0               ;LOCATION INDICATOR - AUTOM/MAN MODE
                                                                        ;ASSEMBLE AS A 0

                                                .=46
                                                .WORD   $ENDAD          ;SET TO $ENDAD IN .$EOP

                                                .=52
                                                .WORD   0               ;CHARACTERISTICS OF PROGRAM
                                                                        ;SET TO 0

                                                .=$SVPC                 ;RESTORE PC

                                ;       ********************************************************************
```

```
1607
1608                    ;       **********************************************************************
1609                    ;               MACRO FOR SIZING DRIVES AND SLAVES
1610                    ;               IN CHAIN MODE.
1611
1613                            .MACRO  $CHNMODE
1614                            MOV     #-1,DRVN                ;INITIALIZE DRIVE #
1615                    NXTDRV: MOV     #-1,SLVN                ;INITIALIZE SLAVE #
1616                    1$:     MOV     #40,@CS                 ;INIT CONTROLLER
1617                            INC     DRVN                    ;STEP DRIVE #
1618                            CMP     #10,DRVN                ;ALL DRIVES TESTED?
1619                            BEQ     TENDO                   ;BRANCH - IF YES
1620                            MOV     DRVN,@CS                ;LOAD DRIVE #
1621                            TST     @C1                     ;ACCESS DRIVE
1622                            BIT     #10000,@CS              ;NON-EXISTANT DRIVE
1623                            BNE     1$                      ;BRANCH - IF YES (NED=1)
1624                    NXTSLV: INC     SLVN                    ;STEP SLAVE #
1625                            BNE     1$                      ;BRANCH IF NOT SLAVE 0
1626                            TST     DRVN                    ;DRIVE 0?
1627                            BNE     1$                      ;BRANCH - IF NO
1628                            TSTB    XXDPM                   ;XXDP?
1629                            BEQ     1$                      ;BRANCH - IF NO
1630                            INC     SLVN                    ;STEP TO SLAVE #1
1631                    1$:     CMP     #10,SLVN                ;ALL SLAVES TESTED?
1632                            BEQ     NXTDRV                  ;BRANCH - IF YES
1633                            MOV     SLVN,@TC                ;LOAD SLAVE UNIT #
1634                            BIT     #2000,@DT               ;SLAVE PRESENT?
1635                            BEQ     NXTSLV                  ;BRANCH - IF NO (SPR=0)
1636                            CMPB    #2,@DT                  ;IS DRIVE A TE16 OR TU16?
1637                            BEQ     2$                      ;BRANCH IF NO
1638                            BIT     #140000,@DT             ;IS DRIVE A TAPE UNIT?
1639                            BEQ     NXTSLV                  ;BRANCH IF NO
1640                    2$:     MOV     #MSGC,R4                ;GET MESSAGE
1641                            JSR     PC,TTOUT                ;TYPE MESSAGE
1642                            HALT
1643                            .ENDM   $CHNMODE
1644
1645                    ;       **********************************************************************
1646
```

```
1648
1649                                    ;TTY INTERRUPT VECTOR**********
1650
1651            000060                  .=60
1652  000060    024260                  TTINT           ;TTY INTERRUPT HEADER ADDRESS
1653  000062    000000                  0
1654
1655                                    ;SOFTWARE SWITCH REGISTER LOC. 176**********
1656
1657            000176                  .=176
1658  000176    000000                  SWREG:  0               ;SOFTWARE SWITCH REGISTER
1659
1660
1661                                    ;START ADDRESS***********
1662
1663            000200                  .=200
1664  000200    005000                  CLR     R0
1665  000202    000167  001222          JMP     START   ;PROGRAM START
1666
1667            000210                  .=210
1668  000210    012700  000001          MOV     #1,R0           ;SET NO HEADER FLAG
1669  000214    000167  001210          JMP     START
1670
1671                                    ;TM02 INTERRUPT VECTOR**********
1672
1673            000224                  .=224
1674  000224    024246                  MTINT           ;TAPE INTERRUPT HANDLER ADDRESS
1675  000226    000340                  340
1676
```

```
1678            000510                          .=510
1679                                            ;MASS BUS REGISTER EQUIVS**********
1680
1681    000510  172440                  C1:     172440
1682    000512  172442                  WC:     172442
1683    000514  172444                  BA:     172444
1684    000516  172446                  FC:     172446
1685    000520  172450                  CS:     172450
1686    000522  172452                  DS:     172452
1687    000524  172454                  ER:     172454
1688    000526  172456                  AS:     172456
1689    000530  172460                  CC:     172460
1690    000532  172462                  DB:     172462
1691    000534  172464                  MR:     172464
1692    000536  172466                  DT:     172466
1693    000540  172470                  SN:     172470
1694    000542  172472                  TC:     172472
1695    000544  172474                  BAE:    172474
1696
1697                                            ;ILLEGAL FUNCTION CODES
1698
1699    000546  005405                  ILFT:   5405
1700    000550  007415                          7415
1701    000552  016423                          16423
1702    000554  020437                          20437
1703    000556  022443                          22443
1704    000560  025447                          25447
1705    000562  031455                          31455
1706    000564  033465                          33465
1707    000566  036473                          36473
1708
1709                                            ;CONSTANTS**********
1710
1711    000570  177776                  PSW:    177776          ;PROCESSOR STATUS
1712    000572  177570                  SWR:    177570          ;SWITCH REGISTER
1713    000574  177560                  TKS:    177560          ;TTY READER STATUS
1714    000576  177562                  TKB:    177562          ;TTY READ BUFFER
1715    000600  177564                  TPS:    177564          ;TTY PUNCH STATUS
1716    000602  177566                  TPB:    177566          ;TTY PUNCH BUFFER
1717    000604  177777                  SERNUM: 177777          ;SERIAL NUMBER
1718    000606  000011                  DRVTP:  011             ;DRIVE TYPE
1719    000610  000020                  ITAMT:  20              ;ITERATION AMOUNT
1720    000612  000224                  VECT:   224             ;INTERRUPT VECTOR(RH)
1721    000614  172440                  REGS:   172440          ;STARTING REGISTER ADDRESS
1722
1723                                    ;       ****************************************************************
1724                                    ;                       ACT11 MODE INDICATORS
1725                                    ;       ****************************************************************
1726    000616  000000                  AUTOM:  .WORD   0               ;AUTOMATIC MODE INDICATOR
1727    000620      000                 ACT11M: .BYTE   0               ;ACT11 AUTO MODE INDICATOR
1728    000621      000                 XXDPM:  .BYTE   0               ;XXDP AUTOM MODE INDICATOR
1729    000622      000                 ADUMPM: .BYTE   0               ;ACT11 DUMP MODE INDICATOR
1730    000623      000                 XDUMPM: .BYTE   0               ;XXDP DUMP MODE INDICATOR
1731                                    ;       ****************************************************************
```

```
 1733                                   ;FLAGS AND COUNTERS**********
 1734
 1735  000624  000000                   TQB:    0
 1736  000626  000000                   TIB:    0
 1737  000630  000000                   HDRFL:  0
 1738  000632  000000                   EMADDR: 0
 1739  000634  000000                   DRVN:   0
 1740  000636  000000                   TR00:   0
 1741  000640  000000                   TR01:   0
 1742  000642  000000                   TR02:   0
 1743  000644  000000                   TR03:   0
 1744  000646  000000                   TR04:   0
 1745  000650  000000                   TR05:   0
 1746  000652  000000                   TR06:   0
 1747  000654  000000                   TR07:   0
 1748  000656  000000                   TR10:   0
 1749  000660  000000                   TR11:   0
 1750  000662  000000                   TR12:   0
 1751  000664  000000                   TR13:   0
 1752  000666  000000                   TR14:   0
 1753  000670  000000                   TR15:   0
 1754  000672  000000                   NRZOF:  0
 1755  000674  000000                   SLVN:   0
 1756  000676  000000                   PFLG:   0
 1757  000700  000000                   RTRN:   0
 1758  000702  000000                   ERADD:  0
 1759  000704  000000                   TEMP1:  0
 1760  000706  000000                   TEMP2:  0
 1761  000710  000000                   TEMP3:  0
 1762  000712  000000                   ITCNT:  0
 1763  000714  000000                   SAV1:   0
 1764  000716  000000                   SAV2:   0
 1765  000720  000000                   SAV3:   0
 1766  000722  000000                   SCOLP:  0
 1767  000724  000000                   ITRLP:  0
 1768  000726  000000                   EXFL:   0
 1769  000730  000000                   ATAF:   0
 1770  000732  000000                   SLAF:   0
 1771  000734  000000                   SSCF:   0
 1772  000736  000000                   ERRF:   0
 1773  000740  000000                   ASF:    0
 1774  000742  000000                   SCF:    0
 1775  000744  000000                   TREF:   0
 1776  000746  000000                   PEXFL:  0
 1777  000750  000000                   STFLG:  0
 1778  000752  000000                   LTADD:  0
 1779  000754  000000                   T24FL:  0
 1780  000756  000000                   ADDFL:  0
 1781  000760  000000                   WAM:    0
 1782  000762  000000                   FUN:    0
 1783  000764  000000                   DATC:   0
 1784  000766  000000                   WTAD:   0
 1785  000770  000000                   DATAD:  0
 1786  000772  000000                   RDAD:   0
 1787  000774  000000                   W2FLG:  0
 1788  000776  000000                   DERFL:  0
```

```
1789  001000  000000                PREFL:  0
1790  001002  000000                SERFL:  0
1791  001004  000000                CRCNT:  0
1792  001006  000000                UDES:   0
1793  001010  000000                WPGFL:  0
1794  001012  000000                PATRN:  0
1795  001014  000000                STATF:  0
1796  001016  000000                RDRVF:  0
1797  001020  000000                RCDP:   0
1798  001022  000000                STATC:  0
1799  001024  000000                SKAT:   0
1800  001026  000000                PCNTR:  0               ;PASS COUNTER
1801
1802                                ;**********
1803  001030  000000                PAFLG:  0
1804  001032  000000                RH17F:  0
1805                                ;**********
1806
1807                                        ;EXPT WRAP STATUS*******
1808
1809  001034  000000                WCS1:   0
1810  001036  000000                WCS2:   0
1811  001040  000000                WDS:    0
1812  001042  000000                WER:    0
1813
1814                                        ;DATA PATTERN GENERATORS*****
1815
1816  001044  000000                DATBL:  0
1817  001046  016050                DATA0:  DAT1    ;ALL ONE BITS
1818  001050  016072                DATA1:  DAT2    ;ALL ZERO BITS
1819  001052  016100                DATA2:  DAT3    ;ALTERNATING ONE/ZERO BITS
1820  001054  016110                DATA3:  DAT4    ;ALL BITS 0-377
1821
1822                                        ;CORE DUMP PATTERNS*******
1823
1824  001056  000005                WCDP2:  5
1825  001060  000005                        5
1826  001062  000012                        12
1827  001064  000012                        12
1828  001066  000000                        0
1829  001070  000017                WCDP0:  17
1830  001072  000017                        17
1831  001074  000017                        17
1832  001076  000017                        17
1833  001100  000000                        0
```

```
 1835
 1836                                        ;LOGIC TEST ENTRY TABLE**********
 1837
 1838  001102  000000                TSTTBL: 0
 1839  001104  000000                        0
 1840  001106  002724                T1AD:   LT1
 1841  001110  002724                T1IAD:  LT1
 1842  001112  003154                T2AD:   LT2
 1843  001114  003154                T2IAD:  LT2
 1844  001116  003362                T3AD:   LT3
 1845  001120  003364                T3IAD:  LT3IT
 1846  001122  003546                T4AD:   LT4
 1847  001124  003546                T4IAD:  LT4
 1848  001126  004024                T5AD:   LT5
 1849  001130  004032                T5IAD:  LT5IT
 1850  001132  004226                T6AD:   LT6
 1851  001134  004230                T6IAD:  LT6IT
 1852  001136  004440                T7AD:   LT7
 1853  001140  004442                T7iAD:  LT7IT
 1854  001142  004564                T10AD:  LT10
 1855  001144  004566                T10IAD: LT10IT
 1856  001146  004720                T11AD:  LT11
 1857  001150  004722                T11IAD: LT11IT
 1858  001152  005162                T12AD:  LT12
 1859  0C1154  005164                T12IAD: LT12IT
 1860  001156  005370                T13AD:  LT13
 1861  001160  005400                T13IAD: LT13IT
 1862  001162  005472                T14AD:  LT14
 1863  001164  005540                T14IAD: LT14IT
 1864  001166  005610                T15AD:  LT15
 1865  001170  005656                T15IAD: LT15IT
 1866  001172  005726                T16AD:  LT16
 1867  001174  005774                T16IAD: LT16IT
 1868  001176  006044                T17AD:  LT17
 1869  001200  006112                T17IAD: LT17IT
 1870  001202  006162                T20AD:  LT20
 1871  001204  006176                T20IAD: LT20IT
 1872  001206  006326                T21AD:  Li21
 1873  001210  006342                T21IAD: LT21IT
 1874  001212  006472                T22AD:  LT22
 1875  001214  006506                T22IAD: LT22IT
 1876  001216  006616                T23AD:  LT23
 1877  001220  006632                T23IAD: LT23IT
 1878  001222  006746                T24AD:  LT24
 1879  001224  006762                T24IAD: LT24IT
 1880  001226  007272                T25AD:  LT25
 1881  001230  007306                T25IAD: LT25IT
 1882  001232  007424                T26AD:  LT26
 1883  001234  007432                T26IAD: LT26IT
 1884  001236  007640                T27AD:  LT27
 1885  001240  007664                T27IAD: LT27IT
 1886  001242  007756                T30AD:  LT30
 1887  001244  010000                T30IAD: LT30IT
 1888  001246  010274                T31AD:  LT31
 1889  001250  010310                T31IAD: LT31IT
 1890  001252  010624                T32AD:  LT32
```

```
 1891  001254  010640                T32IAD: LT32IT
 1892  001256  010756                T33AD:  LT33
 1893  001260  010772                T33IAD: LT33IT
 1894  001262  011060                T34AD:  LT34
 1895  001264  011102                T34IAD: LT34IT
 1896  001266  011222                T35AD:  LT35
 1897  001270  011236                T35IAD: LT35IT
 1898  001272  011374                T36AD:  LT36
 1899  001274  011410                T36IAD: LT36IT
 1900  001276  011514                T37AD:  LT37
 1901  001300  011530                T37IAD: LT37IT
 1902  001302  011664                T40AD:  LT40
 1903  001304  011706                T40IAD: LT40IT
 1904  001306  012012                T41AD:  LT41
 1905  001310  012026                T41IAD: LT41IT
 1906  001312  012260                T42AD:  LT42
 1907  001314  012260                        LT42
 1908  001316  012372                T43AD:  LT43
 1909  001320  012372                        LT43
 1910  001322  012454                T44AD:  LT44
 1911  001324  012454                        LT44
 1912  001326  012562                T45AD:  LT45
 1913  001330  012562                        LT45
 1914  001332  012644                T46AD:  LT46
 1915  001334  012644                        LT46
 1916  001336  012752                T47AD:  LT47
 1917  001340  012752                        LT47
 1918  001342  013040                T50AD:  LT50
 1919  001344  013040                        LT50
 1920  001346  013146                T51AD:  LT51
 1921  001350  013146                        LT51
 1922  001352  013230                T52AD:  LT52
 1923  001354  013230                        LT52
 1924  001356  013342                T53AD:  LT53
 1925  001360  013342                        LT53
 1926  001362  013470                T54AD:  LT54
 1927  001364  013470                        LT54
 1928  001366  013540                T55AD:  LT55
 1929  001370  013540                        LT55
 1930  001372  013610                T56AD:  LT56
 1931  001374  013610                        LT56
 1932  001376  013666                T57AD:  LT57
 1933  001400  013716                T57IAD: LT57IT
 1934  001402  014224                T60AD:  LT60
 1935  001404  014244                T60IAD: LT60IT
 1936  001406  014452                T61AD:  LT61
 1937  001410  014500                T61IAD: LT61IT
 1938  001412  014730                T62AD:  LT62
 1939  001414  014756                T62IAD: LT62IT
 1940  001416  015202                T63AD:  LT63
 1941  001420  015230                T63IAD: LT63IT
 1942  001422  015450                T64AD:  LT64
 1943  001424  015464                T64IAD: LT64IT
 1944  001426  000000                TADX:   0
```

```
                                        .EVEN
                                        ;PROGRAM START AND HOUSEKEEPING**********

001430  012777  000340  177132  START:  MOV     #340,@PSW       ;SET PRIORITY
001436  012706  000500                  MOV     #500,SP         ;SET STACK POINTER

                                ;       ********************************************************************
                                ;               DIAGNOSTIC SETUP FOR EXECUTION
                                ;               UNDER ACT11.
                                ;       ********************************************************************

001442  004767  024202                  JSR     PC,CKMODE               ;CHECK FOR MODE OF OPERATION
001446  005767  177144                  TST     AUTOM                   ;IS IT AUTOMATIC MODE
001452  001001                          BNE     1$                      ;BRANCH - IF YES
001454  000412                          BR      SUSWR                   ;CHECK SWR IN DUMPM
001456  032737  020000  000052  1$:     BIT     #20000,@#52             ;SET UP FOR MANUAL INTERVENTION
001464  001406                          BEQ     SUSWR                   ;BRANCH - IF NO
001466  012704  025776                  MOV     #MSGC,R4                ;GET MESSAGE
001472  004767  023024                  JSR     PC,TTOUT                ;TYPE MESSAGE
001476  000167  024240                  JMP     ABORT                   ;AND ABORT THE PROGRAM

                                ;       ********************************************************************

001502  013746  000006          SUSWR:  MOV     @#6,-(SP)               ;SAVE VECTORS
001506  013746  000004                  MOV     @#4,-(SP)
001512  012737  001532  000004          MOV     #1$,@#4                 ;SET UP FOR TIMEOUT
001520  022777  177777  177044          CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
001526  001402                          BEQ     2$
001530  000404                          BR      3$
001532  022626                  1$:     CMP     (SP)+,(SP)+             ;ADJUST STACK
001534  012767  000176  177030  2$:     MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
001542  012637  000004          3$:     MOV     (SP)+,@#4               ;RESTORE VECTORS
001546  012637  000006                  MOV     (SP)+,@#6
001552  022767  000176  177012          CMP     #SWREG,SWR              ;IS SWREG SELECTED
001560  001002                          BNE     4$
001562  004767  023404                  JSR     PC,CNTLU                ;CHECK FOR CONTROL G

001566                          4$:
                                ;       ********************************************************************
                                ;               IF IN ACT11 MODE INHIBIT TYPING PROGRAM
                                ;               IDENTIFICATION AND MANUAL INTERVENTION

001566  005767  177026                  TST     ACT11M                  ;AUTOMATIC MODE?
001572  001142                          BNE     TSCD                    ;BRANCH - IF YES

                                ;       ********************************************************************

001574  005700                          TST     R0
001576  001136                          BNE     ST2
001600  005067  177220                  CLR     SKAT            ;CLEAR SKIP ADDRESS TEST FLAG
001604  012704  026112                  MOV     #MSG1,R4
001610  004767  022706                  JSR     PC,TTOUT        ;PRINT TITLE
001614  012704  027714                  MOV     #MSG44,R4
001620  004767  022676                  JSR     PC,TTOUT        ;REQUEST REGISTER ADDRESS
001624  016703  176764                  MOV     REGS,R3
001630  004767  023030                  JSR     PC,OCTP         ;PRINT CURRENT ADDRESS
```

```
 2002  001634  012705  000614                MOV     #REGS,R5        ;SET ADDRESS SAVE LOC
 2003  001640  012701  000006                MOV     #6,R1           ;SET SIZE OF RESPONSE
 2004  001644  012702  176400                MOV     #176400,R2      ;SET UPPER LIMIT
 2005  001650  012703  172300                MOV     #172300,R3      ;SET LOWER LIMIT
 2006  001654  004767  022404                JSR     PC,TTR          ;GO GET RESPONSE
 2007  001660  012704  027736                MOV     #MSG45,R4
 2008  001664  004767  022632                JSR     PC,TTOUT        ;REQUEST VECTOR
 2009  001670  016703  176716                MOV     VECT,R3
 2010  001674  004767  022764                JSR     PC,OCTP         ;PRINT CURRENT VECTOR
 2011  001700  012705  000612                MOV     #VECT,R5        ;SET ADDRESS SAVE LOC
 2012  001704  012701  000003                MOV     #3,R1           ;SET SIZE OF RESPONSE
 2013  001710  012702  000224                MOV     #224,R2         ;SET UPPER LIMIT
 2014  001714  012703  000150                MOV     #150,R3         ;SET LOWER LIMIT
 2015  001720  004767  022340                JSR     PC,TTR          ;GO GET RESPONSE
 2016  001724  016700  176662                MOV     VECT,R0         ;GET VECTOR
 2017  001730  012720  024246                MOV     #MTINT,(R0)+    ;LOAD INTERRUPT ADDRESS IN VECTOR
 2018  001734  012710  000340                MOV     #340,(R0)       ;LOAD PRIORITY
 2019  001740  016700  176650                MOV     REGS,R0         ;GET START OF REGS
 2020  001744  012701  000016                MOV     #16,R1          ;SET NUMBER OF REGS
 2021  001750  012702  000510                MOV     #C1,R2          ;GET START OF TABLE
 2022  001754  010022              ST0:      MOV     R0,(R2)+        ;BUILD TABLE
 2023  001756  062700  000002                ADD     #2,R0           ;BUMP ADDRESS
 2024  001762  005301                        DEC     R1              ;SEE IF DONE
 2025  001764  001373                        BNE     ST0             ;IF NOT: BR
 2026  001766  012702  000624                MOV     #T0B,R2
 2027  001772  012700  000077                MOV     #77,R0
 2028  001776  005022              ST1:      CLR     (R2)+           ;CLEAR FLAGS + COUNTERS
 2029  002000  005300                        DEC     R0
 2030  002002  001375                        BNE     ST1
 2031  002004  012704  030164                MOV     #MSG52,R4
 2032  002010  004767  022506                JSR     PC,TTOUT        ;PRINT NRZ ONLY REQUEST
 2033  002014  012705  000672                MOV     #NRZOF,R5
 2034  002020  012701  000001                MOV     #1,R1           ;SET SIZE OF ENTRY
 2035  002024  012702  000001                MOV     #1,R2           ;SET UPPER LIMIT
 2036  002030  012703  000000                MOV     #0,R3           ;SET LOWER LIMIT
 2037  002034  004767  022224                JSR     PC,TTR          ;GO GET RESPONSE
 2038  002040  012704  030273                MOV     #MSG56,R4
 2039  002044  004767  022452                JSR     PC,TTOUT        ;REQUEST STATIC ONLY
 2040  002050  012705  001022                MOV     #STATC,R5       ;SET ADDRESS OF STATIC FLAG
 2041  002054  012701  000001                MOV     #1,R1           ;SET SIZE OF RESPONSE
 2042  002060  012702  000001                MOV     #1,R2           ;SET UPPER LIMIT
 2043  002064  012703  000000                MOV     #0,R3           ;SET LOWER LIMIT
 2044  002070  004767  022170                JSR     PC,TTR          ;GET RESPONSE
 2045  002074  005067  176726    ST2:        CLR     PCNTR           ;CLEAR PASS COUNTER
```

```
                                        ;TEST SCHEDULAR**********
                                
002100  005067  176704          TSCD:   CLR     WPGFL           ;CLEAR WRAP PATRN FLAG
002104  052777  000100  176462          BIS     #100,@TKS       ;SET KEYBOARD IE BIT
002112  005067  176632                  CLR     STFLG           ;CLEAR SINGLE TEST FLAG
                                
                                ;       ********************************************************************************
                                
002116  005067  176710                  CLR     RH17F           ;SET RH11 INDICATOR
002122  013746  000004                  MOV     @#4,-(SP)       ;SAVE ERROR TRAP AND VECTORS
002126  013746  000006                  MOV     @#6,-(SP)       ;SAVE PRIORITY
002132  012737  002156  000004          MOV     #1$,@#4         ;SET TIME OUT
002140  005037  000006                  CLR     @#6             ;SET LOW PRIORITY
002144  005777  176374                  TST     @BAE            ;REFERENCE BAE REGISTER
002150  012767  000001  176654          MOV     #1,RH17F        ;SET RH70 INDICATOR
002156  012637  000006          1$:     MOV     (SP)+,@#6       ;RESTORE ERROR TYPE
002162  012637  000004                  MOV     (SP)+,@#4
                                
                                ;       ********************************************************************************
                                
002166  017700  176400                  MOV     @SWR,R0
002172  042700  177700                  BIC     #177700,R0
002176  005700                          TST     R0
002200  001151                          BNE     STSCD           ;GO SELECT SINGLE TEST
                                
                                ;       ********************************************************************************
                                
002202  005767  176410                  TST     AUTOM           ;AUTOMATIC MODE?
002206  001473                          BEQ     TSCDA           ;BRANCH - IF NOT
002210                                  $CHNMODE                ;MACRO FOR CHAINMODE
 (1)    002210  012767  177777  176416          MOV     #-1,DRVN                ;INITIALIZE DRIVE #
 (1)    002216  012767  177777  176450  NXTDRV: MOV     #-1,SLVN                ;INITIALIZE SLAVE #
 (1)    002224  012777  000040  176266  1$:     MOV     #40,@CS                 ;INIT CONTROLLER
 (1)    002232  005267  176376                  INC     DRVN                    ;STEP DRIVE #
 (1)    002236  022767  000010  176370          CMP     #10,DRVN                ;ALL DRIVES TESTED?
 (1)    002244  001562                          BEQ     TEND0                   ;BRANCH - IF YES
 (1)    002246  016777  176362  176244          MOV     DRVN,@CS                ;LOAD DRIVE #
 (1)    002254  005777  176230                  TST     @C1                     ;ACCESS DRIVE
 (1)    002260  032777  010000  176232          BIT     #10000,@CS              ;NON-EXISTANT DRIVE
 (1)    002266  001356                          BNE     1$                      ;BRANCH - IF YES (NED=1)
 (1)    002270  005267  176400          NXTSLV: INC     SLVN                    ;STEP SLAVE #
 (1)    002274  001010                          BNE     1$                      ;BRANCH IF NOT SLAVE 0
 (1)    002276  005767  176332                  TST     DRVN                    ;DRIVE 0?
 (1)    002302  001005                          BNE     1$                      ;BRANCH - IF NO
 (1)    002304  105767  176311                  TSTB    XXDPM                   ;XXDP?
 (1)    002310  001402                          BEQ     1$                      ;BRANCH - IF NO
 (1)    002312  005267  176356                  INC     SLVN                    ;STEP TO SLAVE #1
 (1)    002316  022767  000010  176350  1$:     CMP     #10,SLVN                ;ALL SLAVES TESTED?
 (1)    002324  001734                          BEQ     NXTDRV                  ;BRANCH - IF YES
 (1)    002326  016777  176342  176206          MOV     SLVN,@TC                ;LOAD SLAVE UNIT #
 (1)    002334  032777  002000  176174          BIT     #2000,@DT               ;SLAVE PRESENT?
 (1)    002342  001752                          BEQ     NXTSLV                  ;BRANCH - IF NO (SPR=0)
 (1)    002344  122777  000002  176164          CMPB    #2,@DT                  ;IS DRIVE A TE16 OR TU16?
 (1)    002352  001404                          BEQ     2$                      ;BRANCH IF NO
 (1)    002354  032777  140000  176154          BIT     #140000,@DT             ;IS DRIVE A TAPE UNIT?
```

```
(1)  002362  001742                        BEQ     NXTSLV                  ;BRANCH IF NO
(1)  002364  012704  025776          2$:    MOV     #MSGC,R4                ;GET MESSAGE
(1)  002370  004767  022126                 JSR     PC,TTOUT                ;TYPE MESSAGE
(1)  002374  000000                        HALT
2078
2079                                 ;      ********************************************************************************
2080
2081  002376  012767  001102  176346 TSCDA:  MOV     #TSTTBL,LTADD
2082  002404  062767  000004  176340 TSCD0:  ADD     #4,LTADD
2083  002412  016767  176334  176304        MOV     LTADD,ITRLP
2084  002420  062767  000002  176276        ADD     #2,ITRLP        ;SET ITERATION ADDRESS
2085  002426  005777  176320               TST     @LTADD
2086  002432  001002                       BNE     TSCD1
2087  002434  000167  000136               JMP     TEND            ;GO TO END ROUTINE
2088  002440  005067  176164        TSCD1: CLR     HDRFL           ;CLEAR PRINT HEADER FLAG
2089  002444  017700  176302               MOV     @LTADD,R0       ;SET POINTER TO TEST
2090  002450  000110                       JMP     (R0)            ;GO TO TEST
2091  002452  004767  022442        TSCD2: JSR     PC,CKSWR        ;CHECK FOR CNTL G
2092  002456  032777  002000  176106       BIT     #2000,@SWR      ;SEE IF HALT ON TEST
2093  002464  001404                       BEQ     TSCD3           ;IF NOT: BR
2094  002466  004767  023146               JSR     PC,STOP
2095  002472  005067  176312               CLR     WPGFL           ;CLEAR WRAP DATA GENERATOR FLAG
2096  002476  005767  176246        TSCD3: TST     STFLG           ;SE IF SINGLE TEST
2097  002502  001740                       BEQ     TSCD0           ;IF NOT: BR
2098  002504  017700  176062               MOV     @SWR,R0
2099  002510  042700  177700               BIC     #177700,R0      ;MASK TEST NUMBER
2100  002514  005700                       TST     R0              ;SEE IF RETURN TO ALL
2101  002516  001002                       BNE     STSCD           ;BRANCH - IF NOT
2102  002520  000167  177354               JMP     TSCD            ;JUMP - IF YES
2103  002524  012767  000001  176216 STSCD: MOV     #1,STFLG        ;SET SINGLE TEST FLAG
2104  002532  022700  000065               CMP     #65,R0          ;SEE IF EXCEEDED TESTS
2105  002536  003417                       BLE     TEND            ;IF SO: BR
2106  002540  000241                       CLC
2107  002542  006100                       ROL     R0
2108  002544  006100                       ROL     R0              ;SET TABLE MODIFIER
2109  002546  012767  001102  176176       MOV     #TSTTBL,LTADD
2110  002554  060067  176172               ADD     R0,LTADD        ;SET TEST POINTER
2111  002560  016767  176166  176136       MOV     LTADD,ITRLP
2112  002566  062767  000002  176130       ADD     #2,ITRLP        ;SET ITERATION POINTER
2113  002574  000721                       BR      TSCD1
2114
2115                                 ;      ********************************************************************************
2116
2117  002576  000240                TEND:  NOP
2118  002600  005767  176012               TST     AUTOM           ;AUTOMATIC MODE?
2119  002604  001402                       BEQ     TEND0           ;BRANCH - IF NO
2120  002606  000167  177456               JMP     NXTSLV          ;GET ANOTHER SLAVE DEVICE
2121
2122
2123  002612                        TEND0:
2124
2125                                 ;      ********************************************************************************
2126
2127  002612  012704  027554               MOV     #MSG41,R4
2128  002616  004767  021700               JSR     PC,TTOUT        ;PRINT END OF PASS
2129  002622  016703  176200               MOV     PCNTR,R3
```

```
                        JSR     PC,OCTP         ;PRINT PASS NUMBER

                ;       ********************************************************************************
                ;               AUTOMATIC MODE END OF PASS
                ;       ********************************************************************************

                        TST     PAFLG           ;PASS INDICATOR SET?
                        BNE     3$              ;BRANCH - IF YES
                        INC     PAFLG           ;SET PASS INDICATOR
                3$:     MOV     @#42,R4         ;CONTENTS OF 42 TO R4
                        BEQ     HERE            ;BRANCH - IF NOT AUTO MODE
                        RESET                   ;CLEAR THE WORLD
                $ENDAD: JSR     PC,(R4)         ;RETURN TO MONITOR
                        NOP
                        NOP
                        NOP
                HERE:
                        TST     AUTOM           ;CHECK FOR AUTOM MODE
                        BNE     TENDX           ;BRANCH - IF YES
                        BIT     #4000,@SWR      ;SEE IF HALT ON PASS
                        BNE     TENDX           ;IF NOT: BR
                        JSR     PC,STOP
                TENDX:  MOV     #1,SKAT         ;SET SKIP ADDRESS TEST FLAG
                        INC     PCNTR           ;BUMP PASS COUNTER
                        JMP     TSCD            ;RESTART
```

```
2156                                        ;LOGIC TEST 1: DRIVE ADDRESSING**********
2157
2158  002724  005767  176074        LT1:    TST     SKAT            ;SEE IF SKIP ADDRESS TESTS
2159  002730  001403                        BEQ     LT1G0           ;IF NOT: BR
2160  002732  005767  176012                TST     STFLG           ;SEE IF SINGLE TEST
2161  002736  001504                        BEQ     LT1X            ;IF NOT: BR
2162  002740  012704  026225        LT1G0:  MOV     #MSG2A,R4
2163  002744  004767  021552                JSR     PC,TTOUT        ;PRINT TEST INSTRUCTIONS
2164  002750  012767  030320  175554 LT1G:  MOV     #MSLT1,EMADDR   ;SET HEADER ADDRESS
2165  002756  012704  026206                MOV     #MSG2,R4
2166  002762  004767  021534                JSR     PC,TTOUT        ;REQUEST DRIVE NUMBER
2167  002766  012705  000634                MOV     #DRVN,R5
2168  002772  012701  000001                MOV     #1,R1
2169  002776  012702  000007                MOV     #7,R2
2170  003002  012703  000000                MOV     #0,R3
2171  003006  004767  021252                JSR     PC,TTR          ;GET DRIVE NUMBER
2172  003012  005767  175666                TST     TEMP1           ;SEE IF ANOTHER DRIVE
2173  003016  001454                        BEQ     LT1X            ;IF NOT: BR
2174  003020  005001                        CLR     R1              ;SELECT DRIVE 0
2175  003022  012700  000010                MOV     #10,R0          ;SET NUMBER OF DRIVES
2176  003026  012777  000040  175464 LT1A:  MOV     #40,@CS         ;INIT
2177  003034  010177  175460                MOV     R1,@CS          ;SELECT DRIVE
2178  003040  005777  175444                TST     @C1             ;ACCESS DRIVE
2179  003044  032777  010000  175446        BIT     #10000,@CS      ;SEE IF NED
2180  003052  001005                        BNE     LT1B            ;IF SO: BR
2181  003054  026701  175554                CMP     DRVN,R1         ;SEE IF SHOULD BE NED
2182  003060  001407                        BEQ     LT1C            ;IF NOT: BR
2183  003062  000167  000022                JMP     LT1ER           ;ELSE GO TO ERROR
2184  003066  026701  175542        LT1B:   CMP     DRVN,R1         ;SEE IF SHOULD BE NED
2185  003072  001002                        BNE     LT1C            ;IF SO: BR
2186  003074  000167  000020                JMP     LT1ER1          ;ELSE GO TO ERROR
2187  003100  005300                LT1C:   DEC     R0
2188  003102  001722                        BEQ     LT1G            ;IF DONE ALL: BR
2189  003104  005201                        INC     R1              ;SELECT NEXT DRIVE
2190  003106  000747                        BR      LT1A            ;CONTINUE
2191  003110  012767  000001  175610 LT1ER:  MOV     #1,EXFL         ;FLAG EXPT
2192  003116  000403                        BR      LT1ER2
2193  003120  012767  000002  175600 LT1ER1: MOV     #2,EXFL         ;FLAG NOT EXPT
2194  003126  012767  026354  175546 LT1ER2: MOV     #MSG3,ERADD     ;FLAG CONDITION
2195  003134  012767  003026  175560        MOV     #LT1A,SCOLP     ;SET SCOPE ADDRESS
2196  003142  004767  017316                JSR     PC,LTGER        ;GO PRINT LOGIC TEST ERROR
2197  003146  000754                        BR      LT1C            ;CONTINUE TEST
2198  003150  000167  177276        LT1X:   JMP     TSCD2           ;RETURN TO SCHED
2199
```

```
2201                                                ;LOGIC TEST 2: REGISTER ADDRESSING**********
2202
2203  003154  000240                        LT2:    NOP
2204  003156  012777  000040  175334        LT2IT:  MOV     #40,@CS         ;INIT
2205  003164  016777  175444  175326                MOV     DRVN,@CS        ;SELECT DRIVE
2206  003172  012767  030374  175432                MOV     #MSLT2,EMADDR   ;SAVE LT2 HEADER ADDRESS
2207  003200  012705  000510                       MOV     #C1,R5          ;SET ADDRESS OF FIRST REGISTER
2208  003204  012700  000016                       MOV     #16,R0          ;SET NUMBER OF REGISTERS
2209  003210  012702  000636                       MOV     #TR00,R2        ;SET START OF REGISTER BUFFER
2210  003214  011501                    LT2A:   MOV     (R5),R1
2211  003216  011112                            MOV     (R1),(R2)       ;READ REGISTER
2212  003220  032777  020000  175262             BIT     #20000,@C1      ;SEE IF ERROR
2213  003226  001402                             BEQ     LT2B            ;IF NOT: BR
2214  003230  004767  000024                     JSR     PC,LT2ER1       ;ELSE GO TO ERROR 1
2215  003234  032777  000002  175262  LT2B:     BIT     #2,@ER          ;SEE IF ILR
2216  003242  001402                             BEQ     LT2C            ;IF NOT: BR
2217  003244  004767  000026                     JSR     PC,LT2ER2       ;ELSE GO TO ERROR 2
2218  003250  022225                    LT2C:   CMP     (R2)+,(R5)+     ;BUMP ADDRESS
2219  003252  005300                            DEC     R0
2220  003254  001357                            BNE     LT2A            ;CONTINUE FOR ALL REGISTERS
2221  003256  000435                            BR      LT2X
2222  003260  012767  000002  175440  LT2ER1:  MOV     #2,EXFL         ;FLAG NOT EXPECTED
2223  003266  012767  026376  175406                MOV     #MSG4,ERADD     ;POINT TO CONTROLLER ERROR
2224  003274  000415                             BR      LT2ERG          ;GO TO ERROR
2225  003276  012767  000002  175422  LT2ER2:  MOV     #2,EXFL         ;FLAG NOT EXPECTED
2226  003304  012767  026414  175370                MOV     #MSG5,ERADD     ;POINT TO DRIVE ERROR
2227  003312  000406                             BR      LT2ERG          ;GO TO ERROR
2228  003314  012767  000001  175404  LT2ER3:  MOV     #1,EXFL         ;FLAG EXPECTED
2229  003322  012767  026376  175352                MOV     #MSG4,ERADD     ;POINT TO DRIVE
2230  003330  012767  003344  175364  LT2ERG:  MOV     #LT2LP,SCOLP    ;SET SCOPE ADDRESS
2231  003336  004767  017122                       JSR     PC,LTGER        ;GO PRINT
2232  003342  000207                             RTS     PC              ;ELSE CONTINUE
2233  003344  005726                    LT2LP:  TST     (SP)+           ;RESET STACK
2234  003346  000167  177642                     JMP     LT2A            ;LOOP
2235  003352  004767  020520            LT2X:   JSR     PC,ITER         ;GO SEE IF ITERATIONS
2236  003356  000167  177070                     JMP     TSCD2           ;RETURN TO SCHED
```

```
                                                ;LOGIC TEST 3: CONTROL BUS**********

003362  000240                          LT3:    NOP
003364  012767  030453  175240        LT3IT:  MOV     #MSLT3,EMADDR   ;SET TEST HEADER
003372  012701  000001                          MOV     #1,R1           ;PRESET PATTERN 1
003376  012700  000020                          MOV     #20,R0          ;SET PATTERN CHANGE NUMBER
003402  004767  020552                LT3A:   JSR     PC,INIT1        ;GO INIT
003406  010177  175104                          MOV     R1,@FC          ;WRITE TO FC
003412  032777  000010  175104                  BIT     #10,@ER         ;SEE IF CPAR (TM02)
003420  001013                                  BNE     LT3ER1          ;IF SO: BR
003422  017702  175070                LT3B:   MOV     @FC,R2          ;READ FC
003426  032777  020000  175054                  BIT     #20000,@C1      ;SEE IF MCPE (RH)
003434  001020                                  BNE     LT3ER2          ;IF SO: BR
003436  005300                        LT3C:   DEC     R0              ;SEE IF DONE PATTERN CHANGES
003440  001427                                  BEQ     LT3X            ;IF SO: BR
003442  000241                                  CLC
003444  006101                                  ROL     R1              ;CHANGE PATTERN
003446  000755                                  BR      LT3A            ;CONTINUE
003450  012767  026705  175224  LT3ER1: MOV     #MSG11,ERADD    ;SET ERROR CODE
003456  012767  003402  175236                  MOV     #LT3A,SCOLP     ;SET SCOPE ADDRESS
003464  017702  175026                          MOV     @FC,R2          ;GET DATA
003470  004767  020130                          JSR     PC,LTGER1       ;GO DO ERROR
003474  000752                                  BR      LT3B
003476  012767  026661  175176  LT3ER2: MOV     #MSG10,ERADD    ;SET ERROR CODE
003504  012767  003422  175210                  MOV     #LT3B,SCOLP     ;SET SCOPE ADDRESS
003512  004767  020106                          JSR     PC,LTGER1       ;GO DO ERROR
003516  000747                                  BR      LT3C
003520  105701                        LT3X:   TSTB    R1              ;SEE IF DONE PATTERN 2
003522  100405                                  BMI     LT3XX           ;IF SO: BR
003524  012701  000401                          MOV     #401,R1         ;SET PATTERN 2
003530  012700  000010                          MOV     #10,R0          ;SET PATTERN CHANGE NUMBER
003534  000722                                  BR      LT3A            ;DO PATTERN 2
003536  004767  020334                LT3XX:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
003542  000167  176704                          JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
2273
2274                                        ;LOGIC TEST 4: SLAVE ADDRESSING**********
2275
2276  003546  005767  175252        LT4:    TST     SKAT            ;SEE IF SKIP ADDRESS TESTS
2277  003552  001403                        BEQ     LT4G0           ;IF NOT: BR
2278  003554  005767  175170                TST     STFLG           ;SEE IF SINGLE TEST
2279  003560  001517                        BEQ     LT4X            ;IF NOT: BR
2280  003562  012704  026510        LT4G0:  MOV     #MSG8A,R4
2281  003566  004767  020730                JSR     PC,TTOUT        ;PRINT TEST INSTRUCTIONS
2282  003572  012704  026471        LT4G:   MOV     #MSG8,R4
2283  003576  004767  020720                JSR     PC,TTOUT        ;REQUEST SLAVE
2284  003602  012705  000674                MOV     #SLVN,R5
2285  003606  012701  000001                MOV     #1,R1
2286  003612  012702  000007                MOV     #7,R2
2287  003616  012703  000000                MOV     #0,R3
2288  003622  004767  020436                JSR     PC,TTR          ;GET SLAVE NUMBER
2289  003626  005767  175052                TST     TEMP1           ;SEE IF SLAVE
2290  003632  001472                        BEQ     LT4X            ;IF NOT: BR
2291  003634  005001                        CLR     R1              ;SELECT SLAVE 0
2292  003636  012700  000010                MOV     #10,R0          ;SET NUMBER OF SLAVES
2293  003642  012777  000040  174650 LT4A:  MOV     #40,@CS         ;INIT
2294  003650  016777  174760  174642        MOV     DRVN,@CS        ;SELECT DRIVE
2295  003656  010177  174660                MOV     R1,@TC          ;SELECT SLAVE
2296  003662  017703  174650                MOV     @DT,R3          ;GET DT
2297  003666  020167  175002                CMP     R1,SLVN         ;SEE IF SHOULD HAVE SPR
2298  003672  001405                        BEQ     LT4B            ;IF SO: BR
2299  003674  032703  002000                BIT     #2000,R3        ;SEE IF SPR
2300  003700  001417                        BEQ     LT4D            ;IF NOT: BR
2301  003702  000167  000044                JMP     LT4ER1          ;GO TO ERROR 1
2302  003706  032703  002000        LT4B:   BIT     #2000,R3        ;SEE IF SPR
2303  003712  001002                        BNE     LT4C            ;IF SO: BR
2304  003714  000167  000042                JMP     LT4ER2          ;ELSE GO TO ERROR
2305  003720  012704  027376        LT4C:   MOV     #MSG30,R4
2306  003724  004767  020572                JSR     PC,TTOUT        ;PRINT SERIAL NUMBER TAG
2307  003730  017703  174604                MOV     @SN,R3
2308  003734  004767  021576                JSR     PC,SNPT         ;PRINT SERIAL NUMBER
2309  003740  005300        LT4D:   DEC     R0
2310  003742  001713                        BEQ     LT4G            ;IF DONE ALL: BR
2311  003744  005201                        INC     R1              ;BUMP SLAVE
2312  003746  000167  177670                JMP     LT4A            ;CONTINUE
2313  003752  012767  000001  174746 LT4ER1: MOV     #1,EXFL         ;FLAG EXPT: NOT RECEIVED
2314  003760  000403                        BR      LT4ERG
2315  003762  012767  000002  174736 LT4ER2: MOV     #2,EXFL         ;FLAG RECVD: NOT EXPT
2316  003770  012767  030535  174634 LT4ERG: MOV     #MSLT4,EMADDR   ;SET  LT4 HEADER
2317  003776  012767  026637  174676        MOV     #MSG9,ERADD     ;SET ERROR CONDITION
2318  004004  012767  003642  174710        MOV     #LT4A,SCOLP     ;SET SCOPE ADDRESS
2319  004012  004767  016446                JSR     PC,LTGER        ;GO TO ERROR
2320  004016  000750                        BR      LT4D            ;IF NO SCOPE: BR
2321  004020  000167  176426        LT4X:   JMP     TSCD2           ;RETURN TO SCHED
2322
```

```
2324                                        ;LOGIC TEST 5: MAINTENANCE REGISTER BIT TEST**********
2325
2326  004024  012767  030614  174600  LT5:    MOV     #MSLT5,EMADDR   ;SET TEST HEADER
2327  004032  004767  020122          LT5IT:  JSR     PC,INIT1        ;GO INIT
2328  004036  012700  000032                  MOV     #32,R0          ;SET LOOP FOR BITS 4-0
2329  004042  005001                          CLR     R1              ;SET TEST WORD
2330  004044  010177  174464          LT5A:   MOV     R1,@MR          ;SEND TEST WORD TO MR
2331  004050  017702  174460                  MOV     @MR,R2          ;READ MR
2332  004054  042702  177740                  BIC     #177740,R2      ;MASK BITS 4-0
2333  004060  020102                          CMP     R1,R2           ;SEE IF EXPT = RECVD
2334  004062  001402                          BEQ     LT5B            ;IF SO: BR
2335  004064  000167  000056                  JMP     LT5ER1          ;ELSE GO TO ERROR 1
2336  004070  005300          LT5B:   DEC     R0
2337  004072  001402                          BEQ     LT5C            ;IF DONE LOOP: BR
2338  004074  005201                          INC     R1              ;BUMP TEST WORD
2339  004076  000762                          BR      LT5A            ;CONTINUE LOOP
2340  004100  012701  000015          LT5C:   MOV     #15,R1          ;SET TEST WORD + WAM 3
2341  004104  012700  001000                  MOV     #1000,R0        ;SET LOOP FOR BITS 15-7
2342  004110  010177  174420          LT5D:   MOV     R1,@MR          ;LOAD MR
2343  004114  017702  174414                  MOV     @MR,R2          ;READ MR
2344  004120  042702  000140                  BIC     #140,R2         ;MASK OUT BITS 5,6
2345  004124  020102                          CMP     R1,R2           ;SEE IF EXPT = RECVD
2346  004126  001402                          BEQ     LT5E            ;IF SO: BR
2347  004130  000167  000036                  JMP     LT5ER2          ;ELSE GO TO ERR 2
2348  004134  005300          LT5E:   DEC     R0
2349  004136  001427                          BEQ     LT5X            ;IF DONE LOOP: BR
2350  004140  062701  000200                  ADD     #200,R1         ;BUMP TEST WORD
2351  004144  000761                          BR      LT5D            ;CONTINUE LOOP
2352  004146  012767  026750  174526  LT5ER1: MOV     #MSG14,ERADD    ;SET ERROR CODE
2353  004154  012767  004044  174540          MOV     #LT5A,SCOLP     ;SET SCOPE ADDRESS
2354  004162  004767  017436                  JSR     PC,LTGER1       ;GO TO ERROR
2355  004166  000167  177676                  JMP     LT5B            ;CONTINUE
2356  004172  012767  026765  174502  LT5ER2: MOV     #MSG15,ERADD    ;SET ERROR CODE
2357  004200  012767  004110  174514          MOV     #LT5D,SCOLP     ;SET SCOPE ADDRESS
2358  004206  004767  017412                  JSR     PC,LTGER1       ;GO TO ERROR
2359  004212  000167  177716                  JMP     LT5E            ;CONTINUE
2360  004216  004767  017654          LT5X:   JSR     PC,ITER         ;GO SEE IF ITERATIONS
2361  004222  000167  176224                  JMP     TSCD2           ;RETURN TO SCHED
2362
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2364                                        ;LOGIC TEST 6: TC REGISTER BIT TEST**********
2365
2366  004226  000240                LT6:    NOP
2367  004230  012767  030660  174374 LT6IT:  MOV     #MSLT6,EMADDR    ;POINT TO LT6 HEADER
2368  004236  012700  000003                MOV     #3,R0            ;SET NUMBER OF TESTS
2369  004242  005001                LT6A1:  CLR     R1
2370  004244  004767  017710        LT6A:   JSR     PC,INIT1         ;GO INIT
2371  004250  010177  174266        LT6B:   MOV     R1,@TC           ;WRITE TC
2372  004254  017702  174262                MOV     @TC,R2           ;READ TC
2373  004260  042702  160000                BIC     #160000,R2       ;MASK OUT TCW
2374  004264  020102                        CMP     R1,R2            ;SEE IF EXPT = RECVD
2375  004266  001402                        BEQ     LT6C             ;IF SO: BR
2376  004270  000167  000036                JMP     LT6ER1           ;ELSE GO TO ERROR
2377  004274  032777  020000  174240 LT6C:   BIT     #20000,@TC       ;SEE IF TCW SET
2378  004302  001002                        BNE     LT6D             ;IF SO: BR
2379  004304  000167  000046                JMP     LT6ER2           ;ELSE GO TO ERROR
2380  004310  005300                LT6D:   DEC     R0
2381  004312  001446                        BEQ     LT6X             ;IF DONE ALL: BR
2382  004314  022700  000001                CMP     #1,R0            ;SEE IF RESET TEST
2383  004320  001750                        BEQ     LT6A1            ;IF SO: BR
2384  004322  012701  017777                MOV     #17777,R1        ;SET TEST WORD
2385  004326  000167  177712                JMP     LT6A             ;DO SET TEST
2386  004332  012767  027027  174342 LT6ER1: MOV     #MSG18,ERADD     ;SET ERROR CODE
2387  004340  012767  004250  174354        MOV     #LT6B,SCOLP      ;SET SCOPE ADDRES
2388  004346  004767  017252                JSR     PC,LTGER1        ;GO TO ERROR
2389  004352  000167  177716                JMP     LT6C             ;CONTINUE
2390  004356  012767  027013  174316 LT6ER2: MOV     #MSG17,ERADD     ;SET ERROR CODE
2391  004364  010167  174324                MOV     R1,SAV1          ;SAVE R1
2392  004370  012701  000001                MOV     #1,R1            ;SET EXPT
2393  004374  005002                        CLR     R2               ;SET RECVD   0
2394  004376  012767  004420  174316        MOV     #LT6ER4,SCOLP    ;SET SCOPE ADDRESS
2395  004404  004767  017214                JSR     PC,LTGER1        ;GO TO ERROR
2396  004410  016701  174300                MOV     SAV1,R1
2397  004414  000167  177670                JMP     LT6D             ;ELSE CONTINUE
2398  004420  005077  174116        LT6ER4: CLR     @TC              ;WRITE TO TC
2399  004424  000167  177644                JMP     LT6C             ;LOOP ON ERROR
2400  004430  004767  017442        LT6X:   JSR     PC,ITER          ;GO SEE IF ITERATIONS
2401  004434  000167  176012                JMP     TSCD2            ;RETURN TO SCHED
2402
```

```
2404                                        ;LOGIC TEST 7: FRAME COUNT BIT TEST**********
2405
2406  004440  000240                LT7:    NOP
2407  004442  012700  000003        LT7IT:  MOV     #3,R0           ;SET TEST NUMBER
2408  004446  012767  030724  174156 LT7C:  MOV     #MSLT7,EMADDR   ;SET TEST HEADER
2409  004454  005001                        CLR     R1              ;SET TEST WORD
2410  004456  004767  017476        LT7A:   JSR     PC,INIT1        ;GO INIT
2411  004462  010177  174030                MOV     R1,@FC          ;CLEAR FRAME COUNT
2412  004466  017702  174024                MOV     @FC,R2          ;READ FC
2413  004472  020102                        CMP     R1,R2           ;SEE IF EXPT = RECVD
2414  004474  001402                        BEQ     LT7B            ;IF SO: BR
2415  004476  000167  000022                JMP     LT7ER1          ;ELSE GO TO ERROR
2416  004502  005300                LT7B:   DEC     R0              ;SEE IF DONE ALL
2417  004504  001421                        BEQ     LT7X            ;IF SO: BR
2418  004506  022700  000001                CMP     #1,R0           ;SEE IF RESET TEST
2419  004512  001755                        BEQ     LT7C            ;IF SO: BR
2420  004514  012701  177777                MOV     #-1,R1          ;SET TEST WORD TO -1
2421  004520  000167  177732                JMP     LT7A            ;CONTINUE
2422  004524  012767  027046  174150 LT7ER1: MOV     #MSG19,ERADD    ;SET ERROR CODE
2423  004532  012767  004456  174162        MOV     #LT7A,SCOLP     ;SET SCOPE ADDRESS
2424  004540  004767  017060                JSR     PC,LTGER1       ;GO PRINT ERROR
2425  004544  000167  177732                JMP     LT7B            ;ELSE CONTINUE
2426  004550  012700  000003        LT7X:   MOV     #3,R0           ;RESET TEST AMT
2427  004554  004767  017316                JSR     PC,ITER         ;GO SEE IF ITERATIONS
2428  004560  000167  175666                JMP     TSCD2           ;RETURN TO SCHED
2429
```

```
                                                ;LOGIC TEST 10: FUNCTION CODE BIT TEST**********
                                        LT10:   NOP
004564  000240                                    
004566  012767  030770  174036  LT10IT: MOV     #MSLT10,EMADDR  ;SET TEST HEADER
004574  012700  000003                  MOV     #3,R0           ;SET NUMBER OF TESTS
004600  005001                  LT10A1: CLR     R1              ;SET TEST WORRD
004602  012777  000040  173710  LT10A:  MOV     #40,@CS         ;INIT
004610  016777  174020  173702          MOV     DRVN,@CS        ;SELECT DRIVE
004616  010177  173666                  MOV     R1,@C1          ;WRITE C1
004622  017702  173662                  MOV     @C1,R2          ;READ C1
004626  042702  177701                  BIC     #177701,R2      ;MASK FUNCTION CODE
004632  020102                          CMP     R1,R2           ;SEE IF EXPT = RECVD
004634  001402                          BEQ     LT10B           ;IF SO: BR
004636  000167  000022                  JMP     LT10E1          ;ELSE GO TO ERROR
004642  005300                  LT10B:  DEC     R0
004644  001421                          BEQ     LT10X           ;IF DONE ALL: BR
004646  022700  000001                  CMP     #1,R0           ;SEE IF RESET TEST
004652  001752                          BEQ     LT10A1          ;IF SO: BR
004654  012701  000076                  MOV     #76,R1          ;SET TEST WORD
004660  000167  177716                  JMP     LT10A           ;DO SET TEST
004664  012767  027065  174010  LT10E1: MOV     #MSG20,ERADD    ;SET ERROR CODE
004672  012767  004602  174022          MOV     #LT10A,SCOLP    ;SET SCOPE ADDRESS
004700  004767  016720                  JSR     PC,LTGER1       ;GO PRINT ERROR
004704  000167  177732                  JMP     LT10B           ;ELSE CONTINUE
004710  004767  017162          LT10X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
004714  000167  175532                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2458
2459                                        ;LOGIC TEST 11: GO BIT SET RESET**********
2460
2461  004720  000240                 LT11:   NOP
2462  004722  012767  031043  173702 LT11IT: MOV     #MSLT11,EMADDR  ;SET TEST HEADER
2463  004730  004767  017224                JSR     PC,INIT1        ;GO INIT
2464  004734  017702  173550                MOV     @C1,R2          ;READ C1
2465  004740  032702  000001                BIT     #1,R2           ;SEE IF GO=0
2466  004744  001402                        BEQ     LT11B           ;IF SO: BR
2467  004746  000167  000066                JMP     LT11E1          ;ELSE GO TO ERROR 1
2468  004752  012777  000015  173554 LT11B: MOV     #15,@MR         ;SELECT WAM 3
2469  004760  005077  173532                CLR     @FC             ;ASSURE FCS = 1
2470  004764  052777  001700  173550        BIS     #1700,@TC       ;ASSURE FMT OK
2471  004772  012777  000071  173510        MOV     #71,@C1         ;SET READ+GO
2472  005000  017702  173504                MOV     @C1,R2          ;READ C1
2473  005004  032702  000001                BIT     #1,R2           ;SEE IF GO =1
2474  005010  001002                        BNE     LT11C           ;IF SO: BR
2475  005012  000167  000054                JMP     LT11E2          ;ELSE GO TO ERROR 2
2476  005016  004767  017136         LT11C: JSR     PC,INIT1        ;GO INIT
2477  005022  017702  173462                MOV     @C1,R2          ;READ C1
2478  005026  032702  000001                BIT     #1,R2           ;SEE IF GO=0
2479  005032  001447                        BEQ     LT11X           ;IF SO:BR
2480  005034  000167  000064                JMP     LT11E3          ;ELSE GO TO ERROR 3
2481  005040  012767  027117  173634 LT11E1: MOV     #MSG21,ERADD    ;SET ERROR CODE
2482  005046  012702  000001                MOV     #1,R2           ;SET REVD
2483  005052  005001                        CLR     R1              ;SET EXPT
2484  005054  012767  004722  173640        MOV     #LT11IT,SCOLP           ;SET SCOPE ADDRESS
2485  005062  004767  016536                JSR     PC,LTGER1       ;GO PRINT ERROR
2486  005066  000167  177660                JMP     LT11B           ;ELSE CONTINUE
2487  005072  012767  027155  173602 LT11E2: MOV     #MSG22,ERADD    ;SET ERROR CODE
2488  005100  005002                        CLR     R2              ;SET RCVD
2489  005102  012701  000001                MOV     #1,R1           ;SET EXPT
2490  005106  012767  004752  173606        MOV     #LT11B,SCOLP    ;SET SCOPE ADDRESS
2491  005114  004767  016504                JSR     PC,LTGER1       ;GO PRINT ERROR
2492  005120  000167  177672                JMP     LT11C           ;ELSE CONTINUE
2493  005124  012767  027176  173550 LT11E3: MOV     #MSG23,ERADD    ;SET ERROR CODE
2494  005132  005001                        CLR     R1              ;SET EXPT
2495  005134  012702  000001                MOV     #1,R2           ;SET RCVD
2496  005140  012767  005016  173554        MOV     #LT11C,SCOLP    ;SET SCOPE ADDRESS
2497  005146  004767  016452                JSR     PC,LTGER1       ;GO PRINT ERROR
2498  005152  004767  016720         LT11X: JSR     PC,ITER         ;GO SEE IF ITERATIONS
2499  005156  000167  175270                JMP     TSCD2           ;RETURN TO SCHED
```

```
2501
2502                                            ;LOGIC TEST 12: DRIVE READY BIT**********
2503
2504  005162  000240                    LT12:   NOP
2505  005164  012767  031110  173440    LT12IT: MOV     #MSLT12,EMADDR  ;SET TEST HEADER
2506  005172  004767  016762                    JSR     PC,INIT1        ;GO INIT
2507  005176  032777  000200  173316            BIT     #200,@DS        ;SEE IF DRY=1
2508  005204  001002                            BNE     LT12B           ;IF SO: BR
2509  005206  000167  000062                    JMP     LT12E1          ;ELSE GO TO ERROR 1
2510  005212  012777  000015  173314    LT12B:  MOV     #15,@MR         ;SET WAM3
2511  005220  005077  173272                    CLR     @FC             ;ASSURE FCS = 1
2512  005224  052777  001700  173310            BIS     #1700,@TC       ;ASSURE FMT OK
2513  005232  012777  000071  173250            MOV     #71,@C1         ;SET READ+GO
2514  005240  032777  000200  173254            BIT     #200,@DS        ;SEE IF DRY=0
2515  005246  001402                            BEQ     LT12C           ;IF SO: BR
2516  005250  000167  000042                    JMP     LT12E2          ;ELSE GO TO ERROR 2
2517  005254  004767  016700            LT12C:  JSR     PC,INIT1        ;GO INIT
2518  005260  032777  000200  173234            BIT     #200,@DS        ;SEE IF DRY=1
2519  005266  001034                            BNE     LT12X           ;IF SO: BR
2520  005270  000167  000044                    JMP     LT12E3          ;ELSE GO TO ERROR 3
2521  005274  012767  027231  173400    LT12E1: MOV     #MSG24,ERADD    ;SET ERROR CODE
2522  005302  012767  005164  173412            MOV     #LT12IT,SCOLP   ;SET SCOPE ADDRESS
2523  005310  004767  016302                    JSR     PC,LTGER2       ;GO TO ERROR
2524  005314  000736                            BR      LT12B           ;CONTINUE
2525  005316  012767  027257  173356    LT12E2: MOV     #MSG25,ERADD    ;SET ERROR CODE
2526  005324  012767  005212  173370            MOV     #LT12B,SCOLP    ;SET LOOP ADDRESS
2527  005332  004767  016260                    JSR     PC,LTGER2       ;GO PRINT ERROR
2528  005336  000746                            BR      LT12C           ;CONTINUE
2529  005340  012767  027306  173334    LT12E3: MOV     #MSG25A,ERADD   ;SET ERROR CODE
2530  005346  012767  005254  173346            MOV     #LT12C,SCOLP    ;SET ERROR LOOP
2531  005354  004767  016236                    JSR     PC,LTGER2       ;GET PRINT ERROR
2532  005360  004767  016512            LT12X:  JSR     PC,ITER         ;GO TO ITERATION SUBROUTINE
2533  005364  000167  175062                    JMP     TSCD2           ;RETURN TO SCHED
```

```
2535
2536                                        ;LOGIC TEST 13: INTERRUPT TEST**********
2537
2538  005370  005000                LT13:   CLR     R0
2539  005372  012767  031161  173232        MOV     #MSLT13,EMADDR  ;SET TEST HEADER
2540  005400  004767  016554        LT13IT: JSR     PC,INIT1        ;GO INIT,SELECT DRIVE, SELECT ABOVE
2541  005404  012767  005462  173266        MOV     #LT13X,RTRN     ;SET RETURN ADDRESS
2542  005412  005077  173072                CLR     @C1             ;CLEAR CS1
2543  005416  005077  173146                CLR     @PSW            ;SET PRIORITY
2544  005422  052777  000100  173060        BIS     #100,@C1        ;BIT SET IE
2545  005430  005300          LT13A:  DEC     R0
2546  005432  001376                BNE     LT13A           ;AWAIT INTERRUPT
2547  005434  012777  000340  173126  LT13E1: MOV     #340,@PSW       ;RESET PRIORITY
2548  005442  012767  027333  173232        MOV     #MSG26,ERADD    ;SET ERROR CODE
2549  005450  012767  005400  173244        MOV     #LT13IT,SCOLP   ;SET LOOP ADDRESS
2550  005456  004767  016134                JSR     PC,LTGER2       ;GO PRINT ERROR
2551  005462  004767  016410          LT13X:  JSR     PC,ITER         ;GO TO ITERATION SUBROUTINE
2552  005466  000167  174760                JMP     TSCD2           ;RETURN TO SCHED
```

```
2554
2555                                    ;THE NEXT 4 TESTS ARE MANUAL INTERVENTION STATUS TESTS.
2556                                    ;THE OPERATOR WILL BE REQUIRED TO MANIPULATE THE TU16
2557                                    ;CONTROL PANEL IN ACCORDANCE WITH TTY INSTRUCTIONS.
2558
2559                                    ;LOGIC TEST 14: STATUS AT BOT ON LINE, LOADED, NO WRITE RING**********
2560
2561                            ;       **********************************************************************
2562
2563                            ;               FOR AUTOMATIC MODE SKIP TESTS
2564                            ;               WITH MANUAL INTERVENTION
2565
2566  005472  005767  173120       LT14:   TST     AUTOM           ;CHECK FOR AUTOMATIC MODE
2567  005476  001042                       BNE     LT14XX          ;BRANCH - IF YES
2568
2569                            ;       **********************************************************************
2570
2571  005500  032777  001000  173064       BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2572  005506  001005                       BNE     LT14A           ;IF NOT: BR
2573  005510  005767  173234               TST     STFLG           ;SEE IF SINGLE TEST
2574  005514  001433                       BEQ     LT14XX          ;IF NOT: BR
2575  005516  000167  016416               JMP     INMT            ;ELSE GO PRINT INHIB MSG
2576  005522  012767  031226  173102 LT14A: MOV     #MSLT14,EMADDR  ;SET TEST HEADER
2577  005530  012704  034147               MOV     #MMSG1,R4       ;SET INSTRUCTION ONE
2578  005534  004767  016444               JSR     PC,INST         ;GO DO INSTRUCTION
2579  005540  004767  016414       LT14IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE + SLAVE
2580  005544  012701  014602               MOV     #14602,R1       ;SET TEST WORD
2581  005550  017702  172746               MOV     @DS,R2          ;ASSURE MOL,WRL,DPR,DRY,BOT
2582  005554  020102                       CMP     R1,R2
2583  005556  001410                       BEQ     LT14X           ;IF SO: BR
2584  005560  012767  005540  173134       MOV     #LT14IT,SCOLP   ;SET LOOP ADDRESS
2585  005566  012767  027362  173106       MOV     #MSG27,ERADD    ;SET ERROR CODE
2586  005574  004767  016024               JSR     PC,LTGER1       ;GO PRINT ERROR
2587  005600  004767  016272       LT14X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2588  005604  000167  174642       LT14XX: JMP     TSCD2           ;RETURN TO SCHED
2589
```

```
2591
2592                                        ;LOGIC TEST 15: STATUS AT BOT, OFFLINE, LOADED, NO WRITE RING**********
2593
2594                                ;       ************************************************************
2595
2596  005610                        LT15:
2597  005610  005767  173002               TST     AUTOM           ;AUTOMATIC MODE?
2598  005614  001042                       BNE     LT15XX          ;BRANCH - IF YES
2599
2600                                ;       ************************************************************
2601
2602  005616  032777  001000  172746       BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2603  005624  001005                       BNE     LT15A           ;IF NOT: BR
2604  005626  005767  173116               TST     STFLG           ;SEE IF SINGLE TEST
2605  005632  001433                       BEQ     LT15XX          ;IF NOT: BR
2606  005634  000167  016300               JMP     INMT            ;ELSE GO PRINT INHIB MSG
2607  005640  012767  031274  172764 LT15A: MOV     #MSLT15,EMADDR  ;SET TEST HEADER
2608  005646  012704  034245               MOV     #MMSG2,R4
2609  005652  004767  016326               JSR     PC,INST         ;PRINT INSTRUCTION
2610  005656  004767  016304        LT15IT: JSR     PC,INIT2        ;GO INIT, SELECT DRIVE, SLAV
2611  005662  012701  100700               MOV     #100700,R1      ;SET TEST WORD
2612  005666  017702  172630               MOV     @DS,R2          ;READ STATUS
2613  005672  020102                       CMP     R1,R2           ;SEE OF EXPT=RCVD
2614  005674  001410                       BEQ     LT15X
2615  005676  012767  005656  173016       MOV     #LT15IT,SCOLP   ;SET LOOP ADDRESS
2616  005704  012767  027362  172770       MOV     #MSG27,ERADD    ;SET ERROR CODE
2617  005712  004767  015706               JSR     PC,LTGER1       ;GO PRINT ERROR
2618  005716  004767  016154        LT15X: JSR     PC,ITER         ;GO SEE IF ITERATIONS
2619  005722  000167  174524        LT15XX: JMP    TSCD2           ;RETURN TO SCHED
```

```
2621
2622                                        ;LOGIC TEST 16: STATUS AT EOT, OFFLINE LOADED, NO WRITE RING**********
2623
2624                                ;       ************************************************************
2625
2626  005726                        LT16:
2627  005726  005767  172664                TST     AUTOM           ;AUTO MODE?
2628  005732  001042                        BNE     LT16XX          ;BRANCH - IF YES
2629
2630                                ;       ************************************************************
2631
2632  005734  032777  001000  172630        BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
2633  005742  001005                        BNE     LT16A           ;IF NOT: BR
2634  005744  005767  173000                TST     STFLG           ;SEE IF SINGLE TEST
2635  005750  001433                        BEQ     LT16XX          ;IF NOT: BR
2636  005752  000167  016162                JMP     INMT            ;ELSE GO PRINT INHIB MSG
2637  005756  012767  031342  172646  LT16A: MOV     #MSLT16,EMADDR  ;SET TEST HEADER
2638  005764  012704  034266                MOV     #MMSG3,R4
2639  005770  004767  016210                JSR     PC,INST         ;GO PRINT INSTRUCTION
2640  005774  004767  016166        LT16IT: JSR     PC,INIT2        ;SELECT DRIVE,SLAVE
2641  006000  012701  116701                MOV     #116701,R1      ;SET TEST WORD
2642  006004  017702  172512                MOV     @DS,R2          ;READ STATUS
2643  006010  020102                        CMP     R1,R2           ;SEE IF EXPT=RCVD
2644  006012  001410                        BEQ     LT16X           ;IF SO: BR
2645  006014  012767  005774  172700        MOV     #LT16IT,SCOLP   ;SET LOOP ADDRESS
2646  006022  012767  027362  172652        MOV     #MSG27,ERADD    ;SET ERROR CODE
2647  006030  004767  015570                JSR     PC,LTGER1       ;GO PRINT ERROR
2648  006034  004767  016036        LT16X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2649  006040  000167  174406        LT16XX: JMP     TSCD2           ;RETURN TO SCHED
2650
```

```
                                        ;LOGIC TEST 17: STATUS AT ON LINE, LOADED**********
                                ;       ************************************************************
                                LT17:
006044                                  TST     AUTOM           ;AUTOMATIC MODE?
006044  005767  172546                  BNE     LT17XX          ;BRANCH - IF YES
006050  001042
                                ;       ************************************************************
006052  032777  001000  172512          BIT     #1000,@SWR      ;SEE IF INHIB MAN TST
006060  001005                          BNE     LT17A           ;IF NOT: BR
006062  005767  172662                  TST     STFLG           ;SEE IF SINGLE TEST
006066  001433                          BEQ     LT17XX          ;IF NOT: BR
006070  000167  016044                  JMP     INMT            ;ELSE GO PRINT INHIB MSG
006074  012767  031410  172530  LT17A:  MOV     #MSLT17,EMADDR  ;SET TEST HEADER
006102  012704  034324                  MOV     #MMSG4,R4
006106  004767  016072                  JSR     PC,INST         ;GO PRINT INSTRUCTION
006112  004767  016050          LT17IT: JSR     PC,INIT2        ;SELECT DRIVE, SLAVE
006116  012701  110701                  MOV     #110701,R1      ;SET TEST WORD
006122  017702  172374                  MOV     @DS,R2          ;READ STATUS
006126  020102                          CMP     R1,R2           ;SEE IF EXPT=RCVD
006130  001410                          BEQ     LT17X           ;IF SO: BR
006132  012767  006112  172562          MOV     #LT17IT,SCOLP   ;SET LOOP ADDRESS
006140  012767  027362  172534          MOV     #MSG27,ERADD    ;SET ERROR CODE
006146  004767  015452                  JSR     PC,LTGER1       ;YES PRINT ERROR
006152  004767  015720          LT17X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
006156  000167  174270          LT17XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
                                        ;THE FOLLOWING 11 TESTS WILL TEST ALL POSSIBLE ERROR BITS
                                        ;BY FORCING THEIR CONDITIONS THROUGH VARIOUS ILLEGAL PROGRAMMING
                                        ;SEQUENCES AND USING THE MAINTENANCE WILL MODES AVAILABLE WITH TM02
                                        ;FOR EACH ERROR CONDITION SET THE APPROPRIATE STATUS WILL BE
                                        ;CHECKED. IE: ERR, ATA, SLA, SC ETC.

                                        ;LOGIC TEST 20: ILLEGAL FUNCTION (ILF)**********

006162  012767  031456  172442  LT20:   MOV     #MSLT20,EMADDR  ;SET TEST HEADER
006170  012767  006210  172524          MOV     #LT20A,SCOLP    ;SET LOOP ADDRESS
006176  012700  000022          LT20IT: MOV     #22,R0          ;SET NUMBER OF ILL CODES
006202  012767  000546  172474          MOV     #ILFT,TEMP1     ;POINT TO START IF TABLE
006210  004767  015744          LT20A:  JSR     PC,INIT1        ;GO INIT, SELECT SLAVE + DRIVE
006214  012777  177777  172270          MOV     #-1,@WC         ;SET WC= -1
006222  012701  000001                  MOV     #1,R1           ;SET TEST WORD
006226  117777  172452  172254          MOVB    @TEMP1,@C1      ;SET ILL CODE
006234  017702  172264                  MOV     @ER,R2          ;READ ER
006240  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
006242  001011                          BNE     LT20B           ;IF SO: BR
006244  012767  034607  172430          MOV     #TMS17,ERADD    ;SET ERROR CODE
006252  012767  000001  172446          MOV     #1,EXFL         ;SET EXPT FLG
006260  004767  014172                  JSR     PC,LTGER0       ;GO PRINT ERROR
006264  000404                          BR      LT20C
006266  020102          LT20B:  CMP     R1,R2           ;SEE UNEXPECTED ERRORS
006270  001402                  BEQ     LT20C           ;IF NOT: BR
006272  004767  014146          JSR     PC,LTGER3       ;ELSE PRINT ERROR
006276  005300          LT20C:  DEC     R0              ;SEE IF DONE ALL ILL CODES
006300  001404                  BEQ     LT20X           ;IF SO: BR
006302  005267  172376          INC     TEMP1           ;BUMP ADDRESS
006306  000167  177676          JMP     LT20A           ;CONTINUE
006312  004767  015560  LT20X:  JSR     PC,ITER         ;GO SEE IF ITERATION
006316  004767  014612          JSR     PC,DRVCLR
006322  000167  174124          JMP     TSCD2           ;RETURN TO SCHED
```

```
2716
2717                                        ;LOGIC TEST 21: REGISTER MODIFICATION REFUSED(RMR)**********
2718
2719  006326  012767  031535  172276  LT21:   MOV     #MSLT21,EMADDR  ;SET TEST HEADER
2720  006334  012767  006342  172360          MOV     #LT21IT,SCOLP   ;SET SCOPE LOOP ADDRESS
2721  006342  004767  015612          LT21IT: JSR     PC,INIT1        ;GO INIT, SELECT SLAVE, DRIVE
2722  006346  052777  000300  172166          BIS     #300,@TC        ;SET FORMAT
2723  006354  012777  000015  172152          MOV     #15,@MR         ;SET WAM3
2724  006362  012777  000071  172120          MOV     #71,@C1         ;SET READ+GO
2725  006370  005077  172122                  CLR     @FC             ;ATTEMPT WRITE TO FC
2726  006374  012701  000004                  MOV     #4,R1           ;SET TEST WORD
2727  006400  017702  172120                  MOV     @ER,R2          ;GET ER
2728  006404  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2729  006406  001011                          BNE     LT21A           ;IF SO: BR
2730  006410  012767  034623  172264          MOV     #TMS19,ERADD    ;SET ERROR CODE
2731  006416  012767  000001  172302          MOV     #1,EXFL         ;SET EXPT FLG
2732  006424  004767  014026                  JSR     PC,LTGER0       ;GO PRINT ERROR
2733  006430  000404                          BR      LT21B
2734  006432  020102          LT21A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2735  006434  001402                          BEQ     LT21B           ;IF NOT: BR
2736  006436  004767  014002                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2737  006442  004767  015430          LT21B:  JSR     PC,ITER         ;GO SEE IF ITERATION
2738  006446  012703  040000                  MOV     #40000,R3
2739  006452  005303          LT21XA: DEC     R3              ;DELAY FOR ALPHA
2740  006454  001376                          BNE     LT21XA
2741  006456  004767  013564                  JSR     PC,EORPA        ;GO DO EOR CLEAR
2742  006462  004767  014446                  JSR     PC,DRVCLR
2743  006466  000167  173760                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2745
2746                                        ;LOGIC TEST 22: CONTROL BUS PARITY (CPAR)**********
2747
2748  006472  012767  031571  172132  LT22:   MOV     #MSLT22,EMADDR  ;SET TEST HEADER
2749  006500  012767  006506  172214          MOV     #LT22IT,SCOLP   ;SET SCOPE LOOP ADDRESS
2750  006506  004767  015446          LT22IT: JSR     PC,INIT1        ;INIT, SELECT SLAVE+DRIVE
2751  006512  052777  000020  172000          BIS     #20,@CS         ;ENABLE EVEN PARITY ON MB
2752  006520  012777  177777  171770          MOV     #-1,@FC         ;WRITE TO FC
2753  006526  012701  000010                  MOV     #10,R1          ;SET TEST WORD
2754  006532  042777  000020  171760          BIC     #20,@CS         ;RESET PARITY TO ODD
2755  006540  017702  171760                  MOV     @ER,R2          ;GET ER
2756  006544  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2757  006546  001011                          BNE     LT22A           ;IF SO: BR
2758  006550  012767  034631  172124          MOV     #TMS20,ERADD    ;SET ERROR CODE
2759  006556  012767  000001  172142          MOV     #1,EXFL         ;SET EXPT FLG
2760  006564  004767  013666                  JSR     PC,LTGER0       ;GO PRINT ERROR
2761  006570  000404                          BR      LT22X
2762  006572  020102                  LT22A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2763  006574  001402                          BEQ     LT22X           ;IF NOT: BR
2764  006576  004767  013642                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2765  006602  004767  015270          LT22X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2766  006606  004767  014322                  JSR     PC,DRVCLR
2767  006612  000167  173634                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2769
2770                                        ;LOGIC TEST 23: FORMAT ERROR(FMT)**********
2771
2772  006616  012767  031626  172006  LT23:   MOV     #MSLT23,EMADDR  ;SET TEST HEADER
2773  006624  012767  006632  172070          MOV     #LT23IT,SCOLP   ;SET SCOPE ADDRESS
2774  006632  004767  015322          LT23IT: JSR     PC,INIT1        ;GO INIT SELECT DRIVE+SLAVE
2775  006636  042777  000360  171676          BIC     #360,@TC        ;SET ILLEGAL FORMAT
2776  006644  012701  000020                  MOV     #20,R1          ;SET TEST WORD
2777  006650  012777  000015  171656          MOV     #15,@MR         ;SET WAM 3
2778  006656  012777  000071  171624          MOV     #71,@C1         ;SET READ+GO
2779  006664  017702  171634                  MOV     @ER,R2          ;READ ER
2780  006670  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2781  006672  001011                          BNE     LT23A           ;IF SO: BR
2782  006674  012767  034640  172000          MOV     #TMS21,ERADD    ;SET ERROR CODE
2783  006702  012767  000001  172016          MOV     #1,EXFL         ;SET EXPT FLG
2784  006710  004767  013542                  JSR     PC,LTGER0       ;GO PRINT ERROR
2785  006714  000404                          BR      LT23X
2786  006716  020102          LT23A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2787  006720  001402                          BEQ     LT23X           ;IF NOT: BR
2788  006722  004767  013516                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2789  006726  004767  015144          LT23X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2790  006732  004767  013310                  JSR     PC,EORPA
2791  006736  004767  014172                  JSR     PC,DRVCLR
2792  006742  000167  173504                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2794                                                ;LOGIC TEST 24: DATA BUS PARITY ERROR(DPAR)**********
2795
2796  006746  012767  031670  171656  LT24:   MOV     #MSLT24,EMADDR  ;SET TEST HEADER
2797  006754  012767  006762  171740          MOV     #LT24IT,SCOLP   ;SET SCOPE ADDRESS
2798  006762  012767  000005  171620  LT24IT: MOV     #5,ITAMT
2799  006770  004767  015164                  JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
2800  006774  052777  000300  171540          BIS     #300,@TC        ;SET NORMAL FORMAT
2801  007002  012777  035054  171504          MOV     #WDATA,@BA      ;SET BA
2802  007010  012777  177760  171500          MOV     #-20,@FC        ;SET FC
2803  007016  012777  177770  171466          MOV     #-10,@WC        ;SET WC
2804  007024  012777  000013  171502          MOV     #13,@MR         ;SELECT WAM 2
2805  007032  012777  000061  171450          MOV     #61,@C1         ;SET WRITE+GO
2806  007040  052777  000020  171452          BIS     #20,@CS         ;FORCE EVEN PARITY
2807  007046  012701  000040                  MOV     #40,R1          ;SET TEST WORD
2808  007052  012703  000004                  MOV     #4,R3
2809  007056  005000                          CLR     R0
2810  007060  005300                  LT24A:  DEC     R0
2811  007062  001376                          BNE     LT24A           ;DELAY
2812  007064  005303                          DEC     R3
2813  007066  001374                          BNE     LT24A
2814  007070  012700  000004                  MOV     #4,R0
2815  007074  012777  000013  171432  LT24B:  MOV     #13,@MR         ;CLOCK MR 4 TIMES
2816  007102  005300                          DEC     R0
2817  007104  022700  000002                  CMP     #2,R0           ;SEE IF DONE 1 BYTE
2818  007110  001002                          BNE     LT24B0          ;IF NOT: BR
2819  007112  017701  171416                  MOV     @MR,R1          ;ELSE GET BYTE 1
2820  007116  005700                  LT24B0: TST     R0              ;SEE IF BYTE 2
2821  007120  001365                          BNE     LT24B           ;IF NOT: BR
2822  007122  017704  17'406                  MOV     @MR,R4          ;GET BYTE 2
2823  007126  005000                          CLR     R0
2824  007130  005300                  LT24C:  DEC     R0
2825  007132  001376                          BNE     LT24C           ;DELAY
2826  007134  032777  000040  171362          BIT     #40,@ER         ;SEE IF DPAR IS SET
2827  007142  001023                          BNE     LT24D           ;IF SO: BR
2828  007144  000301                          SWAB    R1
2829  007146  042701  177400                  BIC     #177400,R1      ;GET LOW BYTE
2830  007152  0-2704  000377                  BIC     #377,R4
2831  007156  050401                          BIS     R4,R1           ;GET HIGH BYTE
2832  007160  005267  171570                  INC     T24FL           ;SET T24 FLAG
2833  007164  012767  034646  171510          MOV     #TMS22,ERADD    ;SET ERROR CODE
2834  007172  012767  000001  171526          MOV     #1,EXFL         ;SET EXPT FLG
2835  007200  004767  013252                  JSR     PC,LTGER0       ;GO PRINT ERROR
2836  007204  005067  171544                  CLR     T24FL           ;CLEAR FLAG
2837  007210  000412                          BR      LT24X
2838  007212  012701  000050          LT24D:  MOV     #50,R1
2839  007216  017702  171302                  MOV     @ER,R2          ;GET ERROR REGISTER
2840  007222  042702  020000                  BIC     #20000,R2       ;MASK OPI
2841  007226  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2842  007230  001402                          BEQ     LT24X           ;IF NOT: BR
2843  007232  004767  013206                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2844  007236  042777  000020  171254  LT24X:  BIC     #20,@CS         ;RESET EVEN PARITY
2845  007244  004767  012776                  JSR     PC,EORPA        ;GO DO EOR CLEAR
2846  007250  004767  013660                  JSR     PC,DRVCLR       ;GO SEE IF DRIVE CLEAR OK
2847  007254  004767  014616                  JSR     PC,ITER         ;GO SEE IF ITERATION
2848  007260  012767  000020  171322          MOV     #20,ITAMT
2849  007266  000167  173160                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2851
2852                                        ;LOGIC TEST 25: NON-EXECUTABLE FUNCTION(NEF)**********
2853
2854  007272  012767  031730  171332  LT25:   MOV     #MSLT25,EMADDR  ;SET TEST HEADER
2855  007300  012767  007306  171414          MOV     #LT25IT,SCOLP   ;SET LOOP ADDRESS
2856  007306  004767  014646          LT25IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
2857  007312  052777  000300  171222          BIS     #300,@TC        ;SET NORMAL FORMAT
2858  007320  012777  177777  171170          MOV     #-1,@FC         ;SET ITLLEGAL FC
2859  007326  012777  000013  171200          MOV     #13,@MR         ;SET WAM 2
2860  007334  012777  000061  171146          MOV     #61,@C1         ;LOAD WRITE+GO
2861  007342  012701  004000                  MOV     #4000,R1        ;SET TEST WORD
2862  007346  017702  171152                  MOV     @ER,R2          ;GET ER
2863  007352  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
2864  007354  001011                          BNE     LT25A           ;IF SO: BR
2865  007356  012767  034734  171316          MOV     #TMS31,ERADD    ;SET ERROR CODE
2866  007364  012767  000001  171334          MOV     #1,EXFL         ;SET EXPT FLAG
2867  007372  004767  013060                  JSR     PC,LTGER0       ;GO PRINT ERROR
2868  007376  000404                          BR      LT25X
2869  007400  020102                  LT25A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2870  007402  001402                          BEQ     LT25X           ;IF NOT: BR
2871  007404  004767  013034                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2872  007410  004767  014462          LT25X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2873  007414  004767  013514                  JSR     PC,DRVCLR
2874  007420  000167  173026                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2876
2877                                        ;LOGIC TEST 26: FRAME COUNT ERROR(FCE)**********
2878
2879  007424  012767  031764  171200  LT26:   MOV     #MSLT26,EMADDR  ;SET TEST HEADER
2880  007432  004767  014522          LT26IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
2881  007436  005000                          CLR     R0
2882  007440  005300                  LT26W:  DEC     R0
2883  007442  001376                          BNE     LT26W           ;AWAIT OPI RESET
2884  007444  052777  000300  171070          BIS     #300,@TC        ;SET NORMAL FORMAT
2885  007452  012777  177770  171032          MOV     #-10,@WC        ;SET WC=-10
2886  007460  012777  177760  171030          MOV     #-20,@FC        ;SET FC=-20
2887  007466  012777  000013  171040          MOV     #13,@MR         ;SET WAM 3
2888  007474  012777  000061  171006          MOV     #61,@C1         ;LOAD WRITE+GO
2889  007502  012701  001000                  MOV     #1000,R1        ;SET TEST WORD
2890  007506  005000                          CLR     R0
2891  007510  005300                  LT26A:  DEC     R0
2892  007512  001376                          BNE     LT26A           ;DELAY
2893  007514  012777  000025  171012          MOV     #25,@MR         ;LOAD MM EOR CLEAR
2894  007522  105077  171006                  CLRB    @MR             ;RESET MR
2895  007526  012703  000004                  MOV     #4,R3
2896  007532  005000                          CLR     R0
2897  007534  032777  001000  170762  LT26B:  BIT     #1000,@ER       ;SEE IF FCE SET
2898  007542  001022                          BNE     LT26C           ;IF SO: BR
2899  007544  005300                          DEC     R0
2900  007546  001372                          BNE     LT26B           ;DELAY
2901  007550  005303                          DEC     R3
2902  007552  001370                          BNE     LT26B
2903  007554  017702  170744                  MOV     @ER,R2          ;GET ER
2904  007560  012767  007432  171134          MOV     #LT26IT,SCOLP   ;SET SCOPE ADDRESS
2905  007566  012767  034713  171106          MOV     #TMS28,ERADD
2906  007574  012767  000001  171124          MOV     #1,EXFL         ;SET EXPT FLG
2907  007602  004767  012650                  JSR     PC,LTGER0       ;GO PRINT ERROR
2908  007606  000406                          BR      LT26X
2909  007610  017702  170710          LT26C:  MOV     @ER,R2          ;GET ERROR REGISTER
2910  007614  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2911  007616  001402                          BEQ     LT26X           ;IF NOT: BR
2912  007620  004767  012620                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2913  007624  004767  014246          LT26X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2914  007630  004767  013300                  JSR     PC,DRVCLR
2915  007634  000167  172612                  JMP     TSCD2           ;RETURN TO SCHED
```

```
2917
2918                                        ;LOGIC TEST 27: ILLEGAL REGISTER(ILR)**********
2919
2920  007640  022767  172400  170642  LT27:   CMP     #172400,C1      ;SEE IF ADDRESSES OPEN
2921  007646  001041                          BNE     LT27XX          ;IF NOT: BR
2922  007650  012767  007674  171044          MOV     #LT27A,SCOLP    ;SET SCOPE ADDRESS
2923  007656  012767  032020  170746          MOV     #MSLT27,EMADDR  ;SET TEST HEADER
2924  007664  012700  000020          LT27IT: MOV     #20,R0          ;SET NUMBER OF ILR TESTS
2925  007670  012701  172434                  MOV     #172434,R1      ;SET FIRST ILR ADDRESS
2926  007674  004767  014260          LT27A:  JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
2927  007700  011103                          MOV     (R1),R3         ;ATTEMPT ILR READ
2928  007702  032777  000002  170614          BIT     #2,@ER          ;SEE IF ILR=1
2929  007710  001010                          BNE     LT27B           ;IF SO: BR
2930  007712  012767  000001  171006          MOV     #1,EXFL         ;SET EXPT-NOT RCVD FLAG
2931  007720  012767  034535  170754          MOV     #TMS10,ERADD    ;SET ERROR CODE
2932  007726  004767  012532                  JSR     PC,LTGER        ;GO PRINT ERROR
2933  007732  005300                  LT27B:  DEC     R0              ;SEE IF DONE ALL
2934  007734  001402                          BEQ     LT27X           ;IF SO: BR
2935  007736  005721                          TST     (R1)+           ;BUMP ADDRESS
2936  007740  000755                          BR      LT27A           ;CONTINUE TESTS
2937  007742  004767  014130          LT27X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
2938  007746  004767  013162                  JSR     PC,DRVCLR
2939  007752  000167  172474          LT27XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
2941
2942                                        ;LOGIC TEST 30: DRIVE TIMING ERROR**********
2943
2944  007756  012767  034742  170716  LT30:   MOV     #TMS32,ERADD    ;SET ERROR CODE
2945  007764  012767  032054  170640          MOV     #MSLT30,EMADDR  ;SET TEST HEADER
2946  007772  012767  010000  170722          MOV     #LT30IT,SCOLP   ;SET SCOPE ADDRESS
2947  010000  004767  014154          LT30IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE + SLAVE
2948  010004  052777  000300  170530          BIS     #300,@TC        ;SET NORMAL FORMAT
2949  010012  012701  010000                  MOV     #10000,R1       ;SET TEST WORD
2950  010016  012777  000017  170510          MOV     #17,@MR         ;CRIPPLE OCCUPIED
2951  010024  005077  170466                  CLR     @FC             ;SET FC3
2952  010030  012777  000061  170452          MOV     #61,@C1         ;LOAD WRITE+GO
2953  010036  032777  010000  170460          BIT     #10000,@ER      ;SEE IF DTE SET
2954  010044  001005                          BNE     LT30A           ;IF SO: BR
2955  010046  012767  000001  170652          MOV     #1,EXFL         ;SET EXPT FLG
2956  010054  004767  012376                  JSR     PC,LTGER0       ;GO PRINT ERROR
2957  010060  004767  014074          LT30A:  JSR     PC,INIT1        ;GO INIT SELECT DRIVE,SLAVE
2958  010064  052777  000300  170450          BIS     #300,@TC        ;SET FORMAT
2959  010072  012701  010000                  MOV     #10000,R1       ;SET TEST WORD
2960  010076  005077  170414                  CLR     @FC             ;SET FCS
2961  010102  012777  000015  170424          MOV     #15,@MR         ;SET WRAP 3
2962  010110  012777  000061  170372          MOV     #61,@C1         ;LOAD WRITE+GO
2963  010116  012704  040000                  MOV     #40000,R4
2964  010122  005777  170414          LT30B:  TST     @TC             ;SEE IF ALPHA
2965  010126  100015                          BPL     LT30C           ;AWAIT ALPHA
2966  010130  005300                          DEC     R0
2967  010132  001373                          BNE     LT30B
2968  010134  016704  170472                  MOV     EMADDR,R4
2969  010140  004767  014356                  JSR     PC,TTOUT        ;PRINT HEADER
2970  010144  012704  030116                  MOV     #MSG50,R4
2971  010150  004767  014346                  JSR     PC,TTOUT        ;PRINT ALPHA ERROR
2972  010154  004767  013664                  JSR     PC,SCOPE
2973  010160  000435                          BR      LT30X
2974  010162  012777  000015  170344  LT30C:  MOV     #15,@MR         ;CLOCK MR
2975  010170  012777  000015  170336          MOV     #15,@MR         ;CLOCK MR
2976  010176  005000                          CLR     R0
2977  010200  005300                  LT30D:  DEC     R0
2978  010202  001376                          BNE     LT30D           ;DELAY
2979  010204  032777  010000  170312          BIT     #10000,@ER      ;SEE IF DTE SET
2980  010212  001006                          BNE     LT30E           ;IF SO: BR
2981  010214  012767  000001  170504          MOV     #1,EXFL         ;SET EXPT FLG
2982  010222  004767  012230                  JSR     PC,LTGER0       ;GO PRINT ERROR
2983  010226  000412                          BR      LT30X
2984  010230  012701  010000          LT30E:  MOV     #10000,R1       ;SET TEST WORD
2985  010234  017702  170264                  MOV     @ER,R2          ;GET ERROR REGISTER
2986  010240  042702  020000                  BIC     #20000,R2       ;MASK OPI
2987  010244  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
2988  010246  001402                          BEQ     LT30X           ;IF NOT: BR
2989  010250  004767  012170                  JSR     PC,LTGER3       ;ELSE GO PRINT ERROR
2990  010254  004767  013616          LT30X:  JSR     PC,ITER         ;GO SEE IF ITERATION
2991  010260  004767  011762                  JSR     PC,EORPA        ;GO CLEAR GO BIT
2992  010264  004767  012644                  JSR     PC,DRVCLR
2993  010270  000167  172156                  JMP     TSCD2           ;RETURN TO SCHED
2994
```

```
2996
2997                                        ;LOGIC TEST 31: OPERATION INCOMPLETE(OPI)**********
2998
2999  010274  012767  032112  170230  LT31:   MOV     #MSLT31,EMADDR  ;SET TEST HEADER
3000  010302  012767  010310  170412          MOV     #LT31IT,SCOLP   ;SET SCOPE ADDRESS
3001  010310  012767  000005  170272  LT31IT: MOV     #5,ITAMT        ;SET REDUCED ITER COUNT
3002  010316  004767  013636                  JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3003  010322  005000                          CLR     R0
3004  010324  005300                  LT31W:  DEC     R0
3005  010326  001376                          BNE     LT31W           ;AWAIT OPI RESET
3006  010330  052777  000300  170204          BIS     #300,@TC        ;SET FORMAT
3007  010336  012777  000013  170170          MOV     #13,@MR         ;SET WAM 2
3008  010344  005077  170146                  CLR     @FC             ;SET FCS
3009  010350  012777  000061  170132          MOV     #61,@C1         ;LOAD WRITE+GO
3010  010356  012701  020000                  MOV     #20000,R1       ;SET TEST WORD
3011  010362  012703  000004                  MOV     #4,R3
3012  010366  005000                          CLR     R0
3013  010370  032777  020000  170126  LT31A:  BIT     #20000,@ER      ;SEE IF OPI SET
3014  010376  001015                          BNE     LT31B           ;IF SO: BR
3015  010400  005300                          DEC     R0
3016  010402  001372                          BNE     LT31A           ;DELAY
3017  010404  005303                          DEC     R3
3018  010406  001370                          BNE     LT31A
3019  010410  012767  034756  170264          MOV     #TMS33A,ERADD   ;SET ERROR CODE
3020  010416  012767  000001  170302          MOV     #1,EXFL         ;SET EXPT FLG
3021  010424  004767  012026                  JSR     PC,LTGER0       ;GO PRINT ERROR
3022  010430  000464                          BR      LT31X
3023  010432  017702  170066          LT31B:  MOV     @ER,R2          ;GET ERROR REGISTER
3024  010436  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3025  010440  001403                          BEQ     LT31C           ;IF NOT: BR
3026  010442  004767  011776                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
3027  010446  000455                          BR      LT31X
3028  010450  004767  013504          LT31C:  JSR     PC,INIT1        ;GO INIT
3029  010454  005000                          CLR     R0
3030  010456  005300                  LT31W1: DEC     R0
3031  010460  001376                          BNE     LT31W1          ;AWAIT OPI RESET
3032  010462  052777  000300  170052          BIS     #300,@TC        ;SET FORMAT
3033  010470  012777  000015  170036          MOV     #15,@MR         ;SET WRAP 3
3034  010476  012777  000071  170004          MOV     #71,@C1         ;LOAD READ+GO
3035  010504  012701  020000                  MOV     #20000,R1       ;SET TEST WORD
3036  010510  012703  000100                  MOV     #100,R3
3037  010514  005000                          CLR     R0
3038  010516  032777  020000  170000  LT31D:  BIT     #20000,@ER      ;SEE IF OPI SET
3039  010524  001020                          BNE     LT31E           ;IF SO: BR
3040  010526  005300                          DEC     R0
3041  010530  001372                          BNE     LT31D           ;DELAY
3042  010532  005303                          DEC     R3
3043  010534  001370                          BNE     LT31D
3044  010536  012767  010450  170156          MOV     #LT31C,SCOLP    ;SET SCOPE ADDRESS
3045  010544  012767  034772  170130          MOV     #TMS33B,ERADD   ;SET ERROR CODE
3046  010552  012767  000001  170146          MOV     #1,EXFL         ;SET EXPT FLG
3047  010560  004767  011672                  JSR     PC,LTGER0       ;GO PRINT ERROR
3048  010564  000406                          BR      LT31X
3049  010566  017702  167732          LT31E:  MOV     @ER,R2          ;GET ERROR REGISTER
3050  010572  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3051  010574  001402                          BEQ     LT31X           ;IF NOT: BR
```

```
 3052  010576  004767  011642                JSR     PC,LTGER3       ;ELSE PRINT ERROR
 3053  010602  004767  013270        LT31X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
 3054  010606  004767  012322                JSR     PC,DRVCLR
 3055  010612  012767  000020  167770        MOV     #20,ITAMT
 3056  010620  000167  171626                JMP     TSCD2           ;RETURN TO SCHED
```

```
 3058
 3059                                          ;LOGIC TEST 32: UNSAFE(UNS)**********
 3060
 3061  010624  012767  032146  170000  LT32:   MOV     #MSLT32,EMADDR  ;SET TEST HEADER
 3062  010632  012767  010640  170062          MOV     #LT32IT,SCOLP   ;SET SCOPE ADDRESS
 3063  010640  004767  013314          LT32IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE +SLAVE
 3064  010644  016700  170024                  MOV     SLVN,R0         ;GET SLAVE NUMBER
 3065  010650  005100                          COM     R0              ;SET NONEXISTANT SLAVE
 3066  010652  042700  177770                  BIC     #177770,R0      ;MASK SLAVE NUMBER
 3067  010656  052700  000300                  BIS     #300,R0         ;SET FORMAT
 3068  010662  010077  167654                  MOV     R0,@TC          ;SELECT ILLEGAL SLAVE
 3069  010666  012777  000071  167614          MOV     #71,@C1         ;LOAD READ+GO
 3070  010674  012701  040000                  MOV     #40000,R1       ;SET TEST WORD
 3071  010700  017702  167620                  MOV     @ER,R2          ;READ ER
 3072  010704  030102                          BIT     R1,R2           ;SEE IF EXPT=RCVD
 3073  010706  001011                          BNE     LT32A           ;IF SO: BR
 3074  010710  012767  035005  167764          MOV     #TMS34,ERADD    ;SET ERROR CODE
 3075  010716  012767  000001  170002          MOV     #1,EXFL         ;SET ERROR CODE
 3076  010724  004767  011526                  JSR     PC,LTGER0       ;GO PRINT ERROR
 3077  010730  000404                          BR      LT32X
 3078  010732  020102                  LT32A:  CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
 3079  010734  001402                          BEQ     LT32X           ;IF NOT: BR
 3080  010736  004767  011502                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
 3081  010742  004767  013130          LT32X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
 3082  010746  004767  012162                  JSR     PC,DRVCLR
 3083  010752  000167  171474                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3085
3086                                        ;THE FOLLOWING 6 TESTS WILL LOOK AT VARIOUS BITS IN THE
3087                                        ;DRIVE STATUS(DS) AND TAPE CONTROL(TC)
3088                                        ;REGISTERS BY FORCING CERTAIN CONDITONS WHICH DO NOT
3089                                        ;REQUIRE TAPE MOVEMENT.
3090
3091                                        ;LOGIC TEST 33: POSITIONING IN PROGRESS(PIP)**********
3092
3093  010756  012767  032202  167646  LT33:   MOV     #MSLT33,EMADDR  ;SET TEST HEADER
3094  010764  012767  010772  167730          MOV     #LT33IT,SCOLP   ;SET SCOPE ADDRESS
3095  010772  004767  013162          LT33IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3096  010776  012777  000013  167530          MOV     #13,@MR         ;SET WAM 2
3097  011004  012777  177777  167504          MOV     #-1,@FC         ;SET FCS
3098  011012  012777  000031  167470          MOV     #31,@C1         ;LOAD SPACE FORWARD+GO
3099  011020  032777  020000  167474          BIT     #20000,@DS      ;SEE IF PIP=1
3100  011026  001010                          BNE     LT33X           ;IF SO: BR
3101  011030  012767  034565  167644          MOV     #TMS14,ERADD    ;SET ERROR CODE
3102  011036  012767  000001  167662          MOV     #1,EXFL         ;SET ERROR CODE
3103  011044  004767  011406                  JSR     PC,LTGERO       ;GO PRINT ERROR
3104  011050  004767  013022          LT33X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3105  011054  000167  171372                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3107
3108                                        ;LOGIC TEST 34: PHASE ENCODED STATUS(PES)********
3109
3110  011060  005767  167606        LT34:   TST     NRZOF           ;SEE IF NRZ ONLY
3111  011064  001054                        BNE     LT34XX          ;IF SO: BR
3112  011066  012767  034505  167606        MOV     #TMS6,ERADD     ;SET ERROR CODE
3113  011074  012767  032236  167530        MOV     #MSLT34,EMADDR  ;SET TEST HEADER
3114  011102  012700  000004        LT34IT: MOV     #4,R0
3115  011106  004767  013046        LT34A1: JSR     PC,INIT1        ;GO INIT, SELECT DRIVE+SLAVE
3116  011112  042777  003400  167422        BIC     #3400,@TC       ;SELECT NRZI
3117  011120  032777  000040  167374  LT34A: BIT     #40,@DS         ;SEE IF PES=0
3118  011126  001410                        BEQ     LT34B           ;IF SO: BR
3119  011130  012767  000002  167570        MOV     #2,EXFL         ;SET RCVD-NOT EXPT
3120  011136  012767  011106  167556        MOV     #LT34A1,SCOLP   ;SET SCOPE ADDRESS
3121  011144  004767  011306                JSR     PC,LTGER0       ;GO PRINT ERROR
3122  011150  062777  000400  167364  LT34B: ADD     #400,@TC        ;BUMP DENSITY
3123  011156  005300                        DEC     R0              ;SEE IF DONE ALL NRZI
3124  011160  001357                        BNE     LT34A           ;IF NOT: BR
3125  011162  032777  000040  167332  LT34C: BIT     #40,@DS         ;SEE IF PES=1
3126  011170  001010                        BNE     LT34X           ;IF SO: BR
3127  011172  012767  011162  167522        MOV     #LT34C,SCOLP    ;SET SCOPE ADDRESS
3128  011200  012767  000001  167520        MOV     #1,EXFL         ;SET EXPT-NOT RCVD FLAG
3129  011206  004767  011244                JSR     PC,LTGER0       ;GO PRINT ERROR
3130  011212  004767  012660        LT34X:  JSR     PC,ITER         ;GO SEE IF ITERATION
3131  011216  000167  171230        LT34XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3133
3134                                        ;LOGIC TEST 35: TAPE CONTROL WRITE(TCW)**********
3135
3136  011222  012767  035030  167452  LT35:   MOV     #TMS37,ERADD
3137  011230  012767  032272  167374          MOV     #MSLT35,EMADDR
3138  011236  004767  012716          LT35IT: JSR     PC,INIT1        ;INIT SELECT DRIVE, SLAVE
3139  011242  032777  000020  167252  1$:     BIT     #20,@DS         ;SEE IF SDWN IS RESET
3140  011250  001374                          BNE     1$              ;IF NOT: BR
3141  011252  052777  000300  167262          BIS     #300,@TC        ;SET FORMAT
3142  011260  012777  000015  167246          MOV     #15,@MR         ;SET WAM 3
3143  011266  012777  000071  167214          MOV     #71,@C1         ;LOAD READ+GO
3144  011274  032777  020000  167240          BIT     #20000,@TC      ;SEE IF TCW=0
3145  011302  001410                          BEQ     LT35A           ;IF SO: BR
3146  011304  012767  000002  167414          MOV     #2,EXFL         ;SET RCV-NOT EXPT FLAG
3147  011312  012767  011236  167402          MOV     #LT35IT,SCOLP   ;SET SCOPE ADDRESS
3148  011320  004767  011132                  JSR     PC,LTGERO       ;GO PRINT ERROR
3149  011324  004767  012630          LT35A:  JSR     PC,INIT1        ;INIT
3150  011330  005077  167206                  CLR     @TC             ;WRITE TO TC
3151  011334  032777  020000  167200          BIT     #20000,@TC      ;SEE IF TCW=1
3152  011342  001010                          BNE     LT35X           ;IF SO: BR
3153  011344  012767  011324  167350          MOV     #LT35A,SCOLP    ;SET SCOPE ADDRESS
3154  011352  012767  000001  167346          MOV     #1,EXFL         ;SE EXPT-NOT RCVD FLAG
3155  011360  004767  011072                  JSR     PC,LTGERO       ;GO PRINT ERROR
3156  011364  004767  012506          LT35X:  JSR     PC,ITER
3157  011370  000167  171056                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3159
3160                                        ;LOGIC TEST 36: FRAME COUNTER STATUS(FCS)**********
3161
3162  011374  012767  032334  167230  LT36:   MOV     #MSLT36,EMADDR
3163  011402  012767  035036  167272          MOV     #TMS38,ERADD    ;SET ERROR CODE
3164  011410  004767  012544          LT36IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3165  011414  032777  040000  167120          BIT     #40000,@TC      ;SEE IF FCS=0
3166  011422  001410                          BEQ     LT36A           ;IF SO: BR
3167  011424  012767  011410  167270          MOV     #LT36IT,SCOLP   ;SET SCOPE ADDRESS
3168  011432  012767  000002  167266          MOV     #2,EXFL         ;SET RCVD-NOT EXPT
3169  011440  004767  011012                  JSR     PC,LTGERO       ;GO PRINT ERROR
3170  011444  004767  012510          LT36A:  JSR     PC,INIT1        ;INIT
3171  011450  005077  167042                  CLR     @FC             ;WRITE TO FC
3172  011454  032777  040000  167060          BIT     #40000,@TC      ;SEE IF FCS=1
3173  011462  001010                          BNE     LT36X           ;IF SO: BR
3174  011464  012767  011444  167230          MOV     #LT36A,SCOLP    ;SET SCOPE ADDRESS
3175  011472  012767  000001  167226          MOV     #1,EXFL         ;SET EXPT-NOT RCVD
3176  011500  004767  010752                  JSR     PC,LTGERO       ;GO PRINT ERROR
3177  011504  004767  012366          LT36X:  JSR     PC,ITER
3178  011510  000167  170736                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3180
3181                                        ;LOGIC TEST 37: ACCELERATION(ACCL)**********
3182
3183  011514  012767  032376  167110  LT37:   MOV     #MSLT37,EMADDR
3184  011522  012767  035044  167152          MOV     #TMS39,ERADD    ;SET ERROR CODE
3185  011530  004767  012424          LT37IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3186  011534  052777  000300  167000          BIS     #300,@TC        ;SET FORMAT
3187  011542  005777  166774                  TST     @TC             ;SEE IF ACCL=1
3188  011546  100410                          BMI     LT37A           ;IF SO: BR
3189  011550  012767  000001  167150          MOV     #1,EXFL
3190  011556  012767  011530  167136          MOV     #LT37IT,SCOLP   ;SET SCOPE ADDRESS
3191  011564  004767  010666                  JSR     PC,LTGERO       ;GO PRINT ERROR
3192  011570  004767  012364          LT37A:  JSR     PC,INIT1        ;INIT
3193  011574  052777  000300  166740          BIS     #300,@TC        ;SET FORMAT
3194  011602  012777  000015  166724          MOV     #15,@MR         ;SET WAM 3
3195  011610  012777  000071  166672          MOV     #71,@C1         ;LOAD READ+GO
3196  011616  012700  100000                  MOV     #100000,R0      ;SET ACCL DELAY
3197  011622  005777  166714          LT37B:  TST     @TC             ;SEE IF ACCL=0
3198  011626  100012                          BPL     LT37X           ;IF SO: BR
3199  011630  005300                          DEC     R0
3200  011632  001373                          BNE     LT37B           ;DELAY
3201  011634  012767  011570  167060          MOV     #LT37A,SCOLP    ;SET SCOPE ADDRESS
3202  011642  012767  000002  167056          MOV     #2,EXFL
3203  011650  004767  010602                  JSR     PC,LTGERO       ;GO PRINT ERROR
3204  011654  004767  012216          LT37X:  JSR     PC,ITER
3205  011660  000167  170566                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3207
3208                                        ;LOGIC TEST 40: PE TAPE MARK (TM)**********
3209
3210  011664  005767  167002        LT40:   TST     NRZOF           ;SEE IF NRZ ONLY
3211  011670  001046                        BNE     LT40XX          ;IF SO: BR
3212  011672  012767  011706  167022        MOV     #LT40IT,SCOLP   ;SET SCOPE ADDRESS
3213  011700  012767  032441  166724        MOV     #MSLT40,EMADDR
3214  011706  004767  012246        LT40IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3215  011712  005000                        CLR     R0
3216  011714  005300                LT40W:  DEC     R0
3217  011716  001376                        BNE     LT40W           ;DELAY FOR OPI RESET
3218  011720  052777  002300  166614        BIS     #2300,@TC
3219  011726  012777  000007  166600        MOV     #7,@MR          ;SET WAM 0
3220  011734  012777  000027  166546        MOV     #27,@C1         ;LOAD WRITE TAPE MARK+GO
3221  011742  012700  100000                MOV     #100000,R0      ;SET DELAY
3222  011746  032777  000004  166546  LT40A: BIT     #4,@DS          ;SEE IF TM=1
3223  011754  001012                        BNE     LT40X           ;IF SO: BR
3224  011756  005300                        DEC     R0
3225  011760  001372                        BNE     LT40A           ;DELAY
3226  011762  012767  034463  166712        MOV     #TMS3,ERADD
3227  011770  012767  000001  166730        MOV     #1,EXFL
3228  011776  004767  010454                JSR     PC,LTGER0       ;GO PRINT ERROR
3229  012002  004767  012070        LT40X:  JSR     PC,ITER
3230  012006  000167  170440        LT40XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3232
3233                                        ;LOGIC TEST 41: NRZ TAPE MARK (TM,VPE,ITM)**********
3234
3235  012012  012767  012026  166702  LT41:   MOV     #LT41IT,SCOLP   ;SET SCOPE ADDRESS
3236  012020  012767  032506  166604          MOV     #MSLT41,EMADDR
3237  012026  004767  012126          LT41IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE,SLAVE
3238  012032  004767  005232                  JSR     PC,BOTT         ;GO ASSURE NOT AT BOT
3239  012036  052777  001700  166476          BIS     #1700,@TC       ;SET NRZ+NORMAL FORMAT
3240  012044  012777  177760  166444          MOV     #-20,@FC        ;SET FCS
3241  012052  012777  000007  166454          MOV     #7,@MR          ;SET WAM 0
3242  012060  012777  000027  166422          MOV     #27,@C1         ;LOAD WRITE TAPE MARK+GO
3243  012066  005000                          CLR     R0
3244  012070  032777  000004  166424  LT41A:  BIT     #4,@DS          ;SEE IF TM=1
3245  012076  001012                          BNE     LT41B           ;IF SO: BR
3246  012100  005300                          DEC     R0
3247  012102  001372                          BNE     LT41A           ;DELAY
3248  012104  012767  034463  166570          MOV     #TMS3,ERADD     ;SET ERROR CODE
3249  012112  012767  000001  166606          MOV     #1,EXFL
3250  012120  004767  010332                  JSR     PC,LTGER0       ;GO PRINT ERROR
3251  012124  032777  002000  166372  LT41B:  BIT     #2000,@ER       ;SEE IF ITM=1
3252  012132  001010                          BNE     LT41C           ;IF SO: BR
3253  012134  012767  034726  166540          MOV     #TMS30,ERADD    ;SET ERROR CODE
3254  012142  012767  000001  166556          MOV     #1,EXFL
3255  012150  004767  010302                  JSR     PC,LTGER0       ;GO PRINT ERROR
3256  012154  032777  000100  166342  LT41C:  BIT     #100,@ER        ;SEE IF VPE=1
3257  012162  001011                          BNE     LT41D           ;IF SO: BR
3258  012164  012767  034713  166510          MOV     #TMS28,ERADD    ;SET ERROR CODE
3259  012172  012767  000001  166526          MOV     #1,EXFL
3260  012200  004767  010252                  JSR     PC,LTGER0       ;GO PRINT ERROR
3261  012204  000410                          BR      LT41X
3262  012206  012701  002100          LT41D:  MOV     #2100,R1        ;SET EXPT ERROR BITS
3263  012212  017702  166306                  MOV     @ER,R2          ;GET ERROR REGISTER
3264  012216  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3265  012220  001402                          BEQ     LT41X           ;IF NOT: BR
3266  012222  004767  010216                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
3267  012226  005002          LT41X:  CLR     R2                      ;SET TIMER
3268  012230  032777  000200  166264  1$:     BIT     #200,@DS        ;SEE IF DRY SET
3269  012236  001002                          BNE     2$              ;IF SO: BR
3270  012240  005302                          DEC     R2              ;AWAIT DRY
3271  012242  001372                          BNE     1$              ;DELAY
3272  012244  004767  011626          2$:     JSR     PC,ITER         ;GO SEE IF ITERATIONS
3273  012250  004767  010660                  JSR     PC,DRVCLR       ;GO DO DRIVE CLEAR
3274  012254  000167  170172                  JMP     TSCD2           ;RETURN TO SCHED
```

```
                                                ;THE FOLLOWING 13 TESTS WILL CHECK DATA FORMATTING
                                                ;AND TRANSFER THROUGH THE TM02 WRAP AROUND MODES

                                                ;LOGIC TEST 42: WRAP 3, NRZ, NORMAL ODD *****

012260  012767  004270  166546  LT42:   MOV     #4270,WCS1      ;SET EXPT CS1
012266  012767  000100  166542          MOV     #100,WCS2       ;SET EXPT CS2
012274  012767  010600  166536          MOV     #10600,WDS      ;SET EXPT DS
012302  012767  000000  166532          MOV     #0,WER          ;SET EXPT ER
012310  012767  032555  166314          MOV     #MSLT42,EMADDR  ;SET HEADER
012316  012767  001700  166462          MOV     #1700,UDES      ;SET NRZ,NORMAL, ODD
012324  005067  166462          LT42A:  CLR     PATRN           ;POINT TO PATTERN 0
012330  012767  012336  166364          MOV     #LT42B,SCOLP    ;SET SCOPE ADDRESS
012336  004767  00?712          L142B:  JSR     PC,WAM3         ;GO DO WRAP 3
012342  005267  166444          INC     PATRN           ;BUMP PATTERN POINTER
012346  032767  000004  166436          BIT     #4,PATRN        ;SEE IF DONE
012354  001770                  BEQ     LT42B           ;IF NOT: BR
012356  004767  011514          JSR     PC,ITER         ;GO SEE IF ITERATIONS
012362  005067  166430          CLR     RDRVF           ;CLEAR REVENUE FLAG
012366  000167  170060          JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3297
3298                                                ;LOGIC TEST 43: WRAP 3, PE, NORMAL, ODD*****
3299
3300  012372  005767  166274          LT43:   TST     NRZOF           ;SEE IF NRZ ONLY
3301  012376  001402                          BEQ     LT43A           ;IF NOT: BR
3302  012400  000167  170046                  JMP     TSCD2           ;RETURN TO SCHED
3303  012404  012767  004270  166422  LT43A:  MOV     #4270,WCS1      ;SET EXPT CS1
3304  012412  012767  000100  166416          MOV     #100,WCS2       ;SET EXPT CS2
3305  012420  012767  010640  166412          MOV     #10640,WDS      ;SET EXPT DS
3306  012426  012767  000000  166406          MOV     #0,WER          ;SET EXPT WER
3307  012434  012767  032624  166170          MOV     #MSLT43,EMADDR  ;SET HEADER
3308  012442  012767  002300  166336          MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3309  012450  000167  177650                  JMP     LT42A           ;EXECUTE TEST SEQUENCE
```

```
3311
3312                                        ;LOGIC TEST 44: WRAP 2, NRZ, NORMAL, ODD*****
3313
3314  012454  012767  004260  166352  LT44:   MOV     #4260,WCS1      ;SET EXPT CS1
3315  012462  012767  000100  166346          MOV     #100,WCS2       ;SET EXPT CS2
3316  012470  012767  010600  166342          MOV     #10600,WDS      ;SET EXPT DS
3317  012476  012767  000000  166336          MOV     #0,WER          ;SET EXPT WER
3318  012504  012767  032672  166120          MOV     #MSLT44,EMADDR  ;SET HEADER
3319  012512  012767  001700  166266          MOV     #1700,UDES      ;SET TO NRZ,NORMAL, ODD
3320  012520  005067  166266          LT44A:  CLR     PATRN           ;POINT TO PATTERN 0
3321  012524  012767  012532  166170          MOV     #LT44B,SCOLP    ;SET SCOPE ADDRESS
3322  012532  004767  003452          LT44B:  JSR     PC,WAM2         ;GO DO WRAP 2
3323  012536  005267  166250                  INC     PATRN           ;BUMP POINTER
3324  012542  032767  000004  166242          BIT     #4,PATRN        ;SEE IF DONE
3325  012550  001770                          BEQ     LT44B           ;IF NOT: BR
3326  012552  004767  011320                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3327  012556  000167  167670                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3329
3330                                                ;LOGIC TEST 45: WRAP 2, PE, NORMAL, ODD*****
3331
3332  012562  005767  166104          LT45:   TST     NRZOF           ;SEE IF NRZ ONLY
3333  012566  001402                          BEQ     LT45A           ;IF NOT: BR
3334  012570  000167  167656                  JMP     TSCD2           ;RETURN TO SCHED
3335  012574  012767  004260  166232  LT45A:  MOV     #4260,WCS1      ;SET EXPT CS1
3336  012602  012767  000100  166226          MOV     #100,WCS2       ;SET EXPT CS2
3337  012610  012767  010640  166222          MOV     #10640,WDS      ;SET EXPT DS
3338  012616  012767  000000  166216          MOV     #0,WER          ;SET EXPT WER
3339  012624  012767  032741  166000          MOV     #MSLT45,EMADDR  ;SET HEADER
3340  012632  012767  002300  166146          MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3341  012640  000167  177654                  JMP     LT44A           ;GO EXECUTE TEST SEQUENCES
```

```
 3343
 3344                                          ;LOGIC TEST 46: WRAP 1, NRZ, NORMAL, ODD*****
 3345
 3346  012644  012767  004260  166162  LT46:   MOV     #4260,WCS1      ;SET EXPT CS1
 3347  012652  012767  000100  166156          MOV     #100,WCS2       ;SET EXPT CS2
 3348  012660  012767  010600  166152          MOV     #10600,WDS      ;SET EXPT DS
 3349  012666  012767  000000  166146          MOV     #0,WER          ;SET EXPT WER
 3350  012674  012767  033007  165730          MOV     #MSLT46,EMADDR  ;SET HEADER
 3351  012702  012767  001700  166076          MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
 3352  012710  005067  166076          LT46A:  CLR     PATRN           ;POINT TO PATTERN ZERO
 3353  012714  012767  012722  166000          MOV     #LT46B,SCOLP    ;SET SCOPE ADDRESS
 3354  012722  004767  003250          LT46B:  JSR     PC,WAM1         ;GO DO WRAP 1
 3355  012726  005267  166060                  INC     PATRN           ;BUMP POINTER
 3356  012732  032767  000004  166052          BIT     #4,PATRN        ;SEE IF DONE
 3357  012740  001770                          BEQ     LT46B           ;IF NOT: BR
 3358  012742  004767  011130                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
 3359  012746  000167  167500                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3361
3362                                        ;LOGIC TEST 47: WRAP 1, PE, NORMAL, ODD*****
3363
3364  012752  005767  165714        LT47:   TST     NRZOF           ;SEE IF NRZ ONLY
3365  012756  001402                        BEQ     LT47A           ;IF NOT: BR
3366  012760  000167  167466                JMP     TSCD2           ;RETURN TO SCHED
3367  012764  004767  007206        LT47A:  JSR     PC,PPGEN        ;GO GENERATE PRE/POSTAMBLE
3368  012770  012767  004260 166036        MOV     #4260,WCS1      ;SET EXPT CS1
3369  012776  012767  000100 166032        MOV     #100,WCS2       ;SET EXPT CS2
3370  013004  012767  010640 166026        MOV     #10640,WDS      ;SET EXPT DS
3371  013012  012767  000000 166022        MOV     #0,WER          ;SET EXPT WER
3372  013020  012767  033056 165604        MOV     #MSLT47,EMADDR  ;SET HEADER
3373  013026  012767  002300 165752        MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3374  013034  000167  177650                JMP     LT46A           ;GO EXECUTE TEST SEQUENCE
```

```
3376
3377                                        ;LOGIC TEST 50: WRAP 0, NRZ,NORMAL, ODD*****
3378
3379  013040  012767  144260  165766  LT50:   MOV     #144260,WCS1    ;SET EXPT CS1
3380  013046  012767  000100  165762          MOV     #100,WCS2       ;SET EXPT CS2
3381  013054  012767  150600  165756          MOV     #150600,WDS     ;SET EXPT DS
3382  013062  012767  000200  165752          MOV     #200,WER        ;SET EXPT ER
3383  013070  012767  033124  165534          MOV     #MSLT50,EMADDR  ;SET HEADER
3384  013076  012767  001700  165702          MOV     #1700,UDES      ;SET NRZ, NORMAL, ODD
3385  013104  005067  165702          LT50A:  CLR     PATRN           ;POINT TO PATTERN 0
3386  013110  012767  013116  165604          MOV     #LT50B,SCOLP    ;SET SCOPE ADDRESS
3387  013116  004767  003010          LT50B:  JSR     PC,WAM0         ;GO DO WRAP 0
3388  013122  005267  165664                  INC     PATRN           ;BUMP POINTER
3389  013126  032767  000004  165656          BIT     #4,PATRN        ;SEE IF DONE
3390  013134  001770                          BEQ     LT50B           ;IF NOT: BR
3391  013136  004767  010734                  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3392  013142  000167  167304                  JMP     TSCD2           ;RETURN TO SCHEDULAR
```

```
3394
3395                                                ;LOGIC TEST 51: WRAP 0, PE, NORMAL, ODD*****
3396
3397  013146  005767  165520          LT51:   TST     NRZOF           ;SEE IF NRZ ONLY
3398  013152  001402                  BEQ     LT51A           ;IF NOT: BR
3399  013154  000167  167272          JMP     TSCD2           ;RETURN TI SCHED
3400  013160  012767  004260  165646  LT51A:  MOV     #4260,WCS1      ;SET EXPT CS1
3401  013166  012767  000100  165642          MOV     #100,WCS2       ;SET EXPT CS2
3402  013174  012767  010640  165636          MOV     #10640,WDS      ;SET EXPT DS
3403  013202  012767  000000  165632          MOV     #0,WER          ;SET EXPT ER
3404  013210  012767  033173  165414          MOV     #MSLT51,EMADDR  ;SET HEADER
3405  013216  012767  002300  165562          MOV     #2300,UDES      ;SET PE, NORMAL, ODD
3406  013224  000167  177654                  JMP     LT50A           ;GO EXECUTE TEST SEQUENCE
```

```
3408
3409                                        ;LOGIC TEST 52: CORE DUMP WRITE, WAM2*******
3410
3411  013230  012767  004260  165576  LT52:   MOV     #4260,WCS1      ;SET EXPT CS1
3412  013236  012767  000100  165572          MOV     #100,WCS2       ;SET EXPT CS2
3413  013244  012767  010600  165566          MOV     #10600,WDS      ;SET EXPT DS
3414  013252  012767  000000  165562          MOV     #0,WER          ;SET EXPT ER
3415  013260  012767  033241  165344          MOV     #MSLT52,EMADDR  ;SET HEADER
3416  013266  012767  001720  165512          MOV     #1720,UDES      ;SET NRZ, CORE DUMP, ODD
3417  013274  005067  165512                  CLR     PATRN           ;POINT TO PATTERN 0
3418  013300  012767  013306  165414          MOV     #LT52A,SCOLP    ;SET SCOPE ADDRESS
3419  013306  004767  002676          LT52A:  JSR     PC,WAM2         ;GO DO WAM 2
3420  013312  022767  000002  165472          CMP     #2,PATRN        ;SEE IF DONE
3421  013320  001404                          BEQ     LT52X           ;IF SO: BR
3422  013322  012767  000002  165462          MOV     #2,PATRN        ;SELECT PATTERN 2
3423  013330  000766                          BR      LT52A           ;CONTINUE
3424  013332  004767  010540          LT52X:  JSR     PC,ITER         ;GO SEE IF ITERATIONS
3425  013336  000167  167110                  JMP     TSCD2           ;RETURN TO SCHEDULES
3426
```

```
3428
3429                                                    ;LOGIC TEST 53: CORE DUMP READ, WAM 3*****
3430
3431  013342  012767  004270  165464  LT53:   MOV     #4270,WCS1      ;SET EXPT CS1
3432  013350  012767  000100  165460          MOV     #100,WCS2       ;SET EXPT CS2
3433  013356  012767  010600  165454          MOV     #10600,WDS      ;SET EXPT DS
3434  013364  012767  000000  165450          MOV     #0,WER          ;SET EXPT ER
3435  013372  012767  033312  165232          MOV     #MSLT53,EMADDR  ;SET HEADER
3436  013400  012767  001720  165400          MOV     #1720,UDES      ;SELECT NRE, CORE DUMP, ODD
3437  013406  005067  165400                  CLR     PATRN           ;SELECT PATTERN 0
3438  013412  012767  013426  165302          MOV     #LT53A,SCOLP    ;SET SCOPE ADDRESS
3439  013420  012767  001070  165372          MOV     #WCDP0,RCDP     ;POINT TO PATTERN 0
3440  013426  004767  002622          LT53A:  JSR     PC,WAM3         ;GO DO WAM3
3441  013432  022767  000002  165352          CMP     #2,PATRN        ;SEE IF DONE
3442  013440  001407                          BEQ     LT53X           ;IF SO: BR
3443  013442  012767  000002  165342          MOV     #2,PATRN        ;SELECT PATTERN 2
3444  013450  012767  001056  165342          MOV     #WCDP2,RCDP     ;POINT TO PATTERN 2
3445  013456  000763                          BR      LT53A           ;CONTINUE
3446  013460  004767  010412          LT53X:  JSR     PC,ITER         ;GO SEE IF ITERATION
3447  013464  000167  166762                  JMP     TSCD2           ;RETURN TO SCHEDULE
```

```
 3449
 3450                                        ;LOGIC TEST 54: EVEN PARITY WRITE: WAM 1(M8903)*****
 3451
 3452  013470  012767  004260  165336  LT54:  MOV   #4260,WCS1       ;SET EXPT CS1
 3453  013476  012767  000100  165332         MOV   #100,WCS2        ;SET EXPT CS2
 3454  013504  012767  010600  165326         MOV   #10600,WDS       ;SET EXPT DS
 3455  013512  012767  000000  165322         MOV   #0,WER           ;SET EXPT ER
 3456  013520  012767  033362  165104         MOV   #MSLT54,EMADDR   ;SET HEADER
 3457  013526  012767  001710  165252         MOV   #1710,UDES       ;SET NRZ, NORMAL, EVEN
 3458  013534  000167  177150                 JMP   LT46A            ;GO EXECUTE WAM 1
```

```
 3460
 3461                                          ;LOGIC TEST 55: EVEN PARITY READ: WAM 0(M8903 M8904)*****
 3462
 3463  013540  012767  144260  165266  LT55:   MOV     #144260,WCS1    ;SET EXPT CS1
 3464  013546  012767  000100  165262          MOV     #100,WCS2       ;SET EXPT CS2
 3465  013554  012767  150600  165256          MOV     #150600,WDS     ;SET EXPT DS
 3466  013562  012767  000200  165252          MOV     #200,WER        ;SET EXPT ER
 3467  013570  012767  033443  165034          MOV     #MSLT55,EMADDR  ;SET HEADER
 3468  013576  012767  001710  165202          MOV     #1710,UDES      ;SET NRZ, NORMAL, EVEN
 3469  013604  000167  177274                  JMP     LT50A           ;GO DO WAM 0
```

```
3471
3472                                        ;LOGIC TEST 56: READ REVERSE: WAM 3(M8906)*****
3473
3474  013610  012767  004276  165216  LT56: MOV     #4276,WCS1       ;SET EXPT CS1
3475  013616  012767  000100  165212        MOV     #100,WCS2        ;SET EXPT CS2
3476  013624  012767  010640  165206        MOV     #10640,WDS       ;SET EXPT DS
3477  013632  012767  000000  165202        MOV     #0,WER           ;SET EXPT ER
3478  013640  012767  033522  164764        MOV     #MSLT56,EMADDR   ;SET HEADER
3479  013646  012767  002300  165132        MOV     #2300,UDES       ;SELECT PE,NORMAL,ODD
3480  013654  012767  000001  165134        MOV     #1,RDRVF         ;SET READ REVERSE FLAG
3481  013662  000167  176436                JMP     LT42A            ;GO DO WAM 3, REVERSE
3482
```

```
3484
3485                                    ;THE FOLLOWING SIX(6) TEST WILL REQUIRE TAPE MOVEMENT.  EACH
3486                                    ;TEST WILL PERFORM A TAPE WRITE WHILE IN A PARITICULAR MAINTENANCE
3487                                    ;MODE IN ORDER TO FORCE THE REMAINING ERROR CONDITIONS.
3488
3489                                    ;LOGIC TEST 57: CYCLIC REDUNDANCY ERROR(CRC)**********
3490
3491  013666  004767  001746        LT57:   JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3492  013672  012700  001000                MOV     #1000,R0
3493  013676  005300                LT57PS: DEC     R0
3494  013700  001376                        BNE     LT57PS          ;PAUSE
3495  013702  012767  033567  164722        MOV     #MSLT57,EMADDR
3496  013710  012767  013716  165004        MOV     #LT57IT,SCOLP   ;SET SCOPE ADDRESS
3497  013716  004767  010236        LT57IT: JSR     PC,INIT1        ;INIT SELECT DRIVE+SLAVE
3498  013722  052777  001700  164612        BIS     #1700,@TC       ;SET NRZ + NORMAL FORMAT
3499  013730  012777  177770  164554        MOV     #-10,@WC
3500  013736  012777  177760  164552        MOV     #-20,@FC        ;SET FC=20
3501  013744  012777  035054  164542        MOV     #WDATA,@BA      ;SET BUS ADDRESS
3502  013752  012777  000007  164554        MOV     #7,@MR          ;SET MM CODE
3503  013760  012777  000061  164522        MOV     #61,@C1         ;LOAD WRITE+GO
3504  013766  005000                        CLR     R0
3505  013770  032777  000200  164524  LT57A: BIT     #200,@DS        ;SEE IF DRY=1
3506  013776  001002                        BNE     LT57B           ;IF SO: BR
3507  014000  005300                        DEC     R0
3508  014002  001372                        BNE     LT57A           ;DELAY
3509  014004  022777  000200  164512  LT57B: CMP     #200,@ER        ;SEE IF LRC ERROR ONLY
3510  014012  001007                        BNE     LT57B1          ;IF NOT: BR
3511  014014  017702  164510                MOV     @CC,R2          ;GET CHECK CHAR
3512  014020  042702  177000                BIC     #177000,R2      ;MASK CRC
3513  014024  022702  000777                CMP     #777,R2         ;SEE IF SETUP CRC IS CORRECT
3514  014030  001410                        BEQ     LT57B2          ;IF SO: BR
3515  014032  004767  006406        LT57B1: JSR     PC,LTGER3       ;ELSE PRINT ERROR SETUP
3516  014036  012704  030223                MOV     #MSG55,R4
3517  014042  004767  010454                JSR     PC,TTOUT        ;PRINT SETUP ERROR MSG
3518  014046  000167  166400                JMP     TSCD2           ;RETURN TO SCHED
3519  014052  004767  010102        LT57B2: JSR     PC,INIT1        ;GO INIT
3520  014056  052777  000300  164456        BIS     #300,@TC        ;SET FORMAT+NRZ
3521  014064  012777  177770  164420        MOV     #-10,@WC        ;SET WC
3522  014072  012777  177760  164416        MOV     #-20,@FC        ;SET FC
3523  014100  012777  035054  164406        MOV     #WDATA,@BA      ;SET BA
3524  014106  012777  000021  164420        MOV     #21,@MR         ;SET MM
3525  014114  012777  000061  164366        MOV     #61,@C1         ;LOAD WRITE+GO
3526  014122  005000                        CLR     R0
3527  014124  032777  000200  164370  LT57C: BIT     #200,@DS        ;SEE IF DRY
3528  014132  001002                        BNE     LT57D           ;IF SO: BR
3529  014134  005300                        DEC     R0
3530  014136  001372                        BNE     LT57C           ;AWAIT DRY
3531  014140  005777  164360        LT57D:  TST     @ER             ;SEE IF CRC=1
3532  014144  100411                        BMI     LT57E           ;IF SO: BR
3533  014146  012767  035022  164526        MOV     #TMS36,ERADD    ;SET ERROR CODE
3534  014154  012767  000001  164544        MOV     #1,EXFL
3535  014162  004767  006270                JSR     PC,LTGER0       ;GO PRINT ERROR
3536  014166  000410                        BR      LT57X
3537  014170  012701  100200        LT57E:  MOV     #100200,R1      ;SET EXPT ERROR BITS
3538  014174  017702  164324                MOV     @ER,R2          ;GET ERROR REGISTER
3539  014200  020102                        CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
```

```
  3540  014202  001402                    BEQ     LT57X           ;IF NOT: BR
  3541  014204  004767  006234            JSR     PC,LTGER3       ;ELSE PRINT ERROR
  3542  014210  004767  007662  LT57X:    JSR     PC,ITER         ;DO ITERATIONS
  3543  014214  004767  006714            JSR     PC,DRVCLR
  3544  014220  000167  166226            JMP     TSCD2           ;RETURN TO SCHED
```

```
3546
3547                                        ;LOGIC TEST 60: LONGITUALINAL REDUNDANCY(LRC)**********
3548
3549  014224  004767  001410          LT60:   JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3550  014230  012767  014244  164464          MOV     #LT60IT,SCOLP   ;SET SCOPE ADDRESS
3551  014236  012767  033623  164366          MOV     #MSLT60,EMADDR
3552  014244  004767  007710          LT60IT: JSR     PC,INIT1        ;INIT, SELECT DRIVE+SLAVE
3553  014250  052777  000300  164264          BIS     #300,@TC        ;SET FORMAT+NRZ
3554  014256  012777  000023  164250          MOV     #23,@MR         ;SET MM
3555  014264  012777  177770  164220          MOV     #-10,@WC        ;SET WC
3556  014272  012777  177760  164216          MOV     #-20,@FC        ;SET FC
3557  014300  012777  035054  164206          MOV     #WDATA,@BA      ;SET BA
3558  014306  012777  000061  164174          MOV     #61,@C1         ;LOAD WRITE+GO
3559  014314  005000                          CLR     R0
3560  014316  032777  000200  164176  LT60C:  BIT     #200,@DS        ;SEE IF DRY
3561  014324  001002                          BNE     LT60D           ;IF SO: BR
3562  014326  005300                          DEC     R0
3563  014330  001372                          BNE     LT60C           ;AWAIT DRY
3564  014332  032777  000200  164164  LT60D:  BIT     #200,@ER        ;SEE IF LRC=1
3565  014340  001011                          BNE     LT60E           ;IF SO: BR
3566  014342  012767  034677  164332          MOV     #TMS26,ERADD    ;SET ERROR CODE
3567  014350  012767  000001  164350          MOV     #1,EXFL
3568  014356  004767  006074                  JSR     PC,LTGER0       ;GO PRINT
3569  014362  000425                          BR      LT60X
3570  014364  017702  164144          LT60E:  MOV     @MR,R2
3571  014370  042702  000177                  BIC     #177,R2         ;MASK LRC
3572  014374  012701  157600                  MOV     #157600,R1      ;SET EXPT LRC
3573  014400  020102                          CMP     R1,R2           ;SEE IF EXPT = RCVD
3574  014402  001405                          BEQ     LT60F           ;IF SO: BR
3575  014404  012767  030200  164270          MOV     #MSG53,ERADD    ;SET ERROR CODE
3576  014412  004767  007206                  JSR     PC,LTGER1       ;PRINT ERROR
3577  014416  017702  164102          LT60F:  MOV     @ER,R2          ;GET ERROR REGISTER
3578  014422  012701  000200                  MOV     #200,R1         ;SET EXPT ERROR BITS
3579  014426  020102                          CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3580  014430  001402                          BEQ     LT60X           ;IF NOT: BR
3581  014432  004767  006006                  JSR     PC,LTGER3       ;ELSE PRINT ERROR
3582  014436  004767  007434          LT60X:  JSR     PC,ITER
3583  014442  004767  006466                  JSR     PC,DRVCLR
3584  014446  000167  166000                  JMP     TSCD2           ;RETURN TO SCHED
```

```
3586
3587                                        ;LOGIC TEST 61: PE CORRECTABLE DATA (CORR)**********
3588
3589  014452  005767  164214        LT61:   TST     NRZOF           ;SEE IF NRZ ONLY
3590  014456  001122                        BNE     LT61XX          ;IF SO: BR
3591  014460  004767  001154                JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3592  014464  012767  033657  164140        MOV     #MSLT61,EMADDR
3593  014472  012767  014500  164222        MOV     #LT61IT,SCOLP
3594  014500  004767  007454        LT61IT: JSR     PC,INIT1        ;INIT, SELCT DRIVE+SLAVE
3595  014504  052777  002300  164030        BIS     #2300,@TC       ;SET PE,NORMAL
3596  014512  012777  177600  163772        MOV     #-200,@WC       ;SET WC=200
3597  014520  012777  177400  163770        MOV     #-400,@FC       ;SET FC=400
3598  014526  012777  035054  163760        MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
3599  014534  012777  000061  163746        MOV     #61,@C1         ;LOAD WRITE+GO
3600  014542  005000                        CLR     R0
3601  014544  005777  163746        LT61A:  TST     @FC             ;SEE IF FC=0
3602  014550  001402                        BEQ     LT61A1          ;IF SO: BR
3603  014552  005300                        DEC     R0
3604  014554  001373                        BNE     LT61A           ;DELAY FOR FC=0
3605  014556  012777  000021  163750 LT61A1: MOV     #21,@MR         ;SET MAINT CODE
3606  014564  005000                        CLR     R0
3607  014566  032777  000200  163726 LT61B:  BIT     #200,@DS        ;SEE IF DRY IS SET
3608  014574  001002                        BNE     LT61C           ;IF SO: BR
3609  014576  005300                        DEC     R0
3610  014600  001372                        BNE     LT61B           ;AWAIT DRY
3611  014602  005777  163716        LT61C:  TST     @ER             ;SEE IF CORR=1
3612  014606  100410                        BMI     LT61D           ;IF SO: BR
3613  014610  012767  035013  164064        MOV     #TMS35,ERADD    ;SET ERROR CODE
3614  014616  012767  000001  164102        MOV     #1,EXFL
3615  014624  004767  005626                JSR     PC,LTGER0       ;GO PRINT ERROR
3616  014630  000240        LT61D:  NOP
3617  014632  000240        LT61E:  NOP
3618  014634  122777  000002  163666        CMPB    #2,@CC          ;SEE IF DEAD TRACK BIT 1
3619  014642  001414                        BEQ     LT61F           ;IF SO: BR
3620  014644  117702  163660                MOVB    @CC,R2          ;SAVE RCVD
3621  014650  042702  177000                BIC     #177000,R2      ;MASK OUT CRC
3622  014654  112701  000002                MOVB    #2,R1           ;SAVE EXPT
3623  014660  012767  027573  164014        MOV     #MSG42,ERADD    ;SET ERROR CODE
3624  014666  004767  006732                JSR     PC,LTGER1       ;GO PRINT ERROR
3625  014672  000410                        BR      LT61X
3626  014674  017702  163624        LT61F:  MOV     @ER,R2          ;GET ERROR REGISTER
3627  014700  012701  100000                MOV     #100000,R1      ;SET EXPT ERROR BITS
3628  014704  020102                        CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3629  014706  001402                        BEQ     LT61X           ;IF NOT: BR
3630  014710  004767  005530                JSR     PC,LTGER3       ;ELSE PRINT ERROR
3631  014714  004767  007156        LT61X:  JSR     PC,ITER
3632  014720  004767  006210                JSR     PC,DRVCLR
3633  014724  000167  165522        LT61XX: JMP     TSCD2           ;RETURN TO SCHED
3634
```

```
3636
3637                                        ;LOGIC TEST 62: PE INCORRECTABLE DATA(INC,)***********
3638
3639  014730  005767  163736        LT62:   TST     NRZOF           ;SEE IF NRZ ONLY
3640  014734  001120                        BNE     LT62XX          ;IF SO: BR
3641  014736  004767  000676                JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3642  014742  012767  033737  163662        MOV     #MSLT62,EMADDR
3643  014750  012767  014756  163744        MOV     #LT62IT,SCOLP
3644  014756  004767  007176        LT62IT: JSR     PC,INITI        ;INIT SELECT DRIVE SLAVE
3645  014762  012777  177600  163522        MOV     #-200,@WC       ;SET WC=200
3646  014770  012777  177400  163520        MOV     #-400,@FC       ;SET FC=400
3647  014776  012777  035054  163510        MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
3648  015004  052777  002300  163530        BIS     #2300,@TC       ;SET TO PE,NORMAL
3649  015012  012777  000061  163470        MOV     #61,@C1         ;LOAD WRITE+GO
3650  015020  005000                        CLR     R0
3651  015022  005777  163470        LT62E:  TST     @FC             ;AWAIT FC=0
3652  015026  001402                        BEQ     LT62E1
3653  015030  005300                        DEC     R0
3654  015032  001373                        BNE     LT62E           ;AWAIT FC=0
3655  015034  012777  000023  163472 LT62E1: MOV     #23,@MR         ;SET MAINT CODE
3656  015042  005000                        CLR     R0
3657  015044  032777  000200  163450 LT62A:  BIT     #200,@DS        ;SEE IF DRY IS SET
3658  015052  001002                        BNE     LT62B           ;IF SO: BR
3659  015054  005300                        DEC     R0
3660  015056  001372                        BNE     LT62A           ;AWAIT DRY
3661  015060  032777  000100  163436 LT62B:  BIT     #100,@ER        ;SEE IF INC=1
3662  015066  001010                        BNE     LT62D           ;IF SO:BR
3663  015070  012767  034655  163604        MOV     #TMS23,ERADD    ;SET ERROR CODE
3664  015076  012767  000001  163622        MOV     #1,EXFL
3665  015104  004767  005346                JSR     PC,LTGER0       ;GO PRINT ERROR
3666  015110  017702  163414        LT62D:  MOV     @CC,R2          ;GET CHECK CHAR
3667  015114  042702  177000                BIC     #177000,R2      ;MASK CHECK CHAR
3668  015120  012701  000046                MOV     #46,R1          ;SET EXPT CK
3669  015124  020102                        CMP     R1,R2           ;SEE IF EXPT = RCVD
3670  015126  001405                        BEQ     LT62F           ;IF SO: BR
3671  015130  012767  030212  163544        MOV     #MSG54,ERADD
3672  015136  004767  006462                JSR     PC,LTGER1       ;ELSE GO PRINT ERROR
3673  015142  017702  163356        LT62F:  MOV     @ER,R2
3674  015146  042702  120600                BIC     #120600,R2      ;MASK NSG ,OPI AND CORR
3675  015152  012701  000100                MOV     #100,R1         ;SET EXPT ERROR BITS
3676  015156  020102                        CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3677  015160  001402                        BEQ     LT62X           ;IF NOT: BR
3678  015162  004767  005256                JSR     PC,LTGER3       ;ELSE PRINT ERROR
3679  015166  004767  006704        LT62X:  JSR     PC,ITER
3680  015172  004767  005736                JSR     PC,DRVCLR
3681  015176  000167  165250        LT62XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3683
3684                                        ;LOGIC TEST 63: PE FORMAT ERROR(PEF,NSG)**********
3685
3686  015202  005767  163464        LT63:   TST     NRZOF           ;SEE IF NRZ ONLY
3687  015206  001116                        BNE     LT63XX          ;IF SO: BR
3688  015210  004767  000424                JSR     PC,STATIC       ;GO SEE IF STATIC ONLY
3689  015214  012767  034021  163410        MOV     #MSLT63,EMADDR  ;SET HEADER
3690  015222  012767  015230  163472        MOV     #LT63IT,SCOLP   ;SET SCOPE ADDRESS
3691  015230  004767  006724        LT63IT: JSR     PC,INIT1        ;INITIALIZE
3692  015234  012777  177770  163250        MOV     #-10,@WC        ;SET WC=10
3693  015242  012777  177760  163246        MOV     #-20,@FC        ;SET FC=20
3694  015250  052777  002300  163264        BIS     #2300,@TC       ;SET TO PE,NORMAL
3695  015256  012777  035054  163230        MOV     #WDATA,@BA      ;SET BA=START OF WRITE BUFFER
3696  015264  012777  000061  163216        MOV     #61,@C1         ;LOAD WRITE+GO
3697  015272  005777  163220        LT63A:  TST     @FC
3698  015276  001375                        BNE     LT63A           ;AWAIT FC 0
3699  015300  032777  000100  163226  1$:   BIT     #100,@MR
3700  015306  001774                        BEQ     1$              ;TIME DELAY
3701  015310  032777  000100  163216  2$:   BIT     #100,@MR
3702  015316  001374                        BNE     2$
3703  015320  032777  000100  163206  3$:   BIT     #100,@MR
3704  015326  001774                        BEQ     3$
3705  015330  012777  000027  163176        MOV     #27,@MR         ;SET MM CODE TO KILL PEF
3706  015336  012700  004000                MOV     #4000,R0
3707  015342  032777  000200  163152  LT63B: BIT     #200,@DS        ;SEE IF DRY SET
3708  015350  001002                        BNE     LT63C           ;IF SO: BR
3709  015352  005300                        DEC     R0
3710  015354  001372                        BNE     LT63B           ;AWAIT DRY
3711  015356  032777  000200  163140  LT63C: BIT     #200,@ER        ;SEE IF PEF SET
3712  015364  001011                        BNE     LT63D           ;IF SO: BR
3713  015366  012767  034671  163306        MOV     #TMS25,ERADD    ;SET ERROR TAG
3714  015374  012767  000001  163324        MOV     #1,EXFL         ;SET EXPT FLAG
3715  015402  004767  005050                JSR     PC,LTGER0       ;GO PRINT ERROR
3716  015406  000412                        BR      LT63X
3717  015410  017702  163110        LT63D:  MOV     @ER,R2          ;GET ERROR REGISTER
3718  015414  042702  120100                BIC     #120100,R2      ;;CLEAR KNOWN BITS
3719  015420  012701  000600                MOV     #600,R1         ;SET EXPT ERROR BITS
3720  015424  020102                        CMP     R1,R2           ;SEE IF UNEXPECTED ERRORS
3721  015426  001402                        BEQ     LT63X           ;IF NOT: BR
3722  015430  004767  005010                JSR     PC,LTGER3       ;ELSE PRINT ERROR
3723  015434  004767  006436        LT63X:  JSR     PC,ITER
3724  015440  004767  005470                JSR     PC,DRVCLR
3725  015444  000167  165002        LT63XX: JMP     TSCD2           ;RETURN TO SCHED
```

```
3727                                            ;LOGIC TEST 64: FRAME COUNT OVERFLOW(M8905)*******
3728
3729  015450  012767  034055  163154  LT64:     MOV     #MSLT64,EMADDR  ;SET TEST HEADER
3730  015456  012767  015464  163236            MOV     #LT64IT,SCOLP   ;SET SCOPE ADDRESS
3731  015464  004767  006470          LT64IT:   JSR     PC,INIT1        ;GO INIT
3732  015470  012777  177770  163014            MOV     #-10,@WC        ;SET WC = 10
3733  015476  012777  177760  163012            MOV     #-20,@FC        ;SET FC = 20
3734  015504  052777  001700  163030            BIS     #1700,@TC       ;SET TO NRZ, NORMAL, ODD
3735  015512  012777  035054  162774            MOV     #WDATA,@BA      ;SET BUS ADDRESS
3736  015520  012777  000013  163006            MOV     #13,@MR         ;SET WRAP 2
3737  015526  012777  000061  162754            MOV     #61,@C1         ;LOAD WRITE+GO
3738  015534  012700  040000                    MOV     #40000,R0
3739  015540  005777  162776          LT64A:    TST     @TC             ;SEE IF ALPHA
3740  015544  100002                            BPL     LT64B           ;IF SO: BR
3741  015546  005300                            DEC     R0
3742  015550  001373                            BNE     LT64A           ;AWAIT ALPHA
3743  015552  012700  000020          LT64B:    MOV     #20,R0          ;SET CLK CNT
3744  015556  052777  000040  162750  LT64C:    BIS     #40,@MR
3745  015564  042777  000040  162742            BIC     #40,@MR         ;CLOCK MR
3746  015572  005300                            DEC     R0
3747  015574  001370                            BNE     LT64C           ;IF NOT DONE ALL: BR
3748  015576  017702  162714                    MOV     @FC,R2
3749  015602  005001                            CLR     R1              ;SET TEST WORD
3750  015604  020102                            CMP     R1,R2           ;SEE IF EXPT = RCVD
3751  015606  001410                            BEQ     LT64X           ;IF SO: BR
3752  015610  012767  027046  163064            MOV     #MSG19,ERADD    ;SET ERROR CODE
3753  015616  012767  000001  163102            MOV     #1,EXFL         ;SET EXPT FLAG
3754  015624  004767  005774                    JSR     PC,LTGER1       ;GO PRINT ERROR
3755  015630  004767  006242          LT64X:    JSR     PC,ITER         ;GO SEE IF ITERATIONS
3756  015634  000167  164612                    JMP     TSCD2           ;RETURN TO SCHEDULAR
3757
3758                                            ;STATIC TESTS ONLY SUBROUTINE*********
3759
3760  015640  005767  163104  STATIC:   TST     STFLG           ;SEE IF SINGLE TEST ONLY
3761  015644  001006                    BNE     STATX           ;IF SO: BR
3762  015646  005767  163150            TST     STATC           ;SEE IF STATIC ONLY
3763  015652  001403                    BEQ     STATX           ;IF NOT: BR
3764  015654  005726                    TST     (SP)+           ;RESET STACK
3765  015656  000167  164570            JMP     TSCD2           ;RETURN TO SCHEDULAR
3766  015662  000207            STATX:  RTS     PC              ;RETURN TO TEST
3767
```

```
3769
3770                                    ;*********************************************************
3771                                    ;DATA SETUP ROUTINE:
3772                                    ;
3773                                    ;THIS ROUTINE IS USED TO GENERATE THE DATA PATTERNS
3774                                    ;USED BY THE WRAP AROUND TESTS (LT50-LT64).
3775                                    ;*********************************************************
3776
3777  015664  005767  163060       DSUP:  TST     STFLG           ;SEE IF SINGLE TEST
3778  015670  001431                       BEQ     DS0             ;IF NOT: BR
3779  015672  032777  000100  162672       BIT     #100,@SWR       ;SEE IF SELECT PATTERN
3780  015700  001425                       BEQ     DS0             ;IF NOT: BR
3781  015702  012704  035472               MOV     #WMSG3,R4
3782  015706  004767  006610               JSR     PC,TTOUT        ;REQUEST PATTERN NUMBER
3783  015712  016703  163074               MOV     PATRN,R3
3784  015716  004767  006742               JSR     PC,OCTP         ;PRINT PATTERN NUMBER
3785  015722  012705  001012               MOV     #PATRN,R5       ;GET ADDRESS OF PATRN ENTRY
3786  015726  012701  000001               MOV     #1,R1           ;SET SIZE OF ENTRY
3787  015732  012702  000003               MOV     #3,R2           ;SET UPPER LIMIT
3788  015736  012703  000000               MOV     #0,R3           ;SET LOWER LIMIT
3789  015742  004767  006316               JSR     PC,TTR          ;GO GET PATTERN NUMBER
3790  015746  012767  000001  163034       MOV     #1,WPGFL        ;SET FLAG
3791  015754  012703  036402       DS0:    MOV     #WBUFF,R3       ;R3 = ADDRS OF WRITE BUFFER
3792  015760  016701  163026               MOV     PATRN,R1        ;R1 = PATTERN SELECTOR
3793  015764  062701  000001               ADD     #1,R1           ;BUMP POINTER
3794  015770  000241                       CLC
3795  015772  006101                       ROL     R1              ;MAKE PATTERN SELECTOR EVEN
3796  015774  000171  001044               JMP     @DATBL(R1)      ;GO GENERATE PATTERN
3797  016000  032777  010000  162530  DS1: BIT     #10000,@DT      ;SEE IF SEVEN TRACK
3798  016006  001410                       BEQ     DS3             ;IF NOT: BR
3799  016010  012702  000202               MOV     #202,R2         ;SET BUFFER SIZE
3800  016014  012701  036402               MOV     #WBUFF,R1       ;SET START OF BUFFER
3801  016020  042721  140300       DS2:    BIC     #140300,(R1)+   ;MASK FOR 7 CH
3802  016024  005302                       DEC     R2              ;SEE IF DONE
3803  016026  001374                       BNE     DS2             ;IF NOT: BR
3804  016030  012702  000202       DS3:    MOV     #202,R2         ;R2=BUFFER SIZE +2
3805  016034  012701  037014               MOV     #RBUFF,R1       ;R1=READ DATA START
3806  016040  005021               DS4:    CLR     (R1)+           ;CLEAR BUFFER
3807  016042  005302                       DEC     R2              ;SEE IF DONE ALL
3808  016044  001375                       BNE     DS4             ;IF NOT: BR
3809  016046  000207                       RTS     PC              ;EXIT
3810
3811                                    ;ALL ONES**********
3812
3813  016050  012701  177777       DAT1:   MOV     #-1,R1          ;R1=DATA
3814  016054  012702  000202       DAT1A:  MOV     #202,R2         ;R2=WORD COUNT +2
3815  016060  010123               DAT1B:  MOV     R1,(R3)+        ;LOAD BUFFER
3816  016062  005302                       DEC     R2              ;SEE IF DONE
3817  016064  001375                       BNE     DAT1B           ;IF NOT: BR
3818  016066  000167  177706               JMP     DS1             ;RETURN
3819
```

```
3821
3822                                        ;ALL ZEROS**********
3823
3824  016072  005001              DAT2:     CLR     R1              ;R1=DATA
3825  016074  000167  177754              JMP     DAT1A           ;LOAD BUFFER
3826
3827                                        ;ONE/ZERO IN ALTERNATING CHARACTERS**********
3828
3829  016100  012701  125125      DAT3:     MOV     #125125,R1      ;R1=DATA
3830  016104  000167  177744              JMP     DAT1A           ;LOAD BUFFER
3831
3832                                        ;ALL BITS 0-377**********
3833
3834  016110  005001              DAT4:     CLR     R1              ;R1=STARTING DATA
3835  016112  012702  000404              MOV     #404,R2         ;R2=CHARACTER COUNT
3836  016116  110123              DAT4A:    MOVB    R1,(R3)+        ;LOAD BUFFER
3837  016120  105201                        INCB    R1              ;BUMP DATA
3838  016122  005302                        DEC     R2              ;SEE IF DONE
3839  016124  001374                        BNE     DAT4A           ;IF NOT: BR
3840  016126  000167  177646              JMP     DS1             ;RETURN
3841
```

```
3843
3844                                        ;WRAP AROUND MODE 0 GLOBAL*****
3845
3846  016132  012767  000006  162620  WAM0:   MOV     #6,WAM          ;SET WAM NUMBER
3847  016140  012767  000060  162614  WAM01:  MOV     #60,FUN
3848  016146  005067  162612                  CLR     DATC
3849  016152  012767  036402  162610          MOV     #WBUFF,DATAD    ;SET BUFFER ADDRESS
3850  016160  012767  037014  162604          MOV     #RBUFF,RDAD     ;SET POINTER TO READ BUFFER
3851  016166  004767  000170                  JSR     PC,SETUP        ;GO SET UP
3852  016172  000167  000516                  JMP     EXEC
3853
3854                                        ;WRAP AROUND MODE 1 WRITE BUFFER**********
3855
3856  016176  012767  000010  162554  WAM1:   MOV     #10,WAM
3857  016204  000167  177730                  JMP     WAM01
3858
3859                                        ;WRAP AROUND MODE 2 BIT FIDDLER WRITE**********
3860
3861  016210  012767  000012  162542  WAM2:   MOV     #12,WAM
3862  016216  012767  000060  162536          MOV     #60,FUN
3863  016224  005067  162534                  CLR     DATC
3864  016230  012767  036402  162532          MOV     #WBUFF,DATAD
3865  016236  012767  037014  162526          MOV     #RBUFF,RDAD
3866  016244  004767  000112          WAM2A:  JSR     PC,SETUP
3867  016250  000167  000440                  JMP     EXEC
3868
3869                                        ;WRAP AROUND MODE 3 BIT FIDDLER READ**********
3870
3871  016254  012767  000014  162476  WAM3:   MOV     #14,WAM         ;SET WAM NUMBER
3872  016262  012767  000070  162472          MOV     #70,FUN         ;SET FUNCTION
3873  016270  012767  037014  162472          MOV     #RBUFF,DATAD    ;SET BUFFER ADDRESS
3874  016276  012767  036402  162462          MOV     #WBUFF,WTAD     ;SET POINTER TO WRITE BUFFER
3875  016304  005767  162506                  TST     RDRVF
3876  016310  001411                          BEQ     WAM3A
3877  016312  062767  000376  162450          ADD     #376,DATAD
3878  016320  062767  000377  162440          ADD     #377,WTAD
3879  016326  012767  000076  162426          MOV     #76,FUN         ;SET READ REVERSE CODE
3880  016334  032767  000020  162444  WAM3A:  BIT     #20,UDES
3881  016342  001403                          BEQ     WAM3B
3882  016344  016767  162450  162414          MOV     RCDP,WTAD
3883  016352  004767  000004          WAM3B:  JSR     PC,SETUP        ;GO SET UP
3884  016356  000167  000332                  JMP     EXEC            ;GO EXECUTE
3885
```

```
3887                                                ;REGISTER SETUP ROUTINE*****
3888
3889  016362  005767  162362          SETUP:  TST     STFLG           ;SEE IF SINGLE TEST
3890  016366  001403                          BEQ     SET0            ;IF NOT: BR
3891  016370  005767  162414                  TST     WPGFL           ;SEE IF HAVE SELECTED PATTERN
3892  016374  001002                          BNE     SET1            ;IF SO: BR
3893  016376  004767  177262          SET0:   JSR     PC,DSUP         ;GO DO DATA SETUP
3894  016402  004767  005552          SET1:   JSR     PC,INIT1        ;GO INIT SELECT DRIVE, SLAVE
3895  016406  004767  000656                  JSR     PC,BOTT         ;GO ASSURE NOT AT BOT
3896  016412  012777  177400  162076          MOV     #-400,@FC       ;SET FC=WCX2
3897  016420  032767  000020  162360          BIT     #20,UDES        ;SEE IF CORE DUMP
3898  016426  001403                          BEQ     SET2            ;IF NOT: BR
3899  016430  012777  177000  162060          MOV     #-1000,@FC      ;SET FC=WCX4
3900  016436  012777  177600  162046  SET2:   MOV     #-200,@WC       ;SET WC
3901  016444  016777  162320  162042          MOV     DATAD,@BA       ;SET BUS ADDRESS
3902  016452  032777  010000  162040          BIT     #10000,@CS      ;ASSURE DRIVE THERE
3903  016460  001420                          BEQ     SP1             ;IF SO: BR
3904  016462  032777  020000  162102          BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
3905  016470  001004                          BNE     SP01            ;IF NOT: BR
3906  016472  012704  035513                  MOV     #WMSG4,R4
3907  016476  004767  006020                  JSR     PC,TTOUT        ;PRINT NON-EXISTANT DRIVE
3908  016502  032777  100000  162062  SP01:   BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
3909  016510  001402                          BEQ     SP0             ;IF NOT: BR
3910  016512  004767  007122                  JSR     PC,STOP
3911  016516  000167  177660          SP0:    JMP     SET1            ;RESETUP
3912  016522  022767  000014  162230  SP1:    CMP     #14,WAM         ;SEE IF WAM 3
3913  016530  001026                          BNE     SP1B            ;IF NOT: BR
3914  016532  117767  162230  162224          MOVB    @WTAD,DATC      ;GET FIRST CHAR
3915  016540  042767  177400  162216          BIC     #177400,DATC
3916  016546  000367  162212                  SWAB    DATC
3917  016552  005767  162240                  TST     RDRVF           ;SEE IF READ REVERSE
3918  016556  001403                          BEQ     SP1A            ;IF NOT: BR
3919  016560  005367  162202                  DEC     WTAD            ;DECREMENT POINTER
3920  016564  000410                          BR      SP1B
3921  016566  005267  162174          SP1A:   INC     WTAD            ;BUMP POINTER
3922  016572  032767  000020  162206          BIT     #20,UDES        ;SEE IF CORE DUMP
3923  016600  001402                          BEQ     SP1B            ;IF NOT: BR
3924  016602  005267  162160                  INC     WTAD            ;BUMP POINTER AGAIN
3925  016606  056777  162174  161726  SP1B:   BIS     UDES,@TC        ;SET UNIT DESCRIPTION (DEN,PAR,FMT)
3926  016614  052777  000001  161712          BIS     #1,@MR          ;SET MAINT MODE
3927  016622  056777  162132  161704          BIS     WAM,@MR         ;SET WAM
3928  016630  056777  162130  161676          BIS     DATC,@MR        ;SET DATA
3929  016636  016777  162120  161644          MOV     FUN,@C1         ;SET FUNCTION
3930  016644  032777  040000  161650          BIT     #40000,@DS      ;ASSURE NO ERROR
3931  016652  001001                          BNE     SP3             ;IF NOT: BR
3932  016654  000207                          RTS     PC              ;RETURN
3933  016656  032777  020000  161706  SP3:    BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
3934  016664  001004                          BNE     SP4             ;IF NOT: BR
3935  016666  012704  035454                  MOV     #WMSG2,R4
3936  016672  004767  005624                  JSR     PC,TTOUT        ;PRINT SETUP ERROR
3937  016676  032777  100000  161666  SP4:    BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
3938  016704  001402                          BEQ     SP5             ;IF NOT: BR
3939  016706  004767  006726                  JSR     PC,STOP
3940  016712  000207                  SP5:    RTS     PC              ;RETURN
```

```
3942                                                ;EXECUTE WAM ROUTINE*****
3943
3944  016714  032777  000040  161612  EXEC:   BIT     #40,@MR
3945  016722  001403                          BEQ     EX0             ;ASSURE MAINT CLOCK IS ZERO
3946  016724  042777  000040  161602          BIC     #40,@MR         ;IF NOT: CLEAR IT
3947  016732  022767  000010  162020  EX0:    CMP     #10,WAM         ;SEE IF WAM 1 OR 2 OR 3
3948  016740  003402                          BLE     EX1             ;IF SO: BR
3949  016742  000167  000364                  JMP     EXW2            ;GO DO WAM 0
3950  016746  052777  000001  161534  EX1:    BIS     #1,@C1          ;SET GO BIT
3951  016754  005000                          CLR     R0
3952  016756  012701  000002                  MOV     #2,R1           ;SET DELAY
3953  016762  032777  100000  161552  EX1A:   BIT     #100000,@TC     ;SEE IF ALPHA
3954  016770  001404                          BEQ     EX2             ;IF SO: BR
3955  016772  005300                          DEC     R0
3956  016774  001372                          BNE     EX1A            ;AWAIT ALPHA
3957  016776  005301                          DEC     R1
3958  017000  001370                          BNE     EX1A
3959  017002  005077  161562          EX2:    CLR     @PSW
3960  017006  012701  000400                  MOV     #400,R1         ;SET NUMBER OF CLKS
3961  017012  032767  000020  161766          BIT     #20,UDES        ;SEE IF CORE DUMP
3962  017020  001402                          BEQ     EX3             ;IF NOT: BR
3963  017022  012701  001000                  MOV     #1000,R1        ;SET CLOCKS LWCX4
3964  017026  022767  000014  161724  EX3:    CMP     #14,WAM         ;SEE IF WAM 3
3965  017034  001413                          BEQ     EX5A            ;IF SO: BR
3966  017036  032767  002000  161742          BIT     #2000,UDES      ;SEE IF PE
3967  017044  001405                          BEQ     EX5             ;IF NOT PE: BR
3968  017046  000241                          CLC
3969  017050  006101                          ROL     R1
3970  017052  062701  000246                  ADD     #246,R1         ;SET TO ALLOW FOR PRE/POSTAMBLE
3971  017056  000402                          BR      EX5A
3972  017060  062701  000010          EX5:    ADD     #10,R1          ;ADD CLOCKS FOR CRC AND LRC
3973  017064  022767  000014  161666  EX5A:   CMP     #14,WAM         ;SEE IF WAM 3
3974  017072  001044                          BNE     EX5C            ;IF NOT: BR
3975  017074  117700  161666                  MOVB    @WTAD,R0
3976  017100  042700  177400                  BIC     #177400,R0
3977  017104  005767  161706                  TST     RDRVF           ;SEE IF REVERSE
3978  017110  001403                          BEQ     EX5A1           ;IF NOT: BR
3979  017112  005367  161650                  DEC     WTAD            ;DEC POINTER
3980  017116  000416                          BR      EX5B
3981  017120  005267  161642          EX5A1:  INC     WTAD
3982  017124  032767  000020  161654          BIT     #20,UDES        ;SEE IF CORE DUMP
3983  017132  001410                          BEQ     EX5B            ;IF NOT: BR
3984  017134  005267  161626                  INC     WTAD            ;BUMP POINTER
3985  017140  005777  161622                  TST     @WTAD           ;SEE IF END
3986  017144  001003                          BNE     EX5B            ;IF NOT: BR
3987  017146  162767  000010  161612          SUB     #10,WTAD        ;RESTORE POINTER
3988  017154  052777  000040  161352  EX5B:   BIS     #40,@MR         ;CLOCK UP
3989  017162  017702  161346                  MOV     @MR,R2          ;READ MR
3990  017166  042702  177400                  BIC     #177400,R2      ;MASK OUT DATA
3991  017172  000300                          SWAB    R0              ;POSITION DATA
3992  017174  050002                          BIS     R0,R2           ;LOAD NEW DATA
3993  017176  010277  161332                  MOV     R2,@MR          ;CLOCK DOWN AND LOAD NEW DATA
3994  017202  000426                          BR      EX5D
3995  017204  052777  000040  161322  EX5C:   BIS     #40,@MR         ;CLOCK UP
3996  017212  042777  000040  161314          BIC     #40,@MR         ;CLOCK DOWN
3997  017220  017700  161310                  MOV     @MR,R0          ;GET MR
```

```
 3998  017224  000300                          SWAB    R0
 3999  017226  032767  000010  161552          BIT     #10,UDES        ;SEE IF EVEN PAR
 4000  017234  001405                          BEQ     EX5C0           ;IF NOT: BR
 4001  017236  010077  161530                  MOV     R0,@RDAD
 4002  017242  005267  161524                  INC     RDAD
 4003  017246  000402                          BR      EX5C1
 4004  017250  110077  161516          EX5C0:  MOVB    R0,@RDAD        ;PUT CHAR IN CORE
 4005  017254  005267  161512          EX5C1:  INC     RDAD
 4006  017260  005301                  EX5D:   DEC     R1              ;SEE IF DONE CLKS
 4007  017262  001300                          BNE     EX5A            ;IF NOT: BR
 4008  017264  000167  002762                  JMP     EORP            ;GO DO EOR
 4009
 4010                                          ;ASSURE NOT AT BOT FOR WRAP TESTS**********
 4011
 4012  017270  032777  000002  161224  BOTT:   BIT     #2,@DS          ;SEE IF BOT
 4013  017276  001414                          BEQ     BOTTX           ;IF NOT: BR
 4014  017300  052777  001700  161234          BIS     #1700,@TC       ;SET NRZ
 4015  017306  012777  000025  161174          MOV     #25,@C1         ;DO ERASE
 4016  017314  032777  000200  161200  BOTTA:  BIT     #200,@DS
 4017  017322  001774                          BEQ     BOTTA           ;AWAIT DRY
 4018  017324  004767  004630                  JSR     PC,INIT1        ;INIT
 4019  017330  000207                  BOTTX:  RTS     PC              ;RETURN
 4020
```

```
                                                ;EXECUTE WAM 0******
                                                
017332  012767  017504  161340  EXW2:   MOV     #EXW2H,RTRN     ;SET INTERRUPT RETURN ADDRESS
017340  012701  000200                  MOV     #200,R1         ;SET NUMBER OF CLOCKS = FC/2
017344  032767  002000  161434          BIT     #2000,UDES      ;SEE IF PE
017352  001402                          BEQ     EXW2A           ;IF NOT: BR
017354  012701  000100                  MOV     #100,R1         ;ELSE SET CLKS = FC/4
017360  016702  161406          EXW2A:  MOV     RDAD,R2         ;SET BUFFER ADDRESS
017364  012777  000161  161116          MOV     #161,@C1        ;SET WRITE+GO
017372  005077  161172                  CLR     @PSW            ;ALLOW INTERRUPT
017376  032777  000040  161130  EXW2B:  BIT     #40,@MR
017404  001774                          BEQ     EXW2B           ;AWAIT CLOCK UP
017406  017722  161122                  MOV     @MR,(R2)+       ;GET DATA
017412  032777  000040  161114  EXW2C:  BIT     #40,@MR
017420  001374                          BNE     EXW2C           ;AWAIT CLOCK DOWN
017422  017722  161106                  MOV     @MR,(R2)+       ;GET DATA
017426  005301                          DEC     R1              ;SEE IF DONE ALL
017430  001362                          BNE     EXW2B           ;IF NOT: BR
017432  012701  000003          EXW2E:  MOV     #3,R1
017436  005000                          CLR     R0              ;SET DELAY
017440  005300                  EXW2F:  DEC     R0
017442  001376                          BNE     EXW2F
017444  005301                          DEC     R1
017446  001374                          BNE     EXW2F           ;DELAY
017450  032777  020000  161114          BIT     #20000,@SWR     ;SEE IF ERROR PRINT
017456  001004                          BNE     EXW2G           ;IF NOT: BR
017460  012704  035716                  MOV     #WMSG24,R4
017464  004767  005032                  JSR     PC,TTOUT        ;PRINT NO INTERUPT
017470  032777  100000  161074  EXW2G:  BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
017476  001402                          BEQ     EXW2H           ;IF NOT: BR
017500  004767  006134                  JSR     PC,STOP
017504  012701  037014          EXW2H:  MOV     #RBUFF,R1       ;GET START OF READ BUFFER
017510  012700  000400                  MOV     #400,R0         ;SET SIZE
017514  010102                          MOV     R1,R2
017516  012203                  EXW2J:  MOV     (R2)+,R3
017520  000303                          SWAB    R3
017522  032767  000010  161256          BIT     #10,UDES        ;SEE IF EVEN PAR
017530  001402                          BEQ     EXW2J0          ;IF NOT: BR
017532  010321                          MOV     R3,(R1)+        ;SAVE PAR + DATA
017534  000401                          BR      EXW2J1
017536  110321                  EXW2J0: MOVB    R3,(R1)+        ;ASSEMBLE DATA IN BYTES
017540  005300                  EXW2J1: DEC     R0
017542  001365                          BNE     EXW2J           ;CONTINUE FOR ALL
017544  032777  000200  161020          BIT     #200,@SWR       ;SEE IF STATUS CHECK
017552  001002                          BNE     EXW2K           ;IF NOT: BR
017554  004767  000016                  JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
017560  032777  000400  161004  EXW2K:  BIT     #400,@SWR       ;SEE IF DATA CHECK
017566  001002                          BNE     EXW2X           ;IF NOT: BR
017570  004767  000272                  JSR     PC,DCHK         ;ELSE GO CHECK DATA
017574  000207                  EXW2X:  RTS     PC              ;EXIT
```

```
4073
4074                                        ;WRAP AROUND STATUS CHECK ROUTINE*********
4075
4076  017576  005067  161200        WSTCK:  CLR     SERFL           ;CLEAR ERROR FLAG
4077  017602  005067  161022                CLR     HDRFL           ;CLEAR HEADER FLAG
4078  017606  012767  035540  161066        MOV     #WMSG6,ERADD    ;SET CODE=CS1
4079  017614  017702  160670                MOV     @C1,R2          ;GET RCVD CS1
4080  017620  016705  161210                MOV     WCS1,R5         ;GET EXPT CS1
4081  017624  004767  000114                JSR     PC,WSTG         ;GO CHK
4082  017630  012767  035565  161044        MOV     #WMSG6D,ERADD   ;SET CODE=CS2
4083  017636  017702  160656                MOV     @CS,R2          ;SET RCVD CS2
4084  017642  016705  161170                MOV     WCS2,R5         ;GET EXPT CS2
4085  017646  056705  160762                BIS     DRVN,R5         ;SET DRIVE NUMBER IN EXPT CS2
4086  017652  004767  000066                JSR     PC,WSTG         ;GO CHK
4087  017656  012767  035573  161016        MOV     #WMSG6E,ERADD   ;SET CODE=DS
4088  017664  017702  160632                MOV     @DS,R2          ;SET RCVD DS
4089  017670  016705  161144                MOV     WDS,R5          ;GET EXPT DS
4090  017674  004767  000044                JSR     PC,WSTG         ;GO CHK
4091  017700  012767  035600  160774        MOV     #WMSG6F,ERADD   ;SET CODE=ER
4092  017706  017702  160612                MOV     @ER,R2          ;GET RCVD ER
4093  017712  016705  161124                MOV     WER,R5          ;GET EXPT ER
4094  017716  004767  000022                JSR     PC,WSTG         ;GO CHK
4095  017722  005767  161054                TST     SERFL           ;SEE IF ANY ERRORS
4096  017726  001456                        BEQ     WSTX            ;IF NOT: BR
4097  017730  005777  160636                TST     @SWR            ;SEE IF HALT ON ERROR
4098  017734  100053                        BPL     WSTX            ;IF NOT: BR
4099  017736  004767  005676                JSR     PC,STOP
4100  017742  000450                        BR      WSTX            ;CONTINUE
4101  017744  020205                WSTG:   CMP     R2,R5           ;SEE IF EXPT=RCVD
4102  017746  001446                        BEQ     WSTX            ;IF SO: BR
4103  017750  005267  161026                INC     SERFL           ;SET ERROR FLAG
4104  017754  032777  020000  160610        BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4105  017762  001040                        BNE     WSTX            ;IF NOT: BR
4106  017764  005767  160640                TST     HDRFL           ;SEE IF DONE HEADER
4107  017770  001010                        BNE     WSTG0           ;IF SO: BR
4108  017772  016704  160634                MOV     EMADDR,R4
4109  017776  004767  004520                JSR     PC,TTOUT        ;PRINT TEST HEADER
4110  020002  012704  035702                MOV     #WMSG23,R4
4111  020006  004767  004510                JSR     PC,TTOUT        ;PRINT STATUS TAG
4112  020012  012767  000001  160610  WSTG0: MOV     #1,HDRFL        ;SET HEADER FLAG
4113  020020  016704  160656                MOV     ERADD,R4
4114  020024  004767  004472                JSR     PC,TTOUT        ;PRINT CODE
4115  020030  012704  026732                MOV     #MSG12,R4
4116  020034  004767  004462                JSR     PC,TTOUT        ;PRINT EXPT TAG
4117  020040  010503                        MOV     R5,R3
4118  020042  004767  004616                JSR     PC,OCTP         ;PRINT EXPT STATUS
4119  020046  012704  026741                MOV     #MSG13,R4
4120  020052  004767  004444                JSR     PC,TTOUT        ;PRINT RCVD TAG
4121  020056  010203                        MOV     R2,R3
4122  020060  004767  004600                JSR     PC,OCTP         ;PRINT RCVD S.ATUS
4123  020064  000207                WSTX:   RTS     PC              ;RETURN
4124
```

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4126
4127                                        ;DATA CHECK ROUTINE*****
4128
4129  020066  005067  160536        DCHK:   CLR     HDRFL           ;CLEAR HEADER FLAG
4130  020072  005067  160700                CLR     DERFL           ;CLEAR DATA ERROR FLAG
4131  020076  005067  160702                CLR     CRCNT           ;CLEAR CHAR CNTR
4132  020102  032767  000010  160676        BIT     #10,UDES        ;SEE IF EVEN PARITY
4133  020110  001402                        BEQ     DCHKA0          ;IF NOT: BR
4134  020112  000167  000602                JMP     DCHKE           ;ELSE GO CHECK EVEN
4135  020116  022767  000010  160634  DCHKA0: CMP     #10,WAM         ;SEE IF WAM 1
4136  020124  001006                        BNE     DCHKA           ;IF NOT: BR
4137  020126  032767  002000  160652        BIT     #2000,UDES      ;SEE IF PE
4138  020134  001402                        BEQ     DCHKA           ;IF NOT: BR
4139  020136  000167  001202                JMP     PRCHK           ;GO CHK DATA
4140  020142  012700  177400        DCHKA:  MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
4141  020146  022767  000012  160604        CMP     #12,WAM
4142  020154  001006                        BNE     DCHKA1          ;IF NOT WRAP 2: BR
4143  020156  032767  000020  160622        BIT     #20,UDES
4144  020164  001402                        BEQ     DCHKA1          ;IF NOT CORE DUMP: BR
4145  020166  012700  177000                MOV     #-1000,R0
4146  020172  022767  000006  160560  DCHKA1: CMP     #6,WAM
4147  020200  001007                        BNE     DCHKA2
4148  020202  032767  002000  160576        BIT     #2000,UDES      ;SEE IF PE MODE
4149  020210  001430                        BEQ     DCHKB           ;IF NOT: BR
4150  020212  012700  177600                MOV     #-200,R0        ;SET CHAR CNTR TO FC/2 FOR PE
4151  020216  000425                        BR      DCHKB
4152  020220  022767  000012  160532  DCHKA2: CMP     #12,WAM         ;SEE IF WRAP 2
4153  020226  001021                        BNE     DCHKB           ;IF NOT: BR
4154  020230  032767  002000  160550        BIT     #2000,UDES      ;SEE IF PE
4155  020236  001415                        BEQ     DCHKB           ;IF NOT: BR
4156  020240  012700  177653                MOV     #-125,R0        ;POINT TO START OF DATA
4157  020244  012767  000001  160522        MOV     #1,W2FLG        ;SET WRAP 2 FLAG
4158  020252  004767  000014                JSR     PC,DCHKB        ;GO CHECK DATA
4159  020256  004767  001362                JSR     PC,W1DCHK       ;GO CHECK WRAP 1 DATA
4160  020262  005067  160506                CLR     W2FLG
4161  020266  000167  000362                JMP     DCHKX
4162  020272  005067  160500        DCHKB:  CLR     DERFL
4163  020276  012701  036402                MOV     #WBUFF,R1       ;SET GOOD POINTER
4164  020302  012702  037014                MOV     #RBUFF,R2       ;SET READ POINTER
4165  020306  032767  000020  160472        BIT     #20,UDES        ;SEE IF CORE DUMP
4166  020314  001416                        BEQ     DCHK0           ;IF NOT: BR
4167  020316  022767  000012  160434        CMP     #12,WAM         ;SEE IF WAM 2
4168  020324  001011                        BNE     DCHKD           ;IF NOT: BR
4169  020326  005767  160460                TST     PATRN           ;SEE IF PATTERN 0
4170  020332  001003                        BNE     DCHKC           ;IF NOT: BR
4171  020334  012701  001070                MOV     #WCDP0,R1       ;SET CORE DUMP PATTERN 0
4172  020340  000404                        BR      DCHK0           ;GO CHECK DATA
4173  020342  012701  001056        DCHKC:  MOV     #WCDP2,R1       ;SET CORE DUMP WRITE PATTERN 2
4174  020346  000401                        BR      DCHK0           ;GO CHECK DATA
4175  020350  000240                DCHKD:  NOP
4176  020352  121112                DCHK0:  CMPB    (R1),(R2)       ;SEE IF DATA OK
4177  020354  001466                        BEQ     DCHK2           ;IF SO: BR
4178  020356  032777  020000  160206        BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4179  020364  001062                        BNE     DCHK2           ;IF NOT: BR
4180  020366  005767  160236                TST     HDRFL           ;SEE IF DONE HEADER
4181  020372  001004                        BNE     DCHK1           ;IF SO: BR
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 4182  020374  016704  160232                    MOV     EMADDR,R4
 4183  020400  004767  004116                    JSR     PC,TTOUT        ;PRINT HEADER
 4184  020404  005767  160366          DCHK1:    TST     DERFL           ;SEE IF FIRST ERROR
 4185  020410  001014                            BNE     DCHK1A          ;IF NOT: BR
 4186  020412  012704  035650                    MOV     #WMSG16,R4
 4187  020416  004767  004100                    JSR     PC,TTOUT        ;PRINT DATA ERROR TAG
 4188  020422  012704  036075                    MOV     #WMSG32,R4
 4189  020426  004767  004070                    JSR     PC,TTOUT        ;PRINT PATRN TAG
 4190  020432  016703  160354                    MOV     PATRN,R3
 4191  020436  004767  004222                    JSR     PC,OCTP         ;PRINT PATTERN NUMBER
 4192  020442  012767  000001  160160  DCHK1A:   MOV     #1,HDRFL        ;SET HEADER FLAG
 4193  020450  012767  000001  160320            MOV     #1,DERFL        ;SET DATA ERROR FLAG
 4194  020456  012704  035674                    MOV     #WMSG21,R4
 4195  020462  004767  004034                    JSR     PC,TTOUT        ;PRINT CHARACTER NUMBER TAG
 4196  020466  016703  160312                    MOV     CRCNT,R3
 4197  020472  004767  004166                    JSR     PC,OCTP         ;PRINT CHARACTER NUMBER
 4198  020476  012704  035662                    MOV     #WMSG17,R4
 4199  020502  004767  004014                    JSR     PC,TTOUT        ;PRINT GOOD TAG
 4200  020506  111103                            MOVB    (R1),R3
 4201  020510  004767  004714                    JSR     PC,DOUT         ;PRINT GOOD DATA
 4202  020514  012704  035667                    MOV     #WMSG20,R4
 4203  020520  004767  003776                    JSR     PC,TTOUT        ;PRINT BAD TAG
 4204  020524  111203                            MOVB    (R2),R3
 4205  020526  004767  004676                    JSR     PC,DOUT         ;PRINT BAD DATA
 4206  020532  005767  160236          DCHK2:    TST     W2FLG
 4207  020536  001020                            BNE     DCHK2B
 4208  020540  005201                            INC     R1              ;BUMP POINTER
 4209  020542  032767  000020  160236            BIT     #20,UDES        ;SEE IF CORE DUMP
 4210  020550  001413                            BEQ     DCHK2B          ;IF NOT: BR
 4211  020552  022767  000012  160200            CMP     #12,WAM         ;SEE IF WAM 2
 4212  020560  001006                            BNE     DCHK2A          ;IF NOT: BR
 4213  020562  005201                            INC     R1              ;BUMP POINTER
 4214  020564  005711                            TST     (R1)            ;SEE IF END OF PATTERN
 4215  020566  001004                            BNE     DCHK2B          ;IF NOT: BR
 4216  020570  162701  000010                    SUB     #10,R1          ;RESET POINTER TO START OF PATTERN
 4217  020574  000401                            BR      DCHK2B          ;CONTINUE CHECK
 4218  020576  000240                  DCHK2A:   NOP
 4219  020600  005202                  DCHK2B:   INC     R2
 4220  020602  022767  000006  160150            CMP     #6,WAM          ;SEE IF WAM 0
 4221  020610  001005                            BNE     DCHK3
 4222  020612  032767  002000  160166            BIT     #2000,UDES      ;SEE IF PE
 4223  020620  001401                            BEQ     DCHK3           ;IF NOT PE: BR
 4224  020622  005201                            INC     R1              ;BUMP WRITE DATA ADDRESS
 4225  020624  005267  160154          DCHK3:    INC     CRCNT           ;BUMP CHAR CNTR
 4226  020630  032777  000400  157734            BIT     #400,@SWR       ;SEE IF CONT DATA CHK
 4227  020636  001006                            BNE     DCHKX           ;IF NOT: BR
 4228  020640  005200                            INC     R0              ;SEE IF DONE
 4229  020642  001243                            BNE     DCHK0           ;IF NOT: BR
 4230  020644  005767  160124                    TST     W2FLG
 4231  020650  001401                            BEQ     DCHKX
 4232  020652  000207                            RTS     PC
 4233  020654  032777  100000  157710  DCHKX:    BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
 4234  020662  001405                            BEQ     DCHKX1          ;IF NOT: BR
 4235  020664  005767  160106                    TST     DERFL           ;SEE IF DATA ERROR OCCURED
 4236  020670  001402                            BEQ     DCHKX1          ;IF NOT: BR
 4237  020672  004767  004742                    JSR     PC,STOP
```

```
 4238  020676  005067  160102          DCHKX1: CLR     CRCNT           ;CLEAR CHAR CNTR
 4239  020702  005067  157722                  CLR     HDRFL           ;CLEAR HEADER FLAG
 4240  020706  005067  160064                  CLR     DERFL           ;CLEAR DATA ERROR FLAG
 4241  020712  005067  160062                  CLR     PREFL           ;CLEAR PREAMBLE FLAG
 4242  020716  000207                          RTS     PC              ;RETURN
```

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4244
4245                                        ;EVEN PARITY DATA CHECK*****
4246
4247  020720  012700  177400        DCHKE:  MOV     #-400,R0        ;SET NUMBER OF CHARACTERS
4248  020724  012701  036402                MOV     #WBUFF,R1       ;R1=START OF WRITE BUFFER
4249  020730  012702  037014                MOV     #RBUFF,R2       ;R2=START OF READ BUFFER
4250  020734  111105                DCKE0:  MOVB    (R1),R5         ;GET EXPT DATA
4251  020736  005003                        CLR     R3
4252  020740  012704  000010                MOV     #10,R4          ;SET NUMBER OF BITS
4253  020744  032705  000001        DCKE1:  BIT     #1,R5           ;SEE IF ONE BIT
4254  020750  001401                        BEQ     DCKE2           ;IF NOT: BR
4255  020752  005203                        INC     R3              ;COUNT ONE BITS FOR PARITY CHECK
4256  020754  005304                DCKE2:  DEC     R4              ;SEE IF DONE
4257  020756  001402                        BEQ     DCKE3           ;IF SO: BR
4258  020760  006005                        ROR     R5              ;POINT TO NEXT BIT
4259  020762  000770                        BR      DCKE1
4260  020764  111105                DCKE3:  MOVB    (R1),R5         ;GET EXPT DATA
4261  020766  042705  177400                BIC     #177400,R5      ;MASK DATA FIELD
4262  020772  005703                        TST     R3
4263  020774  001003                        BNE     DCKE4           ;IF NO ONE BITS SET: BR
4264  020776  012705  100020                MOV     #100020,R5
4265  021002  000405                        BR      DCKE5
4266  021004  032703  000001        DCKE4:  BIT     #1,R3           ;SEE IF ODD NUMBER OF ONE BITS
4267  021010  001402                        BEQ     DCKE5           ;IF NOT: BR
4268  021012  052705  100000                BIS     #100000,R5      ;SET EVEN PARITY BIT=1
4269  021016  042712  077400        DCKE5:  BIC     #77400,(R2)     ;MASK DATA FIELD
4270  021022  020512                        CMP     R5,(R2)         ;SEE IF DATA + PARITY GOOD
4271  021024  001474                        BEQ     DCKE10          ;IF SO: BR
4272  021026  032777  020000  157536        BIT     #20000,@SWR     ;SEE IF ERROR PRINT
4273  021034  001070                        BNE     DCKE10          ;IF NOT: BR
4274  021036  005767  157566                TST     HDRFL           ;SEE IF DONE HEADER
4275  021042  001004                        BNE     DCKE6           ;IF SO: BR
4276  021044  016704  157562                MOV     EMADDR,R4
4277  021050  004767  003446                JSR     PC,TTOUT        ;PRINT HEADER
4278  021054  005767  157716        DCKE6:  TST     DERFL           ;SEE IF FIRST BAD CHAR
4279  021060  001014                        BNE     DCKE7           ;IF NOT: BR
4280  021062  012704  035650                MOV     #WMSG16,R4
4281  021066  004767  003430                JSR     PC,TTOUT        ;PRINT BAD DATA TAG
4282  021072  012704  036075                MOV     #WMSG32,R4
4283  021076  004767  003420                JSR     PC,TTOUT        ;PRINT PATTERN TAG
4284  021102  016703  157704                MOV     PATRN,R3
4285  021106  004767  003552                JSR     PC,OCTP         ;PRINT PATTERN NUMBER
4286  021112  012767  000001  157656 DCKE7:  MOV     #1,DERFL        ;SET DATA ERROR FLAG
4287  021120  012767  000001  157502        MOV     #1,HDRFL        ;SET HEADER FLAG
4288  021126  012704  035674                MOV     #WMSG21,R4
4289  021132  004767  003364                JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
4290  021136  016703  157642                MOV     CRCNT,R3
4291  021142  004767  003516                JSR     PC,OCTP         ;ORINT CHAR NUMBER
4292  021146  012704  035662                MOV     #WMSG17,R4
4293  021152  004767  003344                JSR     PC,TTOUT        ;PRINT GOOD DATA TAG
4294  021156  110503                        MOVB    R5,R3
4295  021160  004767  00.244                JSR     PC,DOUT         ;PRINT EXPT DATA
4296  021164  010503                        MOV     R5,R3
4297  021166  004767  000064                JSR     PC,DCKEP        ;GO PRINT PARITY BIT
4298  021172  012704  035667                MOV     #WMSG20,R4
4299  021176  004767  003320                JSR     PC,TTOUT        ;PRINT BAD TAG
```

```
 4300  021202  111203                        MOVB    (R2),R3
 4301  021204  004767  004220                JSR     PC,DOUT         ;PRINT BAD DATA
 4302  021210  011203                        MOV     (R2),R3
 4303  021212  004767  000040                JSR     PC,DCKEP        ;GO PRINT PARITY BIT
 4304  021216  005201              DCKE10:   INC     R1
 4305  021220  005722                        TST     (R2)+           ;BUMP POINTERS
 4306  021222  005267  157556                INC     CRCNT           ;BUMP CHAR CNTR
 4307  021226  032777  000400  157336        BIT     #400,@SWR       ;SEE IF CONTINUE DATA CHECK
 4308  021234  001402                        BEQ     DCKE11          ;IF SO: BR
 4309  021236  000167  177412                JMP     DCHKX           ;GO TO END OF DATA CHECK
 4310  021242  005200              DCKE11:   INC     R0              ;SEE IF DONE
 4311  021244  001402                        BEQ     DCKE12          ;IF SO: BR
 4312  021246  000167  177462                JMP     DCKE0           ;ELSE CONTINUE
 4313  021252  000167  177376      DCKE12:   JMP     DCHKX           ;GO TO END OF DATA CHECK
 4314  021256  012767  000240  157340  DCKEP:  MOV     #240,TOB
 4315  021264  004767  003346                JSR     PC,TOG          ;SPACE
 4316  021270  012767  000260  157326        MOV     #260,TOB        ;SET PAR=0
 4317  021276  005703                        TST     R3              ;SEE IF PARITY REALLY=0
 4318  021300  100002                        BPL     DCKEP0          ;IF SO: BR
 4319  021302  005267  157316                INC     TOB             ;ELSE SET TO 1
 4320  021306  004767  003324      DCKEP0:   JSR     PC,TOG          ;PRINT PARITY BIT
 4321  021312  000207                        RTS     PC              ;RETURN
 4322
```

```
4324
4325                                        ;PREAMPLE/POSTAMPLE CHECK*******
4326
4327  021314  012700  000051          PSCHK:  MOV     #51,R0          ;SET SIZE OF POSTAMBLE
4328  021320  012701  036260                  MOV     #POST,R1        ;SET POINTER TO POSTAMBLE
4329  021324  005067  157300                  CLR     HDRFL           ;CLEAR HEADER FLAG
4330  021330  005067  157450                  CLR     CRCNT           ;CLEAR CHAR CNTR
4331  021334  005067  157436                  CLR     DERFL           ;CLEAR DATA ERROR FLAG
4332  021340  000167  000016                  JMP     PD0             ;GO CHECK POSTAMPLE
4333
4334  021344  012700  000051          PRCHK:  MOV     #51,R0          ;SET SIZE OF PREAMBLE
4335  021350  012701  036136                  MOV     #PRE,R1         ;SET POINTER TO PREAMBLE
4336  021354  012702  037014                  MOV     #RBUFF,R2       ;SET POINTER TO START OF READ BUFFER
4337  021360  022122                          CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
4338  021362  121112                  PD0:    CMPB    (R1),(R2)       ;CHECK DATA
4339  021364  001004                          BNE     PD1             ;IF NOT GOOD: BR
4340  021366  126162  000001  000001          CMPB    1(R1),1(R2)     ;COMPARE COMPLIMENT BYTE
4341  021374  001477                          BEQ     PD5             ;IF GOOD: BR
4342  021376  032777  020000  157166  PD1:    BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
4343  021404  001073                          BNE     PD5             ;IF SO: BR
4344  021406  005767  157216                  TST     HDRFL           ;SEE IF DONE HEADER
4345  021412  001020                          BNE     PD4             ;IF SO: BR
4346  021414  016704  157212                  MOV     EMADDR,R4
4347  021420  004767  003076                  JSR     PC,TTOUT        ;PRINT TEST HEADER
4348  021424  005767  157350                  TST     PREFL           ;SEE IF PREAMBLE CHECK
4349  021430  001403                          BEQ     PD2             ;IF NOT: BR
4350  021432  012704  036021                  MOV     #WMSG29,R4      ;SET POSTAMBLE HEADER
4351  021436  000402                          BR      PD3
4352  021440  012704  036003          PD2:    MOV     #WMSG28,R4      ;SET PREAMBLE HEADER
4353  021444  004767  003052          PD3:    JSR     PC,TTOUT        ;PRINT HEADER
4354  021450  005267  157154                  INC     HDRFL
4355  021454  012704  035674          PD4:    MOV     #WMSG21,R4
4356  021460  004767  003036                  JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
4357  021464  016703  157314                  MOV     CRCNT,R3
4358  021470  004767  003170                  JSR     PC,OCTP         ;PRINT CHAR NUMBER
4359  021474  012704  035662                  MOV     #WMSG17,R4
4360  021500  004767  003016                  JSR     PC,TTOUT        ;PRINT GOOD TAG
4361  021504  116103  000001                  MOVB    1(R1),R3
4362  021510  004767  003714                  JSR     PC,DOUT         ;PRINT GOOD CHAR
4363  021514  012767  000240  157102          MOV     #240,TOB
4364  021522  004767  003110                  JSR     PC,TOG
4365  021526  111103                          MOVB    (R1),R3
4366  021530  004767  003674                  JSR     PC,DOUT         ;PRINT COMPLIMENT
4367  021534  012704  035667                  MOV     #WMSG20,R4
4368  021540  004767  002756                  JSR     PC,TTOUT        ;PRINT BAD TAG
4369  021544  116203  000001                  MOVB    1(R2),R3
4370  021550  004767  003654                  JSR     PC,DOUT         ;PRINT BAD CHAR
4371  021554  012767  000240  157042          MOV     #240,TOB
4372  021562  004767  003050                  JSR     PC,TOG
4373  021566  111203                          MOVB    (R2),R3
4374  021570  004767  003634                  JSR     PC,DOUT         ;PRINT COMPLIMENT
4375  021574  022122                  PD5:    CMP     (R1)+,(R2)+     ;BUMP ADDRESS POINTERS
4376  021576  005267  157202                  INC     CRCNT           ;BUMP CHAR NUMBER
4377  021602  005300                          DEC     R0              ;SEE IF DONE
4378  021604  001266                          BNE     PD0             ;IF NOT: BR
4379  021606  005767  157166                  TST     PREFL           ;SEE IF PREAMBLE
```

```
 4380  021612  001402                      BEQ     PD6             ;IF SO: BR
 4381  021614  000167  177034              JMP     DCHKX           ;GO TO EXIT ROUTINE
 4382  021620  005267  157154      PD6:    INC     PREFL           ;SET PREAMBLE FLAG
 4383  021624  005067  157000              CLR     HDRFL           ;CLEAR HEADER FLAG
 4384  021630  005067  157150              CLR     CRCNT           ;CLEAR CHAR CNTR
 4385  021634  005067  157136              CLR     DERFL           ;CLEAR DATA ERROR FLAG
 4386  021640  000167  000000              JMP     W1DCHK          ;GO CHECK WRAP 1 DATA
 4387
```

```
4389
4390                                        ;WAM 1 PE DATA CHECK*****
4391
4392  021644  012700  177400        W1DCHK: MOV     #-400,R0        ;SET NUMBER OF CHAR TO CHECK
4393  021650  012701  036402                MOV     #WBUFF,R1       ;SET WRITE DATA POINTER
4394  021654  012702  037014                MOV     #RBUFF,R2       ;SET READ DATA POINTER
4395  021660  062702  000124                ADD     #124,R2         ;POINT TO START OF DATA
4396  021664  005767  157104                TST     W2FLG           ;SEE IF WRAP 2
4397  021670  001401                        BEQ     W1D0            ;IF NOT WAM 2: BR
4398  021672  005302                        DEC     R2              ;RESET POINTER
4399  021674  111105        W1D0:   MOVB    (R1),R5
4400  021676  120512                CMPB    R5,(R2)         ;CHECK DATA
4401  021700  001007                BNE     W1D1            ;IF NOT GOOD:BR
4402  021702  005767  157066                TST     W2FLG           ;SEE IF WRAP 2
4403  021706  001001                BNE     W1D0A           ;IF SO: BR
4404  021710  105105                COMB    R5              ;COMPLIMENT EXPT DATA
4405  021712  120562  000001        W1D0A:  CMPB    R5,1(R2)        ;CHECK COMPLIMENT DATA
4406  021716  001510                BEQ     W1D3            ;IF GOOD: BR
4407  021720  032777  020000  156644  W1D1:   BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
4408  021726  001104                BNE     W1D3            ;IF SO: BR
4409  021730  005767  156674                TST     HDRFL           ;SEE IF DONE HEADER
4410  021734  001020                BNE     W1D2            ;IF SO: BR
4411  021736  016704  156670                MOV     EMADDR,R4
4412  021742  004767  002554                JSR     PC,TTOUT        ;PRINT TEST HEADER
4413  021746  012704  035650                MOV     #WMSG16,R4
4414  021752  004767  002544                JSR     PC,TTOUT        ;PRINT BAD DATA TAG
4415  021756  012704  036075                MOV     #WMSG32,R4
4416  021762  004767  002534                JSR     PC,TTOUT        ;PRINT PATRN TAG
4417  021766  016703  157020                MOV     PATRN,R3
4418  021772  004767  002666                JSR     PC,OCTP         ;PRINT PATTERN NUMBER
4419  021776  012767  000001  156624  W1D2:   MOV     #1,HDRFL        ;SET HEADER FLAG
4420  022004  012704  035674                MOV     #WMSG21,R4
4421  022010  004767  002506                JSR     PC,TTOUT        ;PRINT CHAR NUMBER TAG
4422  022014  016703  156764                MOV     CRCNT,R3
4423  022020  004767  002640                JSR     PC,OCTP         ;PRINT CHAR NUMBER
4424  022024  012704  035662                MOV     #WMSG17,R4
4425  022030  004767  002466                JSR     PC,TTOUT        ;PRNT GOOD TAG
4426  022034  111105                MOVB    (R1),R5
4427  022036  110503                MOVB    R5,R3           ;GET GOOD CHAR
4428  022040  005767  156730                TST     W2FLG           ;SEE IF WRAP 2
4429  022044  001001                BNE     W1D2A           ;IF SO: BR
4430  022046  105103                COMB    R3              ;ELSE COMPLIMENT CHAR
4431  022050  004767  003354        W1D2A:  JSR     PC,DOUT         ;PRINT CHARACTER
4432  022054  012767  000240  156542        MOV     #240,TOB
4433  022062  004767  002550                JSR     PC,TOG          ;SPACE
4434  022066  110503                MOVB    R5,R3
4435  022070  004767  003334                JSR     PC,DOUT         ;PRINT CHAR
4436  022074  012704  035667                MOV     #WMSG20,R4
4437  022100  004767  002416                JSR     PC,TTOUT        ;PRINT BAD TAG
4438  022104  116203  000001                MOVB    1(R2),R3
4439  022110  004767  003314                JSR     PC,DOUT         ;PRINT BAD CHAR
4440  022114  012767  000240  156502        MOV     #240,TOB
4441  022122  004767  002510                JSR     PC,TOG          ;SPACE
4442  022126  111203                MOVB    (R2),R3
4443  022130  004767  003274                JSR     PC,DOUT         ;PRINT CHAR
4444  022134  005267  156636                INC     DERFL           ;SET DATA ERROR FLAG
```

```
 4445  022140  122122                 W1D3:   CMPB    (R1)+,(R2)+     ;BUMP ADDRESS
 4446  022142  105722                         TSTB    (R2)+           ;BUMP ADDRESS
 4447  022144  005267  156634                 INC     CRCNT           ;BUMP CHAR CNTR
 4448  022150  000406                         BR      W1D5
 4449  022152  005767  156616         W1D4:   TST     W2FLG           ;SEE IF WRAP 2
 4450  022156  001401                         BEQ     W1D4A           ;IF NOT: BR
 4451  022160  000207                         RTS     PC              ;ELSE RETURN
 4452  022162  000167  177126         W1D4A:  JMP     PSCHK           ;GO CHECK POSTAMBLE
 4453  022166  005200                 W1D5:   INC     R0
 4454  022170  001770                         BEQ     W1D4
 4455  022172  000167  177476                 JMP     W1D0
 4456
 4457                                         ;PREAMBLE/POSTAMBLE GENERATE SUBROUTINE**********
 4458
 4459  022176  012700  000050         PPGEN:  MOV     #50,R0          ;SET SIZE OF PREAMBLE
 4460  022202  012701  036136                 MOV     #PRE,R1
 4461  022206  005721                         TST     (R1)+           ;SET ADDRESS OF PRE
 4462  022210  012721  177400         PPG0:   MOV     #177400,(R1)+   ;FILL TABLE
 4463  022214  005300                         DEC     R0              ;SEE IF DONE
 4464  022216  001374                         BNE     PPG0            ;IF NOT: BR
 4465  022220  012701  036260                 MOV     #POST,R1        ;SET ADDRESS OF POST
 4466  022224  012700  000050                 MOV     #50,R0          ;SET SIZE OF POST
 4467  022230  012721  000377                 MOV     #377,(R1)+      ;SET SYNC CHAR
 4468  022234  012721  177400         PPG1:   MOV     #177400,(R1)+   ;FILL TABLE
 4469  022240  005300                         DEC     R0              ;SEE IF DONE
 4470  022242  001374                         BNE     PPG1            ;IF NOT: BR
 4471  022244  000207                         RTS     PC              ;RETURN
```

```
4473
4474                                        ;END OF RECORD FORCE SUBROUTINE*****
4475
4476  022246  005267  156434          EORPA:  INC     TEMP2           ;SET WRAP FLAG
4477  022252  017700  156256          EORP:   MOV     @MR,R0          ;GET MAINT REG
4478  022256  042700  000036                  BIC     #36,R0          ;CLEAR CURRENT OP CODE
4479  022262  052700  000024                  BIS     #24,R0          ;SET EOR CLEAR OP CODE
4480  022266  010077  156242                  MOV     R0,@MR          ;DO EOR
4481  022272  042777  000037  156234          BIC     #37,@MR         ;CLEAR EOR AND MM
4482  022300  005000                          CLR     R0
4483  022302  012701  000002                  MOV     #2,R1
4484  022306  032777  000001  156174  EORP1:  BIT     #1,@C1          ;SEE IF GO GONE
4485  022314  001431                          BEQ     EORP2           ;IF SO: BR
4486  022316  005300                          DEC     R0
4487  022320  001372                          BNE     EORP1           ;AWAIT GO RESET
4488  022322  005301                          DEC     R1
4489  022324  001370                          BNE     EORP1
4490  022326  032777  020000  156236          BIT     #20000,@SWR     ;SEE IF ERROR PRINT INHIBIT
4491  022334  001021                          BNE     EORP2           ;IF SO: BR
4492  022336  005767  156266                  TST     HDRFL           ;SEE IF DONE HEADER
4493  022342  001004                          BNE     EORP1A          ;IF SO: BR
4494  022344  016704  156262                  MOV     EMADDR,R4
4495  022350  004767  002146                  JSR     PC,TTOUT        ;PRINT HEADER
4496  022354  012704  036040          EORP1A: MOV     #WMSG31,R4
4497  022360  004767  002136                  JSR     PC,TTOUT        ;PRINT EOR GO BIT ERROR
4498  022364  032777  100000  156200          BIT     #100000,@SWR    ;SEE IF HALT ON ERROR
4499  022372  001402                          BEQ     EORP2           ;IF NOT: BR
4500  022374  004767  003240                  JSR     PC,STOP
4501  022400  005767  156302          EORP2:  TST     TEMP2           ;SEE IF WAM
4502  022404  001014                          BNE     EORPX           ;IF NOT: BR
4503  022406  032777  000200  156156          BIT     #200,@SWR       ;SEE IF STATUS CHECK
4504  022414  001002                          BNE     EORP3           ;IF NOT: BR
4505  022416  004767  175154                  JSR     PC,WSTCK        ;ELSE GO CHECK STATUS
4506  022422  032777  000400  156142  EORP3:  BIT     #400,@SWR       ;SEE IF DATA CHECK
4507  022430  001002                          BNE     EORPX           ;IF NOT: BR
4508  022432  004767  175430                  JSR     PC,DCHK         ;ELSE GO CHECK DATA
4509  022436  005067  156244          EORPX:  CLR     TEMP2           ;CLEAR FLAG
4510  022442  000207                          RTS     PC              ;RETURN
4511
```

```
                                                ;LOGIC TEST ADDRESSING ERROR SUBROUTINE**********
                                        LTGER3: CLR     EXFL
                                                MOV     #MSG51,ERADD
                                        LTGER0: MOV     #1,ADDFL        ;SET NO ADDRESS FLAG
                                        LTGER:  CLR     PFLG            ;CLEAR PRINT FLAG
                                                BIT     #20000,@SWR     ;SEE IF SHOULD PRINT
                                                BEQ     LTGA            ;IF SO: BR
                                                JMP     LTGX            ;ELSE GO TO EXIT
                                        LTGA:   TST     HDRFL           ;SEE IF PRINTED HEADER
                                                BNE     LTGA1           ;IF SO: BR
                                                MOV     EMADDR,R4
                                                JSR     PC,TTOUT        ;PRINT TEST HEADER
                                        LTGA1:  MOV     #1,HDRFL        ;SET HEADER FLAG
                                                MOV     ERADD,R4
                                                JSR     PC,TTOUT        ;PRINT CONDITION ERROR
                                                TST     ADDFL
                                                BNE     LTGA2
                                                MOV     R1,R3
                                                JSR     PC,OCTP         ;PRINT ADDRESS
                                        LTGA2:  TST     EXFL
                                                BEQ     LTGC            ;IF NO STATUS: BR
                                                MOV     #MSG6,R4
                                                CMP     #1,EXFL         ;EXPT-NOT RCVD
                                                BEQ     LTGB
                                                MOV     #MSG7,R4        ;RCVD-NOT EXPT
                                        LTGB:   JSR     PC,TTOUT        ;PRINT STATUS
                                        LTGC:   INC     PFLG
                                                TST     ADDFL           ;SEE IF ADD TST
                                                BEQ     LTGD            ;IF SO: BR
                                                TST     T24FL           ;SEE IF TEST 24
                                                BEQ     LTGC0           ;IF NOT: BR
                                                MOV     #WMSG27,R4
                                                JSR     PC,TTOUT        ;PRINT DATA TAG
                                                MOV     #MSG12,R4
                                                JSR     PC,TTOUT        ;PRINT EXPT TAG
                                                MOV     #-1,R3
                                                JSR     PC,OCTPE        ;PRINT EXPT
                                                MOV     #MSG13,R4
                                                JSR     PC,TTOUT        ;PRINT RCVD TAG
                                                MOV     R1,R3           ;GET RCVD
                                                JSR     PC,OCTPE        ;PRINT RCVD
                                        LTGC0:  JSR     PC,REGP         ;PRINT REGISTERS
                                        LTGD:   BIT     #10000,@SWR
                                                BNE     LTGX
                                                MOV     #MSG16,R4
                                                JSR     PC,TTOUT
                                                MOV     ITCNT,R3        ;PRINT ITERATION
                                                JSR     PC,OCTP
                                        LTGX:   TST     @SWR
                                                BPL     LTGXA           ;IF NOT STOP ON ERROR: BR
                                                JSR     PC,STOP
                                        LTGXA:  TST     PFLG
                                                BNE     LTGXX           ;IF PRINTED: BR
                                                BIT     #20000,@SWR
                                                BNE     LTGXX           ;IF STILL NO PRINT: BR
```

```
 4569  022760  000167  177520                  JMP     LTGA            ;ELSE GO PRINT ERROR
 4570  022764  005067  155766          LTGXX:  CLR     ADDFL           ;CLEAR ADDRESS FLAG
 4571  022770  005067  155732                  CLR     EXFL
 4572  022774  000167  001044                  JMP     SCOPE
 4573  023000  000207                          RTS     PC              ;EXIT
 4574
 4575                                          ;SUBROUTINE TO PRINT MAJOR REGISTERS**********
 4576
 4577  023002  012704  027760          REGP:   MOV     #MSG46,R4
 4578  023006  004767  001510                  JSR     PC,TTOUT        ;PRINT REGISTER HEADER
 4579  023012  017703  155472                  MOV     @C1,R3
 4580  023016  004767  001632                  JSR     PC,OCTPE
 4581  023022  017703  155464                  MOV     @WC,R3
 4582  023026  004767  001622                  JSR     PC,OCTPE
 4583  023032  017703  155456                  MOV     @BA,R3
 4584  023036  004767  001612                  JSR     PC,OCTPE
 4585  023042  017703  155450                  MOV     @FC,R3
 4586  023046  004767  001602                  JSR     PC,OCTPE
 4587  023052  017703  155442                  MOV     @CS,R3
 4588  023056  004767  001572                  JSR     PC,OCTPE
 4589  023062  017703  155434                  MOV     @DS,R3
 4590  023066  004767  001562                  JSR     PC,OCTPE                ;PRINT REGISTERS
 4591  023072  017703  155426                  MOV     @ER,R3
 4592  023076  004767  001552                  JSR     PC,OCTPE
 4593  023102  017703  155420                  MOV     @AS,R3
 4594  023106  004767  001542                  JSR     PC,OCTPE
 4595  023112  017703  155416                  MOV     @MR,R3
 4596  023116  004767  001532                  JSR     PC,OCTPE
 4597  023122  017703  155414                  MOV     @TC,R3
 4598  023126  004767  001522                  JSR     PC,OCTPE
 4599  023132  000207                          RTS     PC
 4600
 4601
```

```
4603                                                    ;DRIVE CLEAR SUBROUTINE*********
4604
4605  023134  012704  040000          DRVCLR: MOV     #40000,R4
4606  023140  005304                  DCD:    DEC     R4
4607  023142  001376                          BNE     DCD             ;DELAY
4608  023144  005067  155526                  CLR     PFLG
4609  023150  004767  000222                  JSR     PC,ATTN         ;GO SEE OF ATTN SET
4610  023154  012777  000011  155326          MOV     #11,@C1         ;ISSUE DRIVE CLEAR
4611  023162  005000                          CLR     R0
4612  023164  032777  000200  155330  DCA:    BIT     #200,@DS        ;SEE IF DRY
4613  023172  001002                          BNE     DCA0
4614  023174  005300                          DEC     R0
4615  023176  001372                          BNE     DCA             ;WAIT FOR DRY
4616  023200  032777  040000  155314  DCA0:   BIT     #40000,@DS      ;SEE IF ERR RESET
4617  023206  001024                          BNE     DCE             ;IF NOT: BR
4618  023210  005777  155310                  TST     @ER             ;SEE IF ERROR REGISTER RESET
4619  023214  001021                          BNE     DCE             ;IF NOT: BR
4620  023216  005777  155300                  TST     @DS             ;SEE IF ATA RESET
4621  023222  100416                          BMI     DCE             ;IF NOT: BR
4622  023224  012703  000001                  MOV     #1,R3           ;SET TEST BIT
4623  023230  016704  155400                  MOV     DRVN,R4         ;GET DRIVE NUMBER
4624  023234  005704                          TST     R4              ;SEE IF DRIVE 0
4625  023236  001404                          BEQ     DCC             ;IF SO: BR
4626  023240  000241                  DCB:    CLC
4627  023242  006103                          ROL     R3              ;POSITION TEST BIT PER DRIVE NUMBER
4628  023244  005304                          DEC     R4              ;SEE IF DONE
4629  023246  001374                          BNE     DCB             ;IF NOT: BR
4630  023250  030377  155252          DCC:    BIT     R3,@AS          ;SEE IF ATTEN IS RESET
4631  023254  001001                          BNE     DCE             ;IF NOT: BR
4632  023256  000207                          RTS     PC              ;RETURN
4633  023260  032777  020000  155304  DCE:    BIT     #20000,@SWR     ;SEE IF ERROR PRINT INHIBIT
4634  023266  001017                          BNE     DCEX            ;IF SO: BR
4635  023270  005767  155334                  TST     HDRFL           ;SEE IF PRINT HEADER
4636  023274  001004                          BNE     DCEA            ;IF NOT: BR
4637  023276  016704  155330                  MOV     EMADDR,R4
4638  023302  004767  001214                  JSR     PC,TTOUT        ;PRINT HEADER
4639  023306  012704  030064          DCEA:   MOV     #MSG47,R4
4640  023312  004767  001204                  JSR     PC,TTOUT        ;PRINT DRIVE CLEAR ERROR
4641  023316  004767  177460                  JSR     PC,REGP         ;PRINT REGISTERS
4642  023322  005267  155350                  INC     PFLG            ;SET PRINTED FLAG
4643  023326  005777  155240          DCEX:   TST     @SWR            ;SEE IF HALT ON ERROR
4644  023332  100002                          BPL     DCEXA           ;IF NOT: BR
4645  023334  004767  002300                  JSR     PC,STOP
4646  023340  005767  155332          DCEXA:  TST     PFLG            ;SEE IF HAVE PRINTED
4647  023344  001006                          BNE     DCEXX           ;IF SO: BR
4648  023346  032777  020000  155216          BIT     #20000,@SWR     ;SEE IF SHOULD PRINT
4649  023354  001002                          BNE     DCEXX           ;IF NOT: BR
4650  023356  000167  177676                  JMP     DCE             ;ELSE PRINT THIS ERROR
4651  023362  012767  023134  155332  DCEXX:  MOV     #DRVCLR,SCOLP   ;SET SCOPE LOOP ADDRESS
4652  023370  000167  000450                  JMP     SCOPE           ;GO DO SCOPE LOOP
4653  023374  000207                          RTS     PC              ;RETURN
```

```
                                                ;COMPOSITE ERROR CHECK SUBROUTINE**********
                                                
023376  005777  155120          ATTN:   TST     @DS             ;SEE IF ATA SET
023402  001005                          BNE     ATTA            ;IF SO: BR
023404  012767  027422  155276          MOV     #MSG32,TEMP3
023412  000167  000064                  JMP     ATTP            ;ELSE PRINT ERROR
023416  032777  040000  155076  ATTA:   BIT     #40000,@DS      ;SEE IF COMPOSITE ERROR SET
023424  001005                          BNE     ATTB            ;IF SO: BR
023426  012767  027404  155254          MOV     #MSG31,TEMP3
023434  000167  000042                  JMP     ATTP            ;ELSE PRINT ERROR
023440  012703  000001          ATTB:   MOV     #1,R3           ;SET TEST BIT
023444  012767  027440  155236          MOV     #MSG33,TEMP3
023452  016704  155156                  MOV     DRVN,R4         ;GET DRIVE NUMBER
023456  005704                          TST     R4              ;SEE IF DRIVE 0
023460  001404                          BEQ     ATTD            ;IF SO: BR
023462  000241          ATTC:   CLC
023464  006103                          ROL     R3              ;POSITION TEST BIT
023466  005304                          DEC     R4              ;SEE IF DONE
023470  001374                          BNE     ATTC            ;IF NOT: BR
023472  030377  155030          ATTD:   BIT     R3,@AS          ;SEE IF ATTEN SUMMARY SET
023476  001401                          BEQ     ATTP            ;IF NOT: BR
023500  000207                          RTS     PC              ;ELSE RETURN
023502  032777  020000  155062  ATTP:   BIT     #20000,@SWR     ;SEE IF PRINT INHIBIT
023510  001021                          BNE     ATTX            ;IF SO: BR
023512  005767  155112                  TST     HDRFL           ;SEE IF DONE HEADER
023516  001004                          BNE     ATTPA           ;IF SO: BR
023520  016704  155106                  MOV     EMADDR,R4
023524  004767  000772                  JSR     PC,TTOUT        ;PRINT HEADER
023530  016704  155154          ATTPA:  MOV     TEMP3,R4
023534  004767  000762                  JSR     PC,TTOUT        ;PRINT ERROR TYPE
023540  004767  177236                  JSR     PC,REGP         ;PRINT REGISTERS
023544  005267  155126                  INC     PFLG            ;SET PRINT FLAG
023550  005267  155054                  INC     HDRFL           ;SET HEADER FLAG
023554  005777  155012          ATTX:   TST     @SWR            ;SEE IF HALT ON ERROR
023560  100002                          BPL     ATTXA           ;IF NOT: BR
023562  004767  002052                  JSR     PC,STOP
023566  005767  155104          ATTXA:  TST     PFLG            ;SEE IF DONE PRINT
023572  001006                          BNE     ATTXX           ;IF SO: BR
023574  032777  020000  154770          BIT     #20000,@SWP     ;SEE IF SHOULD PRINT
023602  001002                          BNE     ATTXX           ;IF NOT: BR
023604  000167  177672                  JMP     ATTP            ;ELSE PRINT ERROR
023610  005067  155062          ATTXX:  CLR     PFLG            ;CLEAR PRINT FLAG
023614  000207                          RTS     PC              ;RETURN
```

```
4699                                            ;LOGIC TEST REGISTER BIT ERROR SUBROUTIINE**********
4700
4701  023616  012767  000001  155122  LTGER2: MOV     #1,PEXFL        ;SET FLAG
4702  023624  005067  155046          LTGER1: CLR     PFLG            ;CLEAR PRINT FLAG
4703  023630  032777  020000  154734          BIT     #20000,@SWR     ;SEE IF PRINT ERRORS
4704  023636  001402                          BEQ     LTG1A           ;IF SO: BR
4705  023640  000167  000132                  JMP     LTG1X           ;ELSE GO TO EXIT
4706  023644  005767  154760          LTG1A:  TST     HDRFL           ;SEE IF PRINT HEADER
4707  023650  001004                          BNE     LTG1B           ;IF NOT: BR
4708  023652  016704  154754                  MOV     EMADDR,R4
4709  023656  004767  000640                  JSR     PC,TTOUT        ;PRINT HEADER
4710  023662  012767  000001  154740  LTG1B:  MOV     #1,HDRFL        ;SET FLAG
4711  023670  016704  155006                  MOV     ERADD,R4
4712  023674  004767  000622                  JSR     PC,TTOUT        ;PRINT ERROR CODE
4713  023700  005767  155042                  TST     PEXFL           ;SEE IF PRINT EXPT-RCVD
4714  023704  001016                          BNE     LTG1T           ;IF NOT: BR
4715  023706  012704  026732                  MOV     #MSG12,R4
4716  023712  004767  000604                  JSR     PC,TTOUT        ;PRINT EXPT TAG
4717  023716  010103                          MOV     R1,R3
4718  023720  004767  000740                  JSR     PC,OCTP         ;PRINT EXPT
4719  023724  012704  026741                  MOV     #MSG13,R4
4720  023730  004767  000566                  JSR     PC,TTOUT        ;PRINT RCVD TAG
4721  023734  010203                          MOV     R2,R3
4722  023736  004767  000722                  JSR     PC,OCTP         ;PRINT RCVD
4723  023742  032777  010000  154622  LTG1T:  BIT     #10000,@SWR
4724  023750  001010                          BNE     LTG1C
4725  023752  012704  027003                  MOV     #MSG16,R4
4726  023756  004767  000540                  JSR     PC,TTOUT
4727  023762  016703  154724                  MOV     ITCNT,R3
4728  023766  004767  000672                  JSR     PC,OCTP         ;PRINT ITERATION
4729  023772  005267  154700          LTG1C:  INC     PFLG
4730  023776  005777  154570          LTG1X:  TST     @SWR
4731  024002  100002                          BPL     LTG1X1          ;IF NOT STOP ON ERROR: BR
4732  024004  004767  001630                  JSR     PC,STOP
4733  024010  005767  154662          LTG1X1: TST     PFLG
4734  024014  001006                          BNE     LTG1XX          ;IF HAVE PRINTED: BR
4735  024016  032777  020000  154546          BIT     #20000,@SWR
4736  024024  001002                          BNE     LTG1XX          ;IF STILL NO PRINT: BR
4737  024026  000167  177612                  JMP     LTG1A           ;ELSE PRINT ERROR
4738  024032  005067  154710          LTG1XX: CLR     PEXFL           ;CLEAR EXPT-RCVD FLAG
4739  024036  000167  000002                  JMP     SCOPE           ;GO TO SCOPE
4740  024042  000207                          RTS     PC              ;RETURN
4741
```

```
                                                ;SCOPE LOOP ON ERROR SUBROUTINE**********
                                                
024044  004767  001050          SCOPE:  JSR     PC,CKSWR        ;CHECK FOR CONTROL G
024050  032777  040000  154514          BIT     #40000,@SWR     ;SEE IF LOOP ON ERROR
024056  001001                        BNE     SCOPE1          ;IF SO: BR
024060  000207                        RTS     PC              ;ELSE EXIT
024062  005726                SCOPE1: TST     (SP)+           ;RESET STACK
024064  000177  154632                JMP     @SCOLP          ;LOOP ON ERROR
                                                
                                                ;TEST ITERATION SUBROUTINE**********
                                                
                                        ;       ************************************************************************
                                        ;               CHECK FOR END OF PASS INDICATOR
                                        ;               TO INSURE QUICK VERIFY
                                                
024070  005767  154734                        TST     PAFLG           ;PASS FLAG INDICATOR SET?
024074  001404                        BEQ     ITER0           ;BRANCH - IF NO
                                                
                                        ;       ************************************************************************
                                                
024076  032777  010000  154466  ITER:   BIT     #10000,@SWR     ;SEE IF ITERATIONS
024104  001403                        BEQ     ITER1           ;IF SO: BR
024106  005067  154600          ITER0:  CLR     ITCNT           ;CLEAR ITERATION COUNTER
024112  000207                        RTS     PC              ;ELSE EXIT
024114  005267  154572          ITER1:  INC     ITCNT           ;BUMP COUNTER
024120  026767  154566  154462        CMP     ITCNT,ITAMT     ;SEE IF DONE ALL
024126  001767                        BEQ     ITER0           ;IF SO: BR
024130  005726                        TST     (SP)+           ;RESET STACK
024132  017700  154566                MOV     @ITRLP,R0       ;SET ITERATION POINTER
024136  000110                        JMP     (R0)            ;GO ITERATE
                                                
                                                ;MANUAL INTERVENTION INHIBIT*********
                                                
024140  012704  027610          INMT:   MOV     #MSG43,R4
024144  004767  000352                JSR     PC,TTOUT        ;GO PRINT INHIB MSG
024150  004767  001464                JSR     PC,STOP
024154  000167  156272                JMP     TSCD2           ;RETURN TO SCHED
```

```
4783
4784                                        ;INITIALIZE SUBROUTINE**********
4785
4786  024160  012777  000040  154332  INIT1:  MOV     #40,@CS         ;INIT
4787  024166  016777  154442  154324  INIT2:  MOV     DRVN,@CS        ;SELECT DRIVE
4788  024174  016777  154474  154340          MOV     SLVN,@TC        ;SELECT SLAVE
4789  024202  000207                          RTS     PC              ;RETURN
4790
4791                                        ;MANUAL INSTRUCTION SUBROUTINE**********
4792
4793  024204  004767  000312          INST:   JSR     PC,TTOUT        ;PRINT INSTRUCTION
4794  024210  012704  034122                  MOV     #MMSG0,R4
4795  024214  004767  000302                  JSR     PC,TTOUT        ;PRINT REPLY
4796  024220  012705  000710                  MOV     #TEMP3,R5
4797  024224  012701  000001                  MOV     #1,R1
4798  024230  012702  177777                  MOV     #-1,R2
4799  024234  012703  000000                  MOV     #0,R3
4800  024240  004767  000020                  JSR     PC,TTR          ;AWAIT REPLY
4801  024244  000207                          RTS     PC              ;EXIT
4802
4803                                        ;MAG TAPE INTERRUPT HANDLER**********
4804
4805  024246  022626          MTINT:  CMP     (SP)+,(SP)+     ;RESET STACK POINTER
4806  024250  000240                  NOP
4807  024252  000240                  NOP
4808  024254  000177  154420          JMP     @RTRN           ;RETURN TO CALLER
4809
4810                                        ;TTY INTERRUPT HANDLER**********
4811
4812  024260          TTINT:
4813  024260  000240                  NOP
4814  024262  000002                  RTI
4815
```

```
                                        ;*************************************************************
                                        ;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
                                        ;*************************************************************

024264  005067  154414          TTR:    CLR     TEMP1           ;CLEAR FIRST CHARACTER FLAG
024270  005000                          CLR     R0
024272  004767  000152          TTR0:   JSR     PC,TTIN         ;GO READ CHARACTER
024276  122767  000215  154322          CMPB    #215,TIB        ;SEE IF CR
024304  001005                          BNE     TTR1            ;IF NOT: BR
024306  005767  154372                  TST     TEMP1           ;SEE IF FIRST CHARACTER
024312  001446                          BEQ     TTR5            ;IF SO: BR
024314  000167  000066                  JMP     TTR2            ;ELSE GO LOAD VALUE
024320  122767  000260  154300  TTR1:   CMPB    #260,TIB        ;SEE IF CHAR IS LESS THAN 0
024326  101402                          BLOS    TTR1A           ;IF NOT: BR
024330  000167  000076                  JMP     TINER           ;ELSE GO TO ERROR
024334  122767  000270  154264  TTR1A:  CMPB    #270,TIB        ;SEE IF CHAR IS GREATER THAN 7
024342  101002                          BHI     TTR1B           ;IF NOT: BR
024344  000167  000062                  JMP     TINER           ;ELSE GO TO ERROR
024350  005267  154330          TTR1B:  INC     TEMP1           ;SET FIRST CHARACTER FLAG
024354  000241                          CLC
024356  006100                          ROL     R0
024360  000241                          CLC
024362  006100                          ROL     R0              ;SHIFT 3 LEFT
024364  000241                          CLC
024366  006100                          ROL     R0
024370  042767  177770  154230          BIC     #177770,TIB     ;STRIP ASCII
024376  056700  154224                  BIS     TIB,R0          ;LOAD CHARACTER
024402  005301                          DEC     R1              ;SEE IF DONE
024404  001332                          BNE     TTR0            ;IF NOT: BR
024406  020002                  TTR2:   CMP     R0,R2           ;SEE IF EXCEEDED MAXIMUM LIMIT
024410  101402                          BLOS    TTR3            ;IF NOT: BR
024412  000167  000014                  JMP     TINER           ;ELSE GO TO ERROR
024416  020300                  TTR3:   CMP     R3,R0           ;SEE IF BELOW MINIMUM LIMIT
024420  101402                          BLOS    TTR4            ;IF NOT: BR
024422  000167  000004                  JMP     TINER           ;ELSE GO TO ERROR
024426  010015                  TTR4:   MOV     R0,(R5)         ;LOAD VALUE
024430  000207                  TTR5:   RTS     PC              ;EXIT
```

```
                                                ;TTY ENTRY ERROR SUBROUTINE**********
                                                
024432  012704  027550          TINER:  MOV     #MSG40,R4
024436  004767  000060                  JSR     PC,TTOUT        ;PRINT?
024442  162716  000020                  SUB     #20,(SP)        ;RESET SP TO START OF VALUE ROUTINE
024446  000207                          RTS     PC              ;REDO VALUE ENTRY
                                                
                                                ;TTY READ SUBROUTINE**********
                                                
024450  005077  154120          TTIN:   CLR     @TKS
024454  005077  154116                  CLR     @TKB
024460  005067  154142                  CLR     TIB
024464  005277  154104                  INC     @TKS
024470  105777  154100          TTIN1:  TSTB    @TKS
024474  100375                          BPL     TTIN1
024476  017767  154074  154122        MOV     @TKB,TIB
024504  105777  154070          TTIN2:  TSTB    @TPS
024510  100375                          BPL     TTIN2
024512  116777  154110  154062        MOVB    TIB,@TPB
024520  000207                          RTS     PC
                                                
                                                ;TTY OUTPUT SUBROUTINE***********
                                                
024522  112467  154076          TTOUT:  MOVB    (R4)+,TOB
024526  122767  000043  154070        CMPB    #43,TOB
024534  001446                          BEQ     TEX
024536  122767  000045  154060        CMPB    #45,TOB
024544  001403                          BEQ     TCRLF
024546  004767  000064                  JSR     PC,TOG
024552  000763                          BR      TTOUT
024554  112767  000015  154042  TCRLF:  MOVB    #15,TOB
024562  004767  000050                  JSR     PC,TOG
024566  012703  000004                  MOV     #4,R3
024572  005067  154026          TCRLFA: CLR     TOB
024576  004767  000034                  JSR     PC,TOG
024602  005303                          DEC     R3
024604  001372                          BNE     TCRLFA          ;DO FILLERS
024606  112767  000012  154010        MOVB    #12,TOB
024614  004767  000016                  JSR     PC,TOG
024620  105767  000272                  TSTB    RDSW
024624  100401                          BMI     1$
024626  000735                          BR      TTOUT
024630  005067  000262          1$:     CLR     RDSW
024634  000406                          BR      TEX
024636  105777  153736          TOG:    TSTB    @TPS
024642  100375                          BPL     TOG
024644  116777  153754  153730        MOVB    TOB,@TPB
024652  000207                  TEX:    RTS     PC
                                                
                                                ;OCTAL OUTPUT SUBROUTINE***********
                                                
024654  012767  000001  000226  OCTPE:  MOV     #1,OFL
024662  000402                          BR      OCTPE1
024664  005067  000220          OCTP:   CLR     OFL             ;CLEAR FLAG FOR LEADING ZERO
```

```
 4925  024670  010304                 OCTPE1: MOV     R3,R4           ;SEE IF NUMBER IS ZERO
 4926  024672  001007                         BNE     OCTP0           ;IF NOT ZERO: BR
 4927  024674  005767  000210                 TST     OFL             ;SEE IF PRINT ALL 0
 4928  024700  001004                         BNE     OCTP0           ;IF SO: BR
 4929  024702  004767  000162                 JSR     PC,OCTPG1       ;ELSE PRINT ZERO
 4930  024706  000167  000120                 JMP     OCTP3           ;SPACE AND EXIT
 4931  024712  032704  100000         OCTP0:  BIT     #100000,R4      ;SEE IF MSD = 1
 4932  024716  001406                         BEQ     OCTP1           ;IF NOT: BR
 4933  024720  012704  000001                 MOV     #1,R4
 4934  024724  004767  000116                 JSR     PC,OCTPG        ;PRINT 1
 4935  024730  000167  000006                 JMP     OCTP2
 4936  024734  005004                 OCTP1:  CLR     R4
 4937  024736  004767  000104                 JSR     PC,OCTPG        ;PRINT 0
 4938  024742  010304                 OCTP2:  MOV     R3,R4
 4939  024744  006004                         ROR     R4
 4940  024746  006004                         ROR     R4
 4941  024750  006004                         ROR     R4              ;POSITION DIGIT
 4942  024752  006004                         ROR     R4
 4943  024754  000304                         SWAB    R4
 4944  024756  004767  000064                 JSR     PC,OCTPG        ;PRINT DIGIT 2
 4945  024762  010304                         MOV     R3,R4
 4946  024764  006004                         ROR     R4
 4947  024766  000304                         SWAB    R4
 4948  024770  004767  000052                 JSR     PC,OCTPG        ;PRINT DIGIT 3
 4949  024774  010304                         MOV     R3,R4
 4950  024776  006104                         ROL     R4
 4951  025000  006104                         ROL     R4
 4952  025002  000304                         SWAB    R4
 4953  025004  004767  000036                 JSR     PC,OCTPG        ;PRINT DIGIT 4
 4954  025010  010304                         MOV     R3,R4
 4955  025012  006004                         ROR     R4
 4956  025014  006004                         ROR     R4
 4957  025016  006004                         ROR     R4
 4958  025020  004767  000022                 JSR     PC,OCTPG
 4959  025024  010304                         MOV     R3,R4
 4960  025026  004767  000014                 JSR     PC,OCTPG        ;PRINT DIGIT 5
 4961  025032  012767  000240  153564 OCTP3:  MOV     #240,TOB
 4962  025040  004767  177572                 JSR     PC,TOG          ;PRINT SPACE
 4963  025044  000207                         RTS     PC              ;EXIT
 4964  025046  042704  177770         OCTPG:  BIC     #177770,R4
 4965  025052  001004                         BNE     OCTPG0
 4966  025054  005767  000030                 TST     OFL
 4967  025060  001001                         BNE     OCTPG0
 4968  025062  000207                         RTS     PC
 4969  025064  005267  000020         OCTPG0: INC     OFL
 4970  025070  052704  000260         OCTPG1: BIS     #260,R4
 4971  025074  010467  153524                 MOV     R4,TOB
 4972  025100  004767  177532                 JSR     PC,TOG
 4973  025104  010304                         MOV     R3,R4
 4974  025106  000207                         RTS     PC
 4975  025110  000000                 OFL:    0                       ;FIRST CHAR FLAG
 4976
 4977
 4978                                         ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
 4979                                         ;OF LOC.176.
 4980                                         ;CALL IS BY WAY OF JSR  PC,CKSWR
```

```
                                                ;LOCATIONS USED:
                                    TEMPST:  .WORD   0
                                    COUNT:   .WORD   0
                                    RDSW:    .WORD   0
                            CKSWR:  CMP      #SWREG,SWR             ;SOFTWARE SWITCH REG PRESENT
                                    BNE      OUT                    ;NO, GET OUT
                                    TSTB     @TKS                   ;YES,WAIT FOR
                                    BPL      OUT                    ;READY, GET CHARACTER
                                    MOV      @TKB,TIB               ;AND STRIP OFF
                                    BIC      #177600,TIB            ;THE GARBAGE
                                    CMP      #7,TIB          ;IS IT A <^G>
                                    BNE      OUT
                                    MOV      #$CNTG,R4
                                    JSR      PC,TTOUT
                            CNTLU:  MOV      #$MSWR,R4
                                    JSR      PC,TTOUT
                                    MOV      @SWR,R3
                                    JSR      PC,OCTPE
                                    MOV      #$MNEW,R4
                                    JSR      PC,TTOUT
                                    JSR      PC,$READ               ;GO READ A LINE
                            OUT:    RTS      PC                     ;RETURN TO MAIN BODY OF PROGRAM

                            $READ:  CLR      TEMPST
                                    MOV      #7,COUNT
                            1$:     JSR      PC,TTIN        ;GO  READ A CHARACTER
                                    BIC      #177600,TIB    ;STRIP OFF GARBAGE
                                    CMPB     #25,TIB        ;IS IT A ^U?
                                    BNE      2$             ;BRANCH IF NOT
                            3$:     TST      (SP)+          ;POP THE STACK
                                    BR CNTLU                ;START OVER
                            2$:     CMPB     #15,TIB        ;IS IT A <CR>?
                                    BNE      4$             ;BRANCH IF NOT
                                    MOV      #200,RDSW
                                    JSR      PC,TCRLF       ;ECHO IT WITH <LF>
                                    CMP      #7,COUNT       ;WAS IT FIRST CHARACTER
                                    BNE      7$             ;CHANGE SWR IF NOT FIRST ONE
                            8$:     TST      (SP)+          ;POP THE STACK
                                    BR       OUT            ;GET OUT
                            4$:     CMPB     #60,TIB
                                    BGT      5$
                                    CMPB     #67,TIB
                                    BGE      6$
                            5$:     MOV      #$QUEST,R4
                                    JSR      PC,TTOUT
                                    BR       3$             ;START OVER IF NOT LEGAL CHARACTER
                            6$:     ASL      TEMPST
                                    ASL      TEMPST
                                    ASL      TEMPST
                                    BICB     #60,TIB        ;GET NITTY-GRITTY
                                    BISB     TIB,TEMPST
                                    DEC      COUNT          ;ONLY WANT 6   DIGITS
                                    BEQ      5$
                                    BR       1$
                            7$:     MOV      TEMPST,@SWR    ;CHANGE SWITCH REGISTER CONTENTS
                                    BR       8$
```

```
                                                ;DATA CHARACTER OUTPUT SUBROUTINE***********
                                        DOUT:   CLR     TOB
                                                MOV     #10,R4          ;SET NUMBER TO PRINT
                                                MOVB    R3,TOB
                                        DOUT1:  TSTB    @TPS
                                                BPL     DOUT1
                                                BITB    #200,TOB
                                                BEQ     DOUT2
                                                MOV     #061,@TPB
                                                BR      DOUT3
                                        DOUT2:  MOV     #060,@TPB
                                        DOUT3:  ROL     TOB
                                                DEC     R4
                                                BNE     DOUT1
                                                RTS     PC
                                        DOUTD:  MOV     TEMP3,R3
                                                SWAB    R3
                                                JSR     PC,DOUT
                                                MOV     TEMP3,R3
                                                JSR     PC,DOUT
                                                RTS     PC

                                                ;TU16 SERIAL NUMBER PRINT SUBROUTINE**********

                                        SNPT:   MOV     R3,R4
                                                SWAB    R4
                                                ROR     R4
                                                ROR     R4
                                                ROR     R4
                                                ROR     R4              ;GET FIRST DIGIT
                                                JSR     PC,SNPG         ;PRINT
                                                MOV     R3,R4
                                                SWAB    R4              ;GET SECOND DIGIT
                                                JSR     PC,SNPG         ;PRINT
                                                MOV     R3,R4
                                                ROR     R4
                                                ROR     R4
                                                ROR     R4
                                                ROR     R4
                                                JSR     PC,SNPG         ;PRINT THIRD DIGIT
                                                MOV     R3,R4
                                                JSR     PC,SNPG         ;PRINT FOURTH DIGIT
                                                RTS     PC              ;EXIT
                                        SNPG:   MOV     #260,TOB        ;SET BASE = 0
                                                BIC     #177760,R4      ;MASK DIGIT
                                                BIS     R4,TOB          ;SET ASCII
                                                JSR     PC,TOG          ;TYPE DIGIT
                                                RTS     PC              ;RETURN

                                                ;HALT HANDLEN**********

                                        STOP:   HALT
                                                JSR     PC,CKSWR        ;CHECK FOR CONTROL G
                                                RTS     PC
```

```
5095
5096                                    ;       ********************************************************************************
5097                                    ;               CHECK FOR DUMP MODE OR AUTOMATIC MODE
5098                                    ;       ********************************************************************************
5099
5100  025650  005067  152742           CKMODE: CLR     AUTOM                   ;INIT AUTO MODE
5101  025654  005737  000042                   TST     @#42                    ;AUTOMATIC MODE?
5102  025660  001417                           BEQ     2$                      ;BRANCH - IF NOT
5103  025662  005267  152730                   INC     AUTOM                   ;SET AUTO MODE INDICATOR
5104  025666  023737  000042  000046           CMP     @#42,@#46               ;ACT11 MODE?
5105  025674  001403                           BEQ     1$                      ;BRANCH - IF YES
5106  025676  105267  152717                   INCB    XXDPM                   ;INDICATE  XXDP AUTO MODE
5107  025702  000416                           BR      5$                      ;AND EXIT
5108  025704  105267  152710           1$:     INCB    ACT11M                  ;INDICATE ACT11 AUTO MODE
5109  025710  052777  104000  152654           BIS     #104000,@SWR            ;SET FOR CON:CYCLE & HALT ON ERROR
5110  025716  000410                           BR      5$              ;AND EXIT
5111  025720  105737  000041           2$:     TSTB    @#41                    ;MAN:MODE VIA ACT11/PAPER TAPE?
5112  025724  001003                           BNE     3$                      ;BRANCH IF NOT
5113  025726  105267  152670                   INCB    ADUMPM                  ;INDICATE MAN:  MODE VIA ACT11/PPAPER TAPE
5114  025732  000402                           BR      5$                      ;AND EXIT THRU M.I
5115  025734  105267  152663           3$:     INCB    XDUMPM                  ;INDICATE MANUAL MODE VIA XXDP
5116  025740  000207                   5$:     RTS     PC                      ;RETURN
5117
5118                                    ;       ********************************************************************************
5119
```

```
5121
5122                                    ;       **********************************************************************
5123                                    ;               DISCONTINUE TESTING FOR
5124                                    ;               ILLEGAL CONDITIONS
5125                                    ;       **********************************************************************
5126
5127   025742                           ABORT:
5128   025742  000005                           RESET                           ;INITIALIZE THE WORLD
5129   025744  012704  026024                   MOV     #MSGD,R4                ;GET ABORT MESSAGE
5130   025750  004767  176546                   JSR     PC,TTOUT                ;TYPE ABORT MESSAGE
5131   025754  105767  152641                   TSTB    XXDPM                   ;XXDP AUTO MODE
5132   025760  001405                           BEQ     1$                      ;BRANCH - IF NOT
5133   025762  013700  000042                   MOV     @#42,R0                 ;GET MONITOR EXIT ADDRESS
5134   025766  005037  000042                   CLR     @#42                    ;USE AS ABORT FLAG
5135   025772  004710                           JSR     PC,(R0)                 ;EXIT TO XXDP MONITOR
5136   025774  000777                   1$:     BR      .                       ;AND HANG
5137
5138                                    ;       **********************************************************************
5139
```

```
                                                    ;MESSAGE TABLE**********
                                                    ;*******************************************************************
 5144  025776 050045 047522 051107  MSGC:   .ASCII  /%PROGRAM IS DISABLED%#/
       026004 046501 044440 020123
       026012 044504 040523 046102
       026020 042105 021445
 5145  026024 050045 047522 051107  MSGD:   .ASCII  /%PROGRAM IS ABORTED%#/
       026032 046501 044440 020123
       026040 041101 051117 042524
       026046 022504    043
 5146  026051    045 051105 047522  MSGE:   .ASCII  /%ERROR:        DRIVE NOT TE16 NOR TU16%#/
       026056 035122 042011 044522
       026064 042526 047040 052117
       026072 052040 030505 020066
       026100 047516 020122 052524
       026106 033061 021445
 5147                                       ;*******************************************************************
 5148
 5149  026112 022445 046524 031060  MSG1:   .ASCII  /%%TM02 - TU16 CTRL LGC (CZTUCG0)#/
       026120 026440 052040 030525
       026126 020066 052103 046122
       026134 046040 041507 024040
       026142 055103 052524 043503
       026150 024460    043
 5150  026153    105 052116 051105          .ASCII  /ENTER CONDITIONS IN OCTAL%#/
       026160 041440 047117 044504
       026166 044524 047117 020123
       026174 047111 047440 052103
       026202 046101 021445
 5151  026206 042045 044522 042526  MSG2:   .ASCII  /%DRIVE NUMBER #/
       026214 047040 046525 042502
       026222 020122    043
 5152  026225    045 043045 051117  MSG2A:  .ASCII  /%%FOR DRIVE ADDRESS TEST;/
       026232 042040 044522 042526
       026240 040440 042104 042522
       026246 051523 052040 051505
       026254 035524
 5153  026256 020045 047105 042524          .ASCII  /% ENTER EXPT DRIVE NUMBER, ALL OTHERS SHOULD BE NON-EXISTANT.#/
       026264 020122 054105 052120
       026272 042040 044522 042526
       026300 047040 046525 042502
       026306 026122 040440 046114
       026314 047440 044124 051105
       026322 020123 044123 052517
       026330 042114 041040 020105
       026336 047516 026516 054105
       026344 051511 040524 052116
       026352 021456
 5154  026354 047045 047117 042455  MSG3:   .ASCII  /%NON-EXIST DRIVE #/
       026362 044530 052123 042040
       026370 044522 042526 021440
 5155  026376 051045 020110 042504  MSG4:   .ASCII  /%RH DETECTED #/
       026404 042524 052103 042105
       026412 021440
 5156  026414 052045 030115 020062  MSG5:   .ASCII  /%TM02 DETECTED #/
```

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                026422  042504  042524  052103
                026430  042105  021440
 5157           026434  054105  052120  047055  MSG6:   .ASCII  /EXPT-NOT RECVD#/
                026442  052117  051040  041505
                026450  042126     043
 5158           026453     122  053103  026504  MSG7:   .ASCII  /RCVD-NOT EXPT#/
                026460  047516  020124  054105
                026466  052120     043
 5159           026471     045  046123  053101  MSG8:   .ASCII  /%SLAVE NUMBER #/
                026476  020105  052516  041115
                026504  051105  021440
 5160           026510  022445  047506  020122  MSG8A:  .ASCII  /%%FOR SLAVE ADDRESS TEST;/
                026516  046123  053101  020105
                026524  042101  051104  051505
                026532  020123  042524  052123
                026540     073
 5161           026541     045  042440  052116          .ASCII  /% ENTER EXPT SLAVE NUMBER, ALL OTHERS SHOULD BE NON-EXISTANT.#/
                026546  051105  042440  050130
                026554  020124  046123  053101
                026562  020105  052516  041115
                026570  051105  020054  046101
                026576  020114  052117  042510
                026604  051522  051440  047510
                026612  046125  020104  042502
                026620  047040  047117  042455
                026626  044530  052123  047101
                026634  027124     043
 5162           026637     045  047516  026516  MSG9:   .ASCII  /%NON-EXIST SLAVE #/
                026644  054105  051511  020124
                026652  046123  053101  020105
                026660     043
 5163           026661     045  042522  042101  MSG10:  .ASCII  /%READ CONT BUS PAR #/
                026666  041440  047117  020124
                026674  052502  020123  040520
                026702  020122     043
 5164           026705     045  051127  052111  MSG11:  .ASCII  /%WRITE CONT BUS PAR #/
                026712  020105  047503  052116
                026720  041040  051525  050040
                026726  051101  021440
 5165           026732  042440  050130  020124  MSG12:  .ASCII  / EXPT #/
                026740     043
 5166           026741     040  041522  042126  MSG13:  .ASCII  / RCVD #/
                026746  021440
 5167           026750  046445  020122  044502  MSG14:  .ASCII  /%MR BITS 4-0#/
                026756  051524  032040  030055
                026764     043
 5168           026765     045  051115  041040  MSG15:  .ASCII  /%MR BITS 15-7#/
                026772  052111  020123  032461
                027000  033455     043
 5169           027003     045  052111  051105  MSG16:  .ASCII  /%ITER: #/
                027010  020072     043
 5170           027013     045  041524  041040  MSG17:  .ASCII  /%TC BIT 13 #/
                027020  052111  030440  020063
                027026     043
 5171           027027     045  041524  041040  MSG18:  .ASCII  /%TC BITS 12-0 #/
                027034  052111  020123  031061
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                027042  030055  021440
 5172           027046  043045  020103  044502  MSG19:  .ASCII  /%FC BITS 15-0 #/
                027054  051524  030440  026465
                027062  020060      043
 5173           027065      045 052506  020116  MSG20:  .ASCII  /%FUN CODE BITS 5-1 OF C1 #/
                027072  047503  042504  041040
                027100  052111  020123  026465
                027106  020061  043117  041440
                027114  020061      043
 5174           027117      045 047507  041040  MSG21:  .ASCII  /%GO BIT NOT CORRECT AT START #/
                027124  052111  047040  052117
                027132  041440  051117  042522
                027140  052103  040440  020124
                027146  052123  051101  020124
                027154      043
 5175           027155      045 047507  041040  MSG22:  .ASCII  /%GO BIT NOT SET #/
                027162  052111  047040  052117
                027170  051440  052105  021440
 5176           027176  043445  020117  044502  MSG23:  .ASCII  /%GO BIT NOT RESET BY INIT #/
                027204  020124  047516  020124
                027212  042522  042523  020124
                027220  054502  044440  044516
                027226  020124      043
 5177           027231      045 051104  020131  MSG24:  .ASCII  /%DRY NOT SET BY INIT #/
                027236  047516  020124  042523
                027244  020124  054502  044440
                027252  044516  020124      043
 5178           027257      045 051104  020131  MSG25:  .ASCII  /%DRY NOT RESET BY GO=1#/
                027264  047516  020124  042522
                027272  042523  020124  054502
                027300  043440  036517  021461
 5179           027306  042045  054522  047040  MSG25A: .ASCII  /%DRY NOT SET BY GO=0#/
                027314  052117  051440  052105
                027322  041040  020131  047507
                027330  030075      043
 5180           027333      045 047516  044440  MSG26:  .ASCII  /%NO INTERRUPT RETURNED#/
                027340  052116  051105  052522
                027346  052120  051040  052105
                027354  051125  042516  021504
 5181           027362  041045  042101  051440  MSG27:  .ASCII  /%BAD STATUS#/
                027370  040524  052524  021523
 5182           027376  051440  035116  021440  MSG30:  .ASCII  / SN: #/
 5183           027404  042445  051122  047040  MSG31:  .ASCII  /%ERR NOT SET #/
                027412  052117  051440  052105
                027420  021440
 5184           027422  040445  040524  047040  MSG32:  .ASCII  /%ATA NOT SET #/
                027430  052117  051440  052105
                027436  021440
 5185           027440  040445  020123  044502  MSG33:  .ASCII  /%AS BIT NOT SET #/
                027446  020124  047516  020124
                027454  042523  020124      043
 5186           027461      045 041523  047040  MSG34:  .ASCII  /%SC NOT SET #/
                027466  052117  051440  052105
                027474  021440
 5187           027476  052045  042522  047040  MSG35:  .ASCII  /%TRE NOT SET #/
                027504  052117  051440  052105
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                027512  021440
 5188           027514  051445  040514  047040  MSG36:  .ASCII  /%SLA NOT SET #/
                027522  052117  051440  052105
                027530  021440
 5189           027532  051445  041523  047040  MSG37:  .ASCII  /%SSC NOT SET #/
                027540  052117  051440  052105
                027546  021440
 5190           027550  037440  021440          MSG40:  .ASCII  / ? #/
 5191           027554  022445  047105  020104  MSG41:  .ASCII  /%%END OF PASS #/
                027562  043117  050040  051501
                027570  020123     043
 5192           027573     045  042504  042101  MSG42:  .ASCII  /%DEAD TRACK #/
                027600  052040  040522  045503
                027606  021440
 5193           027610  022445  040515  052516  MSG43:  .ASCII  /%%MANUAL TESTS (14-17) INHIBITED: HALT%/
                027616  046101  052040  051505
                027624  051524  024040  032061
                027632  030455  024467  044440
                027640  044116  041111  052111
                027646  042105  020072  040510
                027654  052114     045
 5194           027657     122  051505  046105          .ASCII  /RESELECT AND PRESS CONTINUE%#/
                027664  041505  020124  047101
                027672  020104  051120  051505
                027700  020123  047503  052116
                027706  047111  042525  021445
 5195           027714  051045  043505  051511  MSG44:  .ASCII  /%REGISTER START: #/
                027722  042524  020122  052123
                027730  051101  035124  021440
 5196           027736  053045  041505  047524  MSG45:  .ASCII  /%VECTOR ADDRESS: #/
                027744  020122  042101  051104
                027752  051505  035123  021440
 5197           027760  041445  030523  020040  MSG46:  .ASCII  /%CS1    WC     BA     FC     CS2    DS     ER     AS/
                027766  020040  041527  020040
                027774  020040  041040  020101
                030002  020040  020040  041506
                030010  020040  020040  041440
                030016  031123  020040  020040
                030024  051504  020040  020040
                030032  042440  020122  020040
                030040  020040  051501
 5198           030044  020040  020040  046440          .ASCII  /     MR     TC%#/
                030052  020122  020040  020040
                030060  041524  021445
 5199           030064  047045  052117  051040  MSG47:  .ASCII  /%NOT RESET BY DRIVE CLEAR#/
                030072  051505  052105  041040
                030100  020131  051104  053111
                030106  020105  046103  040505
                030114  021522
 5200           030116  040445  050114  040510  MSG50:  .ASCII  /%ALPHA NOT SET#/
                030124  047040  052117  051440
                030132  052105     043
 5201           030135     045  047125  054105  MSG51:  .ASCII  /%UNEXPECTED ERROR BITS#/
                030142  042520  052103  042105
                030150  042440  051122  051117
                030156  041040  052111  021523
```

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 5202  030164  047045  055122  047440  MSG52:  .ASCII  /%NRZ ONLY: #/
       030172  046116  035131  021440
 5203  030200  041045  042101  046040  MSG53:  .ASCII  /%BAD LRC #/
       030206  041522  021440
 5204  030212  041045  042101  041440  MSG54:  .ASCII  /%BAD CK #/
       030220  020113     043
 5205  030223     045  042523  052524  MSG55:  .ASCII  /%SETUP ERROR: CHECK WRAP 0 WITH TEST 50#/
       030230  020120  051105  047522
       030236  035122  041440  042510
       030244  045503  053440  040522
       030252  020120  020060  044527
       030260  044124  052040  051505
       030266  020124  030065     043
 5206  030273     045  052123  052101  MSG56:  .ASCII  /%STATIC TESTS ONLY: #/
       030300  041511  052040  051505
       030306  051524  047440  046116
       030314  035131  021440
```

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 5208                                                ;TEST HEADER**********
 5209
 5210  030320  022445  047514  044507  MSLT1:  .ASCII  /%%LOGIC TEST 1: DRIVE ADDRESSING (M8909 RH)#/
       030326  020103  042524  052123
       030334  030440  020072  051104
       030342  053111  020105  042101
       030350  051104  051505  044523
       030356  043516  024040  034115
       030364  030071  020071  044122
       030372  021451
 5211  030374  022445  047514  044507  MSLT2:  .ASCII  /%%LOGIC TEST 2: REGISTER ADDRESSING (M8909 RH)#/
       030402  020103  042524  052123
       030410  031040  020072  042522
       030416  044507  052123  051105
       030424  040440  042104  042522
       030432  051523  047111  020107
       030440  046450  034470  034460
       030446  051040  024510     043
 5212  030453     045  046045  043517  MSLT3:  .ASCII  /%%LOGIC TEST 3: CONTROL BUS TEST (RH M8905 M8909)#/
       030460  041511  052040  051505
       030466  020124  035063  041440
       030474  047117  051124  046117
       030502  041040  051525  052040
       030510  051505  020124  051050
       030516  020110  034115  030071
       030524  020065  034115  030071
       030532  024471     043
 5213  030535     045  046045  043517  MSLT4:  .ASCII  /%%LOGIC TEST 4: SLAVE ADDRESSING (M8905 M8903)#/
       030542  041511  052040  051505
       030550  020124  035064  051440
       030556  040514  042526  040440
       030564  042104  042522  051523
       030572  047111  020107  046450
       030600  034470  032460  046440
       030606  034470  031460  021451
 5214  030614  022445  047514  044507  MSLT5:  .ASCII  /%%LOGIC TEST 5: MR BIT TEST (M8905)#/
       030622  020103  042524  052123
       030630  032440  020072  051115
       030636  041040  052111  052040
       030644  051505  020124  046450
       030652  034470  032460  021451
 5215  030660  022445  047514  044507  MSLT6:  .ASCII  /%%LOGIC TEST 6: TC BIT TEST (M8905)#/
       030666  020103  042524  052123
       030674  033040  020072  041524
       030702  041040  052111  052040
       030710  051505  020124  046450
       030716  034470  032460  021451
 5216  030724  022445  047514  044507  MSLT7:  .ASCII  /%%LOGIC TEST 7: FC BIT TEST (M8905)#/
       030732  020103  042524  052123
       030740  033440  020072  041506
       030746  041040  052111  052040
       030754  051505  020124  046450
       030762  034470  032460  021451
 5217  030770  022445  047514  044507  MSLT10: .ASCII  /%%LOGIC TEST 10: FUNCTION BIT TEST (M8905)#/
       030776  020103  042524  052123
       031004  030440  035060  043040
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                031012  047125  052103  047511
                031020  020116  044502  020124
                031026  042524  052123  024040
                031034  034115  030071  024465
                031042     043
 5218           031043     045  046045  043517  MSLT11: .ASCII  /%%LOGIC TEST 11: GO BIT TEST (M8909)#/
                031050  041511  052040  051505
                031056  020124  030461  020072
                031064  047507  041040  052111
                031072  052040  051505  020124
                031100  046450  034470  034460
                031106  021451
 5219           031110  022445  047514  044507  MSLT12: .ASCII  /%%LOGIC TEST 12: DRIVE READY BIT (M8909)#/
                031116  020103  042524  052123
                031124  030440  035062  042040
                031132  044522  042526  051040
                031140  040505  054504  041040
                031146  052111  024040  034115
                031154  030071  024471     043
 5220           031161     045  046045  043517  MSLT13: .ASCII  /%%LOGIC TEST 13: INTERRUPT TEST (RH)#/
                031166  041511  052040  051505
                031174  020124  031461  020072
                031202  047111  042524  051122
                031210  050125  020124  042524
                031216  052123  024040  044122
                031224  021451
 5221           031226  022445  047514  044507  MSLT14: .ASCII  /%%LOGIC TEST 14: MANUAL STATUS TEST 1#/
                031234  020103  042524  052123
                031242  030440  035064  046440
                031250  047101  040525  020114
                031256  052123  052101  051525
                031264  052040  051505  020124
                031272  021461
 5222           031274  022445  047514  044507  MSLT15: .ASCII  /%%LOGIC TEST 15: MANUAL STATUS TEST 2#/
                031302  020103  042524  052123
                031310  030440  035065  046440
                031316  047101  040525  020114
                031324  052123  052101  051525
                031332  052040  051505  020124
                031340  021462
 5223           031342  022445  047514  044507  MSLT16: .ASCII  /%%LOGIC TEST 16: MANUAL STATUS TEST 3#/
                031350  020103  042524  052123
                031356  030440  035066  046440
                031364  047101  040525  020114
                031372  052123  052101  051525
                031400  052040  051505  020124
                031406  021463
 5224           031410  022445  047514  044507  MSLT17: .ASCII  /%%LOGIC TEST 17: MANUAL STATUS TEST 4#/
                031416  020103  042524  052123
                031424  030440  035067  046440
                031432  047101  040525  020114
                031440  052123  052101  051525
                031446  052040  051505  020124
                031454  021464
 5225           031456  022445  047514  044507  MSLT20: .ASCII  /%%LOGIC TEST 20: ILLEGAL FUNCTION TEST (M8909)#/
                031464  020103  042524  052123
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                031472  031040  035060  044440
                031500  046114  043505  046101
                031506  043040  047125  052103
                031514  047511  020116  042524
                031522  052123  024040  034115
                031530  030071  024471    043
 5226           031535    045   046045  043517  MSLT21: .ASCII  /%%LOGIC TEST 21: RMR(M8909)#/
                031542  041511  052040  051505
                031550  020124  030462  020072
                031556  046522  024122  034115
                031564  030071  024471    043
 5227           031571    045   046045  043517  MSLT22: .ASCII  /%%LOGIC TEST 22: CPAR(M8909)#/
                031576  041511  052040  051505
                031604  020124  031062  020072
                031612  050103  051101  046450
                031620  034470  034460  021451
 5228           031626  022445  047514  044507  MSLT23: .ASCII  /%%LOGIC TEST 23: FMT(M8905 M8906)#/
                031634  020103  042524  052123
                031642  031040  035063  043040
                031650  052115  046450  034470
                031656  032460  046440  034470
                031664  033060  021451
 5229           031670  022445  047514  044507  MSLT24: .ASCII  /%%LOGIC TEST 24: DPAR(M8906 RH)#/
                031676  020103  042524  052123
                031704  031040  035064  042040
                031712  040520  024122  034115
                031720  030071  020066  044122
                031726  021451
 5230           031730  022445  047514  044507  MSLT25: .ASCII  /%%LOGIC TEST 25: NEF(M8909)#/
                031736  020103  042524  052123
                031744  031040  035065  047040
                031752  043105  046450  034470
                031760  034460  021451
 5231           031764  022445  047514  044507  MSLT26: .ASCII  /%%LOGIC TEST 26: FCE(M8909)#/
                031772  020103  042524  052123
                032000  031040  035066  043040
                032006  042503  046450  034470
                032014  034460  021451
 5232           032020  022445  047514  044507  MSLT27: .ASCII  /%%LOGIC TEST 27: ILR(M8909)#/
                032026  020103  042524  052123
                032034  031040  035067  044440
                032042  051114  046450  034470
                032050  034460  021451
 5233           032054  022445  047514  044507  MSLT30: .ASCII  /%%LOGIC TEST 30:DTE(M8906 RH)#/
                032062  020103  042524  052123
                032070  031440  035060  052104
                032076  024105  034115  030071
                032104  020066  044122  021451
 5234           032112  022445  047514  044507  MSLT31: .ASCII  /%%LOGIC TEST 31: OPI(M8903)#/
                032120  020103  042524  052123
                032126  031440  035061  047440
                032134  044520  046450  034470
                032142  031460  021451
 5235           032146  022445  047514  044507  MSLT32: .ASCII  /%%LOGIC TEST 32: UNS(M8909)#/
                032154  020103  042524  052123
                032162  031440  035062  052440
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                032170  051516  046450  034470
                032176  034460  021451
 5236           032202  022445  047514  044507  MSLT33: .ASCII  /%%LOGIC TEST 33: PIP(M8909)#/
                032210  020103  042524  052123
                032216  031440  035063  050040
                032224  050111  046450  034470
                032232  034460  021451
 5237           032236  022445  047514  044507  MSLT34: .ASCII  /%%LOGIC TEST 34: PES(M8911)#/
                032244  020103  042524  052123
                032252  031440  035064  050040
                032260  051505  046450  034470
                032266  030461  021451
 5238           032272  022445  047514  044507  MSLT35: .ASCII  /%%LOGIC TEST 35: TCW(M8903 M8905)#/
                032300  020103  042524  052123
                032306  031440  035065  052040
                032314  053503  046450  034470
                032322  031460  046440  034470
                032330  032460  021451
 5239           032334  022445  047514  044507  MSLT36: .ASCII  /%%LOGIC TEST 36: FCS(M8903 M8905)#/
                032342  020103  042524  052123
                032350  031440  035066  043040
                032356  051503  046450  034470
                032364  031460  046440  034470
                032372  032460  021451
 5240           032376  022445  047514  044507  MSLT37: .ASCII  /%%LOGIC TEST 37: ACCL(M8903 M8905)#/
                032404  020103  042524  052123
                032412  031440  035067  040440
                032420  041503  024114  034115
                032426  030071  020063  034115
                032434  030071  024465     043
 5241           032441     045  046045  043517  MSLT40: .ASCII  /%%LOGIC TEST 40: PE TAPE MARK(M8902)#/
                032446  041511  052040  051505
                032454  020124  030064  020072
                032462  042520  052040  050101
                032470  020105  040515  045522
                032476  046450  034470  031060
                032504  021451
 5242           032506  022445  047514  044507  MSLT41: .ASCII  /%%LOGIC TEST 41: NRZ TAPE MARK (M8904)#/
                032514  020103  042524  052123
                032522  032040  035061  047040
                032530  055122  052040  050101
                032536  020105  040515  045522
                032544  024040  034115  030071
                032552  024464     043
 5243           032555     045  046045  043517  MSLT42: .ASCII  /%%LOGIC TEST 42: WRAP 3,NRZ,NORMAL,ODD#/
                032562  041511  052040  051505
                032570  020124  031064  020072
                032576  051127  050101  031440
                032604  047054  055122  047054
                032612  051117  040515  026114
                032620  042117  021504
 5244           032624  022445  047514  044507  MSLT43: .ASCII  /%%LOGIC TEST 43: WRAP 3,PE,NORMAL,ODD#/
                032632  020103  042524  052123
                032640  032040  035063  053440
                032646  040522  020120  026063
                032654  042520  047054  051117
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                032662  040515  026114  042117
                032670  021504
 5245           032672  022445  047514  044507  MSLT44: .ASCII  /%%LOGIC TEST 44: WRAP 2,NRZ,NORMAL,ODD#/
                032700  020103  042524  052123
                032706  032040  035064  053440
                032714  040522  020120  026062
                032722  051116  026132  047516
                032730  046522  046101  047454
                032736  042104     043
 5246           032741     045  046045  043517  MSLT45: .ASCII  /%%LOGIC TEST 45: WRAP 2,PE,NORMAL,ODD#/
                032746  041511  052040  051505
                032754  020124  032464  020072
                032762  051127  050101  031040
                032770  050054  026105  047516
                032776  046522  046101  047454
                033004  042104     043
 5247           033007     045  046045  043517  MSLT46: .ASCII  /%%LOGIC TEST 46: WRAP 1,NRZ,NORMAL,ODD#/
                033014  041511  052040  051505
                033022  020124  033064  020072
                033030  051127  050101  030440
                033036  047054  055122  047054
                033044  051117  040515  026114
                033052  042117  021504
 5248           033056  022445  047514  044507  MSLT47: .ASCII  /%%LOGIC TEST 47: WRAP 1,PE,NORMAL,ODD#/
                033064  020103  042524  052123
                033072  032040  035067  053440
                033100  040522  020120  026061
                033106  042520  047054  051117
                033114  040515  026114  042117
                033122  021504
 5249           033124  022445  047514  044507  MSLT50: .ASCII  /%%LOGIC TEST 50: WRAP 0,NRZ,NORMAL,ODD#/
                033132  020103  042524  052123
                033140  032440  035060  053440
                033146  040522  020120  026060
                033154  051116  026132  047516
                033162  046522  046101  047454
                033170  042104     043
 5250           033173     045  046045  043517  MSLT51: .ASCII  /%%LOGIC TEST 51: WRAP 0,PE,NORMAL,ODD#/
                033200  041511  052040  051505
                033206  020124  030465  020072
                033214  051127  050101  030040
                033222  050054  026105  047516
                033230  046522  046101  047454
                033236  042104     043
 5251           033241     045  046045  043517  MSLT52: .ASCII  /%%LOGIC TEST 52: CORE DUMP WRITE (M8906)#/
                033246  041511  052040  051505
                033254  020124  031065  020072
                033262  047503  042522  042040
                033270  046525  020120  051127
                033276  052111  020105  046450
                033304  034470  033060  021451
 5252           033312  022445  047514  044507  MSLT53: .ASCII  /%%LOGIC TEST 53: CORE DUMP READ (M8906)#/
                033320  020103  042524  052123
                033326  032440  035063  041440
                033334  051117  020105  052504
                033342  050115  051040  040505
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                033350  020104  046450  034470
                033356  033060  021451
 5253           033362  022445  047514  044507  MSLT54: .ASCII  /%%LOGIC TEST 54: EVEN PARITY WRITE (M8903 M8904)#/
                033370  020103  042524  052123
                033376  032440  035064  042440
                033404  042526  020116  040520
                033412  044522  054524  053440
                033420  044522  042524  024040
                033426  034115  030071  020063
                033434  034115  030071  024464
                033442     043
 5254           033443     045  046045  043517  MSLT55: .ASCII  /%%LOGIC TEST 55: EVEN PARITY READ(M8903 M8904)#/
                033450  041511  052040  051505
                033456  020124  032465  020072
                033464  053105  047105  050040
                033472  051101  052111  020131
                033500  042522  042101  046450
                033506  034470  031460  046440
                033514  034470  032060  021451
 5255           033522  022445  047514  044507  MSLT56: .ASCII  /%%LOGIC TEST 56: READ REVERSE(M8906)#/
                033530  020103  042524  052123
                033536  032440  035066  051040
                033544  040505  020104  042522
                033552  042526  051522  024105
                033560  034115  030071  024466
                033566     043
 5256           033567     045  046045  043517  MSLT57: .ASCII  /%%LOGIC TEST 57: CRC(M8904)#/
                033574  041511  052040  051505
                033602  020124  033465  020072
                033610  051103  024103  034115
                033616  030071  024464     043
 5257           033623     045  046045  043517  MSLT60: .ASCII  /%%LOGIC TEST 60: LRC(M8904)#/
                033630  041511  052040  051505
                033636  020124  030066  020072
                033644  051114  024103  034115
                033652  030071  024464     043
 5258           033657     045  046045  043517  MSLT61: .ASCII  /%%LOGIC TEST 61: CORRECTABLE DATA (M8902 M8901)#/
                033664  041511  052040  051505
                033672  020124  030466  020072
                033700  047503  051122  041505
                033706  040524  046102  020105
                033714  040504  040524  024040
                033722  034115  030071  020062
                033730  034115  030071  024461
                033736     043
 5259           033737     045  046045  043517  MSLT62: .ASCII  /%%LOGIC TEST 62: INCORRECTABLE DATA (M8902 M8904)#/
                033744  041511  052040  051505
                033752  020124  031066  020072
                033760  047111  047503  051122
                033766  041505  040524  046102
                033774  020105  040504  040524
                034002  024040  034115  030071
                034010  020062  034115  030071
                034016  024464     043
 5260           034021     045  046045  043517  MSLT63: .ASCII  /%%LOGIC TEST 63: PEF(M8902)#/
                034026  041511  052040  051505
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                034034  020124  031466  020072
                034042  042520  024106  034115
                034050  030071  024462     043
  5261          034055     045  046045  043517  MSLT64: .ASCII  /%%LOGIC TEST 64: FC OVERFLOW (M8905)#/
                034062  041511  052040  051505
                034070  020124  032066  020072
                034076  041506  047440  042526
                034104  043122  047514  020127
                034112  046450  034470  032460
                034120  021451
```

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 5263
 5264                                                    ;MANUAL INSTRUCTION**********
 5265
 5266  034122  052045  050131  020105  MMSG0:  .ASCII  /%TYPE CR WHEN READY;#/
       034130  051103  053440  042510
       034136  020116  042522  042101
       034144  035531     043
 5267  034147     045  046445  052517  MMSG1:  .ASCII  /%%MOUNT TAPE WITH NO WRITE RING, LOAD TO BOT, SET TO ON LINE:#/
       034154  052116  052040  050101
       034162  020105  044527  044124
       034170  047040  020117  051127
       034176  052111  020105  044522
       034204  043516  020054  047514
       034212  042101  052040  020117
       034220  047502  026124  051440
       034226  052105  052040  020117
       034234  047117  046040  047111
       034242  035105     043
 5268  034245     045  042523  020124  MMSG2:   ASCII  /%SET TO OFFLINE:#/
       034252  047524  047440  043106
       034260  044514  042516  021472
 5269  034266  046445  053117  020105  MMSG3:  .ASCII  /%MOVE FORWARD TO EOT, ONLINE:#/
       034274  047506  053522  051101
       034302  020104  047524  042440
       034310  052117  020054  047117
       034316  044514  042516  021472
 5270  034324  047445  043106  046040  MMSG4:  .ASCII  /%OFF LINE REVERSE PAST EOT  INSERT WRITE RING, ON LINE#/
       034332  047111  020105  042522
       034340  042526  051522  020105
       034346  040520  052123  042440
       034354  052117  020054  047111
       034362  042523  052122  053440
       034370  044522  042524  051040
       034376  047111  026107  047440
       034404  020116  044514  042516
       034412     043
 5271  034413     045  046445  053117  MMSG5:  .ASCII  /%%MOVE TAPE TO BOT; ON LINE#/
       034420  020105  040524  042520
       034426  052040  020117  047502
       034434  035524  047440  020116
       034442  044514  042516     043
```

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5273
5274                                                    ;TAG MESSAGE
5275
5276  034447    045  046123  020101  TMS1:   .ASCII  /%SLA #/
      034454    043
5277  034455    045  047502  020124  TMS2:   .ASCII  /%BOT #/
      034462    043
5278  034463    045  046524  021440  TMS3:   .ASCII  /%TM #/
5279  034470 044445  041104  021440  TMS4:   .ASCII  /%IDB #/
5280  034476 051445  053504  020116  TMS5:   .ASCII  /%SDWN #/
      034504    043
5281  034505    045  042520  020123  TMS6:   .ASCII  /%PES #/
      034512    043
5282  034513    045  051523  020103  TMS7:   .ASCII  /%SSC #/
      034520    043
5283  034521    045  051104  020131  TMS8:   .ASCII  /%DRY #/
      034526    043
5284  034527    045  050104  020122  TMS9:   .ASCII  /%DPR #/
      034534    043
5285  034535    045  052116  020114  TMS10:  .ASCII  /%NTL #/
      034542    043
5286  034543    045  047505  020124  TMS11:  .ASCII  /%EOT #/
      034550    043
5287  034551    045  051127  020114  TMS12:  .ASCII  /%WRL #/
      034556    043
5288  034557    045  047515  020114  TMS13:  .ASCII  /%MOL #/
      034564    043
5289  034565    045  044520  020120  TMS14:  .ASCII  /%PIP #/
      034572    043
5290  034573    045  051105  020122  TMS15:  .ASCII  /%ERR #/
      034600    043
5291  034601    045  052101  020101  TMS16:  .ASCII  /%ATA #/
      034606    043
5292  034607    045  046111  020106  TMS17:  .ASCII  /%ILF #/
      034614    043
5293  034615    045  046111  020122  TMS18:  .ASCII  /%ILR #/
      034622    043
5294  034623    045  046522  020122  TMS19:  .ASCII  /%RMR #/
      034630    043
5295  034631    045  050103  051101  TMS20:  .ASCII  /%CPAR #/
      034636 021440
5296  034640 043045  052115  021440  TMS21:  .ASCII  /%FMT #/
5297  034646 042045  040520  020122  TMS22:  .ASCII  /%DPAR #/
      034654    043
5298  034655    045  047111  020103  TMS23:  .ASCII  /%INC #/
      034662    043
5299  034663    045  050126  020105  TMS24:  .ASCII  /%VPE #/
      034670    043
5300  034671    045  042520  020106  TMS25:  .ASCII  /%PEF #/
      034676    043
5301  034677    045  051114  020103  TMS26:  .ASCII  /%LRC #/
      034704    043
5302  034705    045  051516  020107  TMS27:  .ASCII  /%NSG #/
      034712    043
5303  034713    045  041506  020105  TMS28:  .ASCII  /%FCE #/
      034720    043
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 5304  034721     045  051503  021440  TMS29:  .ASCII  /%CS #/
 5305  034726  044445  046524  021440  TMS30:  .ASCII  /%ITM #/
 5306  034734  047045  043105  021440  TMS31:  .ASCII  /%NEF #/
 5307  034742  042045  042524  021440  TMS32:  .ASCII  /%DTE #/
 5308  034750  047445  044520  021440  TMS33:  .ASCII  /%OPI #/
 5309  034756  053445  044522  042524  TMS33A: .ASCII  /%WRITE OPI #/
       034764  047440  044520  021440
 5310  034772  051045  040505  020104  TMS33B: .ASCII  /%READ OPI #/
       035000  050117  020111     043
 5311  035005     045  047125  020123  TMS34:  .ASCII  /%UNS #/
       035012     043
 5312  035013     045  047503  051122  TMS35:  .ASCII  /%CORR #/
       035020  021440
 5313  035022  041445  041522  021440  TMS36:  .ASCII  /%CRC #/
 5314  035030  052045  053503  021440  TMS37:  .ASCII  /%TCW #/
 5315  035036  043045  051503  021440  TMS38:  .ASCII  /%FCS #/
 5316  035044  040445  041503  020114  TMS39:  .ASCII  /%ACCL #/
       035052     043
 5317
 5318          035054                          .EVEN
 5319                                          ;WRITE BUFFER
 5320
 5321  035054  000100                  WDATA:  .REPT   100
 5322                                          -1
 5323                                          .ENDR
  (1)  035054  177777                          -1
  (1)  035056  177777                          -1
  (1)  035060  177777                          -1
  (1)  035062  177777                          -1
  (1)  035064  177777                          -1
  (1)  035066  177777                          -1
  (1)  035070  177777                          -1
  (1)  035072  177777                          -1
  (1)  035074  177777                          -1
  (1)  035076  177777                          -1
  (1)  035100  177777                          -1
  (1)  035102  177777                          -1
  (1)  035104  177777                          -1
  (1)  035106  177777                          -1
  (1)  035110  177777                          -1
  (1)  035112  177777                          -1
  (1)  035114  177777                          -1
  (1)  035116  177777                          -1
  (1)  035120  177777                          -1
  (1)  035122  177777                          -1
  (1)  035124  177777                          -1
  (1)  035126  177777                          -1
  (1)  035130  177777                          -1
  (1)  035132  177777                          -1
  (1)  035134  177777                          -1
  (1)  035136  177777                          -1
  (1)  035140  177777                          -1
  (1)  035142  177777                          -1
  (1)  035144  177777                          -1
  (1)  035146  177777                          -1
  (1)  035150  177777                          -1
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  (1)  035152  177777                    -1
  (1)  035154  177777                    -1
  (1)  035156  177777                    -1
  (1)  035160  177777                    -1
  (1)  035162  177777                    -1
  (1)  035164  177777                    -1
  (1)  035166  177777                    -1
  (1)  035170  177777                    -1
  (1)  035172  177777                    -1
  (1)  035174  177777                    -1
  (1)  035176  177777                    -1
  (1)  035200  177777                    -1
  (1)  035202  177777                    -1
  (1)  035204  177777                    -1
  (1)  035206  177777                    -1
  (1)  035210  177777                    -1
  (1)  035212  177777                    -1
  (1)  035214  177777                    -1
  (1)  035216  177777                    -1
  (1)  035220  177777                    -1
  (1)  035222  177777                    -1
  (1)  035224  177777                    -1
  (1)  035226  177777                    -1
  (1)  035230  177777                    -1
  (1)  035232  177777                    -1
  (1)  035234  177777                    -1
  (1)  035236  177777                    -1
  (1)  035240  177777                    -1
  (1)  035242  177777                    -1
  (1)  035244  177777                    -1
  (1)  035246  177777                    -1
  (1)  035250  177777                    -1
  (1)  035252  177777                    -1
5324
5325
5326                                     ;READ BUFFER
5327
5328  035254  000100            RDATA:   .REPT   100
5329                                     0
5330                                     .ENDR
  (1)  035254  000000                    0
  (1)  035256  000000                    0
  (1)  035260  000000                    0
  (1)  035262  000000                    0
  (1)  035264  000000                    0
  (1)  035266  000000                    0
  (1)  035270  000000                    0
  (1)  035272  000000                    0
  (1)  035274  000000                    0
  (1)  035276  000000                    0
  (1)  035300  000000                    0
  (1)  035302  000000                    0
  (1)  035304  000000                    0
  (1)  035306  000000                    0
  (1)  035310  000000                    0
  (1)  035312  000000                    0
```

```
    (1)  035314  000000                          0
    (1)  035316  000000                          0
    (1)  035320  000000                          0
    (1)  035322  000000                          0
    (1)  035324  000000                          0
    (1)  035326  000000                          0
    (1)  035330  000000                          0
    (1)  035332  000000                          0
    (1)  035334  000000                          0
    (1)  035336  000000                          0
    (1)  035340  000000                          0
    (1)  035342  000000                          0
    (1)  035344  000000                          0
    (1)  035346  000000                          0
    (1)  035350  000000                          0
    (1)  035352  000000                          0
    (1)  035354  000000                          0
    (1)  035356  000000                          0
    (1)  035360  000000                          0
    (1)  035362  000000                          0
    (1)  035364  000000                          0
    (1)  035366  000000                          0
    (1)  035370  000000                          0
    (1)  035372  000000                          0
    (1)  035374  000000                          0
    (1)  035376  000000                          0
    (1)  035400  000000                          0
    (1)  035402  000000                          0
    (1)  035404  000000                          0
    (1)  035406  000000                          0
    (1)  035410  000000                          0
    (1)  035412  000000                          0
    (1)  035414  000000                          0
    (1)  035416  000000                          0
    (1)  035420  000000                          0
    (1)  035422  000000                          0
    (1)  035424  000000                          0
    (1)  035426  000000                          0
    (1)  035430  000000                          0
    (1)  035432  000000                          0
    (1)  035434  000000                          0
    (1)  035436  000000                          0
    (1)  035440  000000                          0
    (1)  035442  000000                          0
    (1)  035444  000000                          0
    (1)  035446  000000                          0
    (1)  035450  000000                          0
    (1)  035452  000000                          0
5331
5332                                             ;WRAP AROUND MESSAGES******
5333
5334  035454  051445  052105  050125  WMSG2:  .ASCII  /%SETUP ERROR%#/
      035462  042440  051122  051117
      035470  021445
5335  035472  050045  052101  047122  WMSG3:  .ASCII  /%PATRN NUMBER = #/
      035500  047040  046525  042502
```

```
        035506  020122  020075     043
 5336   035513     045  047516  026516  WMSG4:  .ASCII  /%NON-EXISTANT DRIVE%#/
        035520  054105  051511  040524
        035526  052116  042040  044522
        035534  042526  021445
 5337   035540  041445  030523  021440  WMSG6:  .ASCII  /%CS1 #/
 5338   035546  053445  020103     043  WMSG6A: .ASCII  /%WC #/
 5339   035553     045  040502  021440  WMSG6B: .ASCII  /%BA #/
 5340   035560  043045  020103     043  WMSG6C: .ASCII  /%FC #/
 5341   035565     045  051503  020062  WMSG6D: .ASCII  /%CS2 #/
        035572     043
 5342   035573     045  051504  021440  WMSG6E: .ASCII  /%DS #/
 5343   035600  042445  020122     043  WMSG6F: .ASCII  /%ER #/
 5344   035605     045  051501  021440  WMSG6G: .ASCII  /%AS #/
 5345   035612  041445  020103     043  WMSG6H: .ASCII  /%CC #/
 5346   035617     045  041104  021440  WMSG6I: .ASCII  /%DB #/
 5347   035624  046445  020122     043  WMSG6J: .ASCII  /%MR #/
 5348   035631     045  052104  021440  WMSG6K: .ASCII  /%DT #/
 5349   035636  052045  020103     043  WMSG6L: .ASCII  /%TC #/
 5350   035643     045  047123  021440  WMSG6M: .ASCII  /%SN #/
 5351   035650  041045  042101  042040  WMSG16: .ASCII  /%BAD DATA#/
        035656  052101  021501
 5352   035662  043445  020072     043  WMSG17: .ASCII  /%G: #/
 5353   035667     045  035102  021440  WMSG20: .ASCII  /%B: #/
 5354   035674  041445  035116  021440  WMSG21: .ASCII  /%CN: #/
 5355   035702  041045  042101  051440  WMSG23: .ASCII  /%BAD STATUS#/
        035710  040524  052524  021523
 5356   035716  047045  020117  047111  WMSG24: .ASCII  /%NO INTERRUPT#/
        035724  042524  051122  050125
        035732  021524
 5357   035734  047045  020117  046103  WMSG25: .ASCII  /%NO CLOCK UP#/
        035742  041517  020113  050125
        035750     043
 5358   035751     045  047516  041440  WMSG26: .ASCII  /%NO CLOCK DOWN#/
        035756  047514  045503  042040
        035764  053517  021513
 5359   035770  042045  052101  020101  WMSG27: .ASCII  /%DATA PAT:#/
        035776  040520  035124     043
 5360   036003     045  040502  020104  WMSG28: .ASCII  /%BAD PREAMBLE#/
        036010  051120  040505  041115
        036016  042514     043
 5361   036021     045  040502  020104  WMSG29: .ASCII  /%BAD POSTAMBLE#/
        036026  047520  052123  046501
        036034  046102  021505
 5362   036040  042445  051117  041440  WMSG31: .ASCII  /%EOR CLEAR DID NOT CLEAR GO%#/
        036046  042514  051101  042040
        036054  042111  047040  052117
        036062  041440  042514  051101
        036070  043440  022517     043
 5363   036075     040  040520  051124  WMSG32: .ASCII  / PATRN #/
        036102  020116     043
 5364
 5365   036105     045  043536     043  $CNTG:  .ASCII  /%^G#/
 5366   036111     045  053523  036522  $MSWR:  .ASCII  /%SWR= #/
        036116  021440
 5367   036120  020040  042516  036527  $MNEW:  .ASCII  /  NEW= #/
```

```
        036126  021440
 5368   036130  037440  022440     043  $QUEST: .ASCII  / ? %#/
 5369
 5370           036136                          .EVEN
 5371   036136  000000                  PRE:    0
 5372           000050                          .REPT   50
 5373                                           0
 5374                                           .ENDR
  (1)   036140  000000                          0
  (1)   036142  000000                          0
  (1)   036144  000000                          0
  (1)   036146  000000                          0
  (1)   036150  000000                          0
  (1)   036152  000000                          0
  (1)   036154  000000                          0
  (1)   036156  000000                          0
  (1)   036160  000000                          0
  (1)   036162  000000                          0
  (1)   036164  000000                          0
  (1)   036166  000000                          0
  (1)   036170  000000                          0
  (1)   036172  000000                          0
  (1)   036174  000000                          0
  (1)   036176  000000                          0
  (1)   036200  000000                          0
  (1)   036202  000000                          0
  (1)   036204  000000                          0
  (1)   036206  000000                          0
  (1)   036210  000000                          0
  (1)   036212  000000                          0
  (1)   036214  000000                          0
  (1)   036216  000000                          0
  (1)   036220  000000                          0
  (1)   036222  000000                          0
  (1)   036224  000000                          0
  (1)   036226  000000                          0
  (1)   036230  000000                          0
  (1)   036232  000000                          0
  (1)   036234  000000                          0
  (1)   036236  000000                          0
  (1)   036240  000000                          0
  (1)   036242  000000                          0
  (1)   036244  000000                          0
  (1)   036246  000000                          0
  (1)   036250  000000                          0
  (1)   036252  000000                          0
  (1)   036254  000000                          0
  (1)   036256  000000                          0
 5375   036260  000000                  POST:   0
 5376           000050                          .REPT   50
 5377                                           0
 5378                                           .ENDR
  (1)   036262  000000                          0
  (1)   036264  000000                          0
  (1)   036266  000000                          0
  (1)   036270  000000                          0
```

```
    (1)  036272  000000                    0
    (1)  036274  000000                    0
    (1)  036276  000000                    0
    (1)  036300  000000                    0
    (1)  036302  000000                    0
    (1)  036304  000000                    0
    (1)  036306  000000                    0
    (1)  036310  000000                    0
    (1)  036312  000000                    0
    (1)  036314  000000                    0
    (1)  036316  000000                    0
    (1)  036320  000000                    0
    (1)  036322  000000                    0
    (1)  036324  000000                    0
    (1)  036326  000000                    0
    (1)  036330  000000                    0
    (1)  036332  000000                    0
    (1)  036334  000000                    0
    (1)  036336  000000                    0
    (1)  036340  000000                    0
    (1)  036342  000000                    0
    (1)  036344  000000                    0
    (1)  036346  000000                    0
    (1)  036350  000000                    0
    (1)  036352  000000                    0
    (1)  036354  000000                    0
    (1)  036356  000000                    0
    (1)  036360  000000                    0
    (1)  036362  000000                    0
    (1)  036364  000000                    0
    (1)  036366  000000                    0
    (1)  036370  000000                    0
    (1)  036372  000000                    0
    (1)  036374  000000                    0
    (1)  036376  000000                    0
    (1)  036400  000000                    0
5379     036402  000000            WBUFF:  0
5380             037014                    .=.+410
5381     037014  000000            RBUFF:  0
5382
5383             C00001                    .END
```

```
ABORT   025742          1965    5127#
ACT11M  000620          1727#   1988    5108*
ADDFL   000756          1780#   4517*   4529    4541    4570*
ADUMPM  000622          1729#   5113*
AS      000526          1688#   4593    4630    4674
ASF     000740          1773#
ATAF    000730          1769#
ATTA    023416          4658    4661#
ATTB    023440          4662    4665#
ATTC    023462          4670    4673
ATTD    023472          4669    4674#
ATTN    023376          4609    4657#
ATTP    023502          4660    4664    4675    4677#   4695
ATTPA   023530          4680    4683#
ATTX    023554          4678    4688#
ATTXA   023566          4689    4691#
ATTXX   023610          4692    4694    4696#
AUTOM   000616          1726#   1958    2075    2118    2147    2566    2597    2627    2658    5100*   5103*
BA      000514          1683#   2801*   3501*   3523*   3557*   3598*   3647*   3695*   3735*   3901*   4583
BAE     000544          1695#   2061
BOTT    017270          3238    3895    4012#
BOTTA   017314          4016#   4017
BOTTX   017330          4013    4019#
CC      000530          1689#   3511    3618    3620    3666
CKMODE  025650          1957    5100#
CKSWR   025120          2091    4746    4985#   5092
CNTLU   025172          1981    4995#   5011
COUNT   025114          4983#   5005*   5016    5032*
CRCNT   001004          1791#   4131*   4196    4225*   4238*   4290    4306*   4330*   4357    4376*   4384*   4422    4447*
CS      000520          1685#   2077*   2176*   2177*   2179    2204*   2205*   2293*   2294*   2437*   2438*   2751*   2754*
                        2806*   2844*   3902    4083    4587    4786*   4787*
C1      000510          1681#   2021    2077    2178    2207    2212    2249    2439*   2440    2464    2471*   2472    2477
                        2513*   2542*   2544*   2697*   2724*   2778*   2805*   2860*   2888*   2920    2952*   2962*   3009*
                        3034*   3069*   3098*   3143*   3195*   3220*   3242*   3503*   3525*   3558*   3599*   3649*   3696*
                        3737*   3929*   3950*   4015*   4030*   4079    4484    4579    4610*
DATAD   000770          1785#   3849*   3864*   3873*   3877*   3901
DATA0   001046          1817#
DATA1   001050          1818#
DATA2   001052          1819#
DATA3   001054          1820#
DATBL   001044          1816#   3796
DATC    000764          1783#   3848*   3863*   3914*   3915*   3916*   3928
DAT1    016050          1817    3813#
DAT1A   016054          3814#   3825    3830
DAT1B   016060          3815#   3817
DAT2    016072          1818    3824#
DAT3    016100          1819    3829#
DAT4    016110          1820    3834#
DAT4A   016116          3836#   3839
DB      000532          1690#
DCA     023164          4612#   4615
DCA0    023200          4613    4616#
DCB     023240          4626#   4629
DCC     023250          4625    4630#
DCD     023140          4606#   4607
DCE     023260          4617    4619    4621    4631    4633#   4650
```

```
DCEA    023306  4636  4639#
DCEX    023326  4634  4643#
DCEXA   023340  4644  4646#
DCEXX   023362  4647  4649  4651#
DCHK    020066  4070  4129#  4508
DCHKA   020142  4136  4138  4140#
DCHKA0  020116  4133  4135#
DCHKA1  020172  4142  4144  4146#
DCHKA2  020220  4147  4152#
DCHKB   020272  4149  4151  4153  4155  4158  4162#
DCHKC   020342  4170  4173#
DCHKD   020350  4168  4175#
DCHKE   020720  4134  4247#
DCHKX   020654  4161  4227  4231  4233#  4309  4313  4381
DCHKX1  020676  4234  4236  4238#
DCHK0   020352  4166  4172  4174  4176#  4229
DCHK1   020404  4181  4184#
DCHK1A  020442  4185  4192#
DCHK2   020532  4177  4179  4206#
DCHK2A  020576  4212  4218#
DCHK2B  020600  4207  4210  4215  4217  4219#
DCHK3   020624  4221  4223  4225#
DCKEP   021256  4297  4303  4314#
DCKEP0  021306  4318  4320#
DCKE0   020734  4250#  4312
DCKE1   020744  4253#  4259
DCKE10  021216  4271  4273  4304#
DCKE11  021242  4308  4310#
DCKE12  021252  4311  4313#
DCKE2   020754  4254  4256#
DCKE3   020764  4257  4260#
DCKE4   021004  4263  4266#
DCKE5   021016  4265  4267  4269#
DCKE6   021054  4275  4278#
DCKE7   021112  4279  4286#
DERFL   000776  1788#  4130*  4162*  4184  4193*  4235  4240*  4278  4286*  4331*  4385*  4444*
DOUT    025430  4201  4205  4295  4301  4362  4366  4370  4374  4431  4435  4439  4443  5041#
                5057  5059
DOUTD   025512  5055#
DOUT1   025444  5044#  5045  5053
DOUT2   025472  5047  5050#
DOUT3   025500  5049  5051#
DRIVE   000040  1583#
DRVCLR  023134  2713  2742  2766  2791  2846  2873  2914  2938  2992  3054  3082  3273  3543
                3583  3632  3680  3724  4605#  4651
DRVN    000634  1739#  2077*  2167  2181  2184  2205  2294  2438  4085  4623  4667  4787
DRVTP   000606  1718#
DS      000522  1686#  2507  2514  2518  2581  2612  2642  2673  3099  3117  3125  3139  3222
                3244  3268  3505  3527  3560  3607  3657  3707  3930  4012  4016  4088  4589
                4612  4616  4620  4657  4661
DSUP    015664  3777#  3893
DS0     015754  3778  3780  3791#
DS1     016000  3797#  3818  3840
DS2     016020  3801#  3803
DS3     016030  3798  3804#
DS4     016040  3806#  3808
```

```
DT      000536  1692#
EMADDR  000632  1738# 2077  2164* 2206* 2241* 2296  2316* 2326* 2367* 2408* 2434* 2462* 2505* 2539* 2576*
                2607* 2637* 2668* 2690* 2719* 2748* 2772* 2796* 2854* 2879* 2923* 2945* 2968
                2999* 3061* 3093* 3113* 3137* 3162* 3183* 3213* 3236* 3285* 3307* 3318* 3339*
                3350* 3372* 3383* 3404* 3415* 3435* 3456* 3467* 3478* 3495* 3551* 3592* 3642*
                3689* 3729* 4108  4182  4276  4346  4411  4494  4524  4637  4681  4708
EORP    022252  4008  4477#
EORPA   022246  2741  2790  2845  2991  4476#
EORPX   022436  4502  4507  4509#
EORP1   022306  4484#  4487  4489
EORP1A  022354  4493  4496#
EORP2   022400  4485  4491  4499  4501#
EORP3   022422  4504  4506#
ER      000524  1687#  2215  2246  2698  2727  2755  2779  2826  2839  2862  2897  2903  2909
                2928  2953  2979  2985  3013  3023  3038  3049  3071  3251  3256  3263  3509
                3531  3538  3564  3577  3611  3626  3661  3673  3711  3717  4092  4591  4618
ERADD   000702  1758#  2194* 2223* 2226* 2229* 2256* 2261* 2317* 2352* 2356* 2386* 2390* 2422*
                2451* 2481* 2487* 2493* 2521* 2525* 2529* 2548* 2585* 2616* 2646* 2677* 2701*
                2730* 2758* 2782* 2833* 2865* 2905* 2931* 2944* 3019* 3045* 3074* 3101* 3112*
                3136* 3163* 3184* 3226* 3248* 3253* 3258* 3533* 3566* 3575* 3613* 3623* 3663*
                3671* 3713* 3752* 4078* 4082* 4087* 4091* 4113  4516* 4527  4711
ERRF    000736  1772#
EXEC    016714  3852  3867  3884  3944#
EXFL    000726  1768#  2191* 2193* 2222* 2225* 2228* 2313* 2315* 2702* 2731* 2759* 2783* 2834*
                2866* 2906* 2930* 2955* 2981* 3020* 3046* 3075* 3102* 3119* 3128* 3146* 3154*
                3168* 3175* 3189* 3202* 3227* 3249* 3254* 3259* 3534* 3567* 3614* 3664* 3714*
                3753* 4515* 4533  4536  4571*
EXW2    017332  3949  4024#
EXW2A   017360  4027  4029#
EXW2B   017376  4032#  4033  4039
EXW2C   017412  4035#  4036
EXW2E   017432  4040#
EXW2F   017440  4042#  4043  4045
EXW2G   017470  4047  4050#
EXW2H   017504  4024  4051  4053#
EXW2J   017516  4056#  4064
EXW2J0  017536  4059  4062#
EXW2J1  017540  4061  4063#
EXW2K   017560  4066  4068#
EXW2X   017574  4069  4071#
EX0     016732  3945  3947#
EX1     016746  3948  3950#
EX1A    016762  3953#  3956  3958
EX2     017002  3954  3959#
EX3     017026  3962  3964#
EX5     017060  3967  3972#
EX5A    017064  3965  3971  3973#  4007
EX5A1   017120  3978  3981#
EX5B    017154  3980  3983  3986  3988#
EX5C    017204  3974  3995#
EX5C0   017250  4000  4004#
EX5C1   017254  4003  4005#
EX5D    017260  3994  4006#
FC      000516  1684#  2245* 2248  2258  2411* 2412  2469* 2511* 2725* 2752* 2802* 2858* 2886*
                2951* 2960* 3008* 3097* 3171* 3240* 3500* 3522* 3556* 3597* 3601  3646* 3651
                3693* 3697  3733* 3748  3896* 3899* 4585
```

FUN	000762	1782#	3847*	3862*	3872*	3879*	3929							
HDRFL	000630	1737#	2088*	4077*	4106	4112*	4129*	4180	4192*	4239*	4274	4287*	4329*	4344
		4354*	4383*	4409	4419*	4492	4522	4526*	4635	4679	4687*	4706	4710*	
HERE	002664	2140	2146#											
ILFT	000546	1699#	2693											
INIT1	024160	2244	2327	2370	2410	2463	2476	2506	2517	2540	2579	2694	2721	2750
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		3149	3164	3170	3185	3192	3214	3237	3497	3519	3552	3594	3644	3691
		3731	3894	4018	4786#									
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INMT	024140	2575	2606	2636	2667	4777#								
INST	024204	2578	2609	2639	2670	4793#								
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		2712	2737	2765	2789	2847	2872	2913	2937	2990	3053	3081	3104	3130
		3156	3177	3204	3229	3272	3293	3326	3358	3391	3424	3446	3542	3582
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ITER1	024114	4765	4768#											
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		3568	3615	3665	3715	4517#								
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		2647	2678	3576	3624	3672	3754	4702#						
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LTGER3	022444	2707	2736	2764	2788	2843	2871	2912	2989	3026	3052	3080	3266	3515
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MSLT54 033362 3456 5253#
MSLT55 033443 3467 5254#
MSLT56 033522 3478 5255#
MSLT57 033567 3495 5256#
MSLT6 030660 2367 5215#
MSLT60 033623 3551 5257#
MSLT61 033657 3592 5258#
MSLT62 033737 3642 5259#
MSLT63 034021 3689 5260#
MSLT64 034055 3729 5261#
MSLT7 030724 2408 5216#
MTINT 024246 1674 2017 4805#
NRZOF 000672 1754# 2033 3110 3210 3300 3332 3364 3397 3589 3639 3686
NXTDRV 002216 2077#
NXTSLV 002270 2077# 2120
OCTP 024664 2001 2010 2130 3784 4118 4122 4191 4197 4285 4291 4358 4418 4423
4532 4561 4718 4722 4728 4924#
OCTPE 024654 4550 4554 4580 4582 4584 4586 4588 4590 4592 4594 4596 4598 4922#
4998
OCTPE1 024670 4923 4925#
OCTPG 025046 4934 4937 4944 4948 4953 4958 4960 4964#
OCTPG0 025064 4965 4967 4969#
OCTPG1 025070 4929 4970#
OCTP0 024712 4926 4928 4931#
OCTP1 024734 4932 4936#
OCTP2 024742 4935 4938#
OCTP3 025032 4930 4961#
OFL 025110 4922* 4924* 4927 4966 4969* 4975#
OUT 025226 4986 4988 4992 5002# 5019
PAFLG 001030 1803# 2136 2138* 4759
PATRN 001012 1794# 3287* 3290* 3291 3320* 3323* 3324 3352* 3355* 3356 3385* 3388* 3389
3417* 3420 3422* 3437* 3441 3443* 3783 3785 3792 4169 4190 4284 4417
PCNTR 001026 1800# 2045* 2129 2153*
PD0 021362 4332 4338# 4378
PD1 021376 4339 4342#
PD2 021440 4349 4352#
PD3 021444 4351 4353#
PD4 021454 4345 4355#
PD5 021574 4341 4343 4375#
PD6 021620 4380 4382#
PEXFL 000746 1776# 4701* 4713 4738*
PFLG 000676 1756# 4518* 4540* 4565 4608* 4642* 4646 4686* 4691 4696* 4702* 4729* 4733
POST 036260 4328 4465 5375#
PPGEN 022176 3367 4459#
PPG0 022210 4462# 4464

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PPG1    022234  4468# 4470
PRCHK   021344  4139  4334#
PRE     036136  4335  4460  5371#
PREFL   001000  1789# 4241* 4348  4379  4382*
PSCHK   021314  4327# 4452
PSW     000570  1711# 1949* 2543* 2547* 3959* 4031*
RBUFF   037014  3805  3850  3865  3873  4053  4164  4249  4336  4394  5381#
RCDP    001020  1797# 3439* 3444* 3882
RDAD    000772  1786# 3850* 3865* 4001* 4002* 4004* 4005* 4029
RDATA   035254  5328#
RDRVF   001016  1796# 3294* 3480* 3875  3917  3977
RDSW    025116  4909  4912* 4984# 5014*
REGP    023002  4555  4577# 4641  4685
REGS    000614  1721# 2000  2002  2019
RH17F   001032  1804# 2056* 2062*
RTRN    000700  1757# 2541* 4024* 4808
SAV1    000714  1763# 2391* 2396
SAV2    000716  1764#
SAV3    000720  1765#
SCF     000742  1774#
SCOLP   000722  1766# 2195* 2230* 2257* 2262* 2318* 2353* 2357* 2387* 2394* 2423* 2452* 2484*
                2490* 2496* 2522* 2526* 2530* 2549* 2584* 2615* 2645* 2676* 2691* 2720* 2749*
                2773* 2797* 2855* 2904* 2922* 2946* 3000* 3044* 3062* 3094* 3120* 3127* 3147*
                3153* 3167* 3174* 3190* 3201* 3212* 3235* 3288* 3321* 3353* 3386* 3418* 3438*
                3496* 3550* 3593* 3643* 3690* 3730* 4651* 4751
SCOPE   024044  2972  4572  4652  4739  4746#
SCOPE1  024062  4748  4750#
SERFL   001002  1790# 4076* 4095  4103*
SERNUM  000604  1717#
SETUP   016362  3851  3866  3883  3889#
SET0    016376  3890  3893#
SET1    016402  3892  3894#  3911
SET2    016436  3898  3900#
SKAT    001024  1799# 1995* 2152* 2158  2276
SLAF    000732  1770#
SLVN    000674  1755# 2077* 2284  2297  3064  4788
SN      000540  1693# 2307
SNPG    025614  5070  5073  5079  5081  5083#
SNPT    025536  2303  5064#
SP0     016516  3909  3911#
SP01    016502  3905  3908#
SP1     016522  3903  3912#
SP1A    016566  3918  3921#
SP1B    016606  3913  3920  3923  3925#
SP3     016656  3931  3933#
SP4     016676  3934  3937#
SP5     016712  3938  3940#
SSCF    000734  1771#
START   001430  1665  1669  1949#
STATC   001022  1798# 2040  3762
STATF   001014  1795#
STATIC  015640  3491  3549  3591  3641  3688  3760#
STATX   015662  3761  3763  3766#
STFLG   000750  1777# 2052* 2096  2103* 2160  2278  2573  2604  2634  2665  3760  3777  3889
STOP    025640  2094  2151  3910  3939  4052  4099  4237  4500  4564  4645  4690  4732  4779
                5091#
```

```
STSCD   002524  2071  2101  2103#
STO     001754  2022# 2025
ST1     001776  2028# 2030
ST2     002074  1994  2045#
SUSWR   001502  1960  1962  1969#
SWR     000572  1712# 1972  1976* 1979  2068  2092  2098  2149  2571  2602  2632  2663  3779
                3904  3908  3933  3937  4046  4050  4065  4068  4097  4104  4178  4226  4233
                4272  4307  4342  4407  4490  4498  4503  4506  4519  4556  4562  4567  4633
                4643  4648  4677  4688  4693  4703  4723  4730  4735  4747  4764  4985  4997
                5035* 5109*
SWREG   000176  1658# 1976  1979  4985
TADX    001426  1944#
TC      000542  1694# 2077* 2295* 2371* 2372  2377  2398* 2470* 2512* 2722* 2775* 2800* 2857*
                2884* 2948* 2958* 2964  3006* 3032* 3068* 3116* 3122* 3141* 3144  3150* 3151
                3165  3172  3186* 3187  3193* 3197  3218* 3239* 3498* 3520* 3553* 3595* 3648*
                3694* 3734* 3739  3925* 3953  4014* 4597  4788*
TCRLF   024554  4897  4900# 5015
TCRLFA  024572  4903# 4906
TEMPST  025112  4982# 5004* 5027* 5028* 5029* 5031* 5035
TEMP1   000704  1759# 2172  2289  2693* 2697  2710* 4834* 4839  4848*
TEMP2   000706  1760# 4476* 4501  4509*
TEMP3   000710  1761# 4659* 4663* 4566* 4683  4796  5055  5058
TEND    002576  2087  2105  2117#
TENDX   002706  2148  2150  2152#
TENDO   002612  2077  2119  2123#
TEX     024652  4895  4913  4917#
TIB     000626  1736# 4837  4842  4845  4855* 4856  4881* 4885* 4888  4989* 4990* 4991  5007*
                5008  5012  5020  5022  5030* 5031
TINER   024432  4844  4847  4861  4864  4872#
TKB     000576  1714# 4880* 4885  4989
TKS     000574  1713# 2051* 4879* 4882* 4883  4987
TMS1    034447  5276#
TMS10   034535  2931  5285#
TMS11   034543  5286#
TMS12   034551  5287#
TMS13   034557  5288#
TMS14   034565  3101  5289#
TMS15   034573  5290#
TMS16   034601  5291#
TMS17   034607  2701  5292#
TMS18   034615  5293#
TMS19   034623  2730  5294#
TMS2    034455  5277#
TMS20   034631  2758  5295#
TMS21   034640  2782  5296#
TMS22   034646  2833  5297#
TMS23   034655  3663  5298#
TMS24   034663  5299#
TMS25   034671  3713  5300#
TMS26   034677  3566  5301#
TMS27   034705  5302#
TMS28   034713  2905  3258  5303#
TMS29   034721  5304#
TMS3    034463  3226  3248  5278#
TMS30   034726  3253  5305#
TMS31   034734  2865  5306#
```

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TMS32   034742          2944    5307#
TMS33   034750          5308#
TMS33A  034756          3019    5309#
TMS33B  034772          3045    5310#
TMS34   035005          3074    5311#
TMS35   035013          3613    5312#
TMS36   035022          3533    5313#
TMS37   035030          3136    5314#
TMS38   035036          3163    5315#
TMS39   035044          3184    5316#
TMS4    034470          5279#
TMS5    034476          5280#
TMS6    034505          3112    5281#
TMS7    034513          5282#
TMS8    034521          5283#
TMS9    034527          5284#
TOB     000624          1735#   2026    4314*   4316*   4319*   4363*   4371*   4432*   4440*   4893*   4894    4896    4900*
                        4903*   4907*   4916    4961*   4971*   5041*   5043*   5046    5051*   5083*   5085*
TOG     024636          4315    4320    4364    4372    4433    4441    4898    4901    4904    4908    4914#   4915    4962
                        4972    5086
TPB     000602          1716#   4888*   4916*   5048*   5050*
TPS     000600          1715#   4886    4914    5044
TREF    000744          1775#
TR00    000636          1740#   2209
TR01    000640          1741#
TR02    000642          1742#
TR03    000644          1743#
TR04    000646          1744#
TR05    000650          1745#
TR06    000652          1746#
TR07    000654          1747#
TR10    000656          1748#
TR11    000660          1749#
TR12    000662          1750#
TR13    000664          1751#
TR14    000666          1752#
TR15    000670          1753#
TSCD    002100          1989    2050#   2102    2154
TSCDA   002376          2076    2081#
TSCD0   002404          2082#   2097
TSCD1   002440          2086    2088#   2113
TSCD2   002452          2091#   2198    2236    2271    2321    2361    2401    2428    2456    2499    2533    2552    2588
                        2619    2649    2680    2714    2743    2767    2792    2849    2874    2915    2939    2993    3056
                        3083    3105    3131    3157    3178    3205    3230    3274    3295    3302    3327    3334    3359
                        3366    3392    3399    3425    3447    3518    3544    3584    3633    3681    3725    3756    3765
                        4780
TSCD3   002476          2093    2096#
TSTTBL  001102          1838#   2081    2109
TTIN    024450          4836    4879#   5006
TTINT   024260          1652    4812#
TTIN1   024470          4883#   4884
TTIN2   024504          4886#   4887
TTOUT   024522          1964    1997    1999    2008    2032    2039    2077    2128    2163    2166    2281    2283    2306
                        2969    2971    3517    3782    3907    3936    4049    4109    4111    4114    4116    4120    4183
                        4187    4189    4195    4199    4203    4277    4281    4283    4289    4293    4299    4347    4353
                        4356    4360    4368    4412    4414    4416    4421    4425    4437    4495    4497    4525    4528
```

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                        4539    4546    4548    4552    4559    4578    4638    4640    4682    4684    4709    4712    4716
                        4720    4726    4778    4793    4795    4873    4893#   4899    4911    4994    4996    5000    5025
                        5130
TTR     024264          2006    2015    2037    2044    2171    2288    3789    4800    4834#
TTR0    024272          4836#   4858
TTR1    024320          4838    4842#
TTR1A   024334          4843    4845#
TTR1B   024350          4846    4848#
TTR2    024406          4841    4859#
TTR3    024416          4860    4862#
TTR4    024426          4863    4865#
TTR5    024430          4840    4866#
T1AD    001106          1840#
T1IAD   001110          1841#
T10AD   001142          1854#
T10IAD  001144          1855#
T11AD   001146          1856#
T11IAD  001150          1857#
T12AD   001152          1858#
T12IAD  001154          1859#
T13AD   001156          1860#
T13IAD  001160          1861#
T14AD   001162          1862#
T14IAD  001164          1863#
T15AD   001166          1864#
T15IAD  001170          1865#
T16AD   001172          1866#
T16IAD  001174          1867#
T17AD   001176          1868#
T17IAD  001200          1869#
T2AD    001112          1842#
T2IAD   001114          1843#
T20AD   001202          1870#
T20IAD  001204          1871#
T21AD   001206          1872#
T21IAD  001210          1873#
T22AD   001212          1874#
T22IAD  001214          1875#
T23AD   001216          1876#
T23IAD  001220          1877#
T24AD   001222          1878#
T24FL   000754          1779#   2832*   2836*   4543
T24IAD  001224          1879#
T25AD   001226          1880#
T25IAD  001230          1881#
T26AD   001232          1882#
T26IAD  001234          1883#
T27AD   001236          1884#
T27IAD  001240          1885#
T3AD    001116          1844#
T3IAD   001120          1845#
T30AD   001242          1886#
T30IAD  001244          1887#
T31AD   001246          1888#
T31IAD  001250          1889#
T32AD   001252          1890#
```

```
T32IAD  001254          1891#
T33AD   001256          1892#
T33IAD  001260          1893#
T34AD   001262          1894#
T34IAD  001264          1895#
T35AD   001266          1896#
T35IAD  001270          1897#
T36AD   001272          1898#
T36IAD  001274          1899#
T37AD   001276          1900#
T37IAD  001300          1901#
T4AD    001122          1846#
T4IAD   001124          1847#
T40AD   001302          1902#
T40IAD  001304          1903#
T41AD   001306          1904#
T41IAD  001310          1905#
T42AD   001312          1906#
T43AD   001316          1908#
T44AD   001322          1910#
T45AD   001326          1912#
T46AD   001332          1914#
T47AD   001336          1916#
T5AD    001126          1848#
T5IAD   001130          1849#
T50AD   001342          1918#
T51AD   001346          1920#
T52AD   001352          1922#
T53AD   001356          1924#
T54AD   001362          1926#
T55AD   001366          1928#
T56AD   001372          1930#
T57AD   001376          1932#
T57IAD  001400          1933#
T6AD    001132          1850#
T6IAD   001134          1851#
T60AD   001402          1934#
T60IAD  001404          1935#
T61AD   001406          1936#
T61IAD  001410          1937#
T62AD   001412          1938#
T62IAD  001414          1939#
T63AD   001416          1940#
T63IAD  001420          1941#
T64AD   001422          1942#
T64IAD  001424          1943#
T7AD    001136          1852#
T7IAD   001140          1853#
UDES    001006          1792#  3286*  3308*  3319*  3340*  3351*  3373*  3384*  3405*  3416*  3436*  3457*  3468*
                        3479*  3880   3897   3922   3925   3961   3966   3982   3999   4026   4058   4132   4137
                        4143   4148   4154   4165   4209   4222
VECT    000612          1720#  2009   2011   2016
WAM     000760          1781#  3846*  3856*  3861*  3871*  3912   3927   3947   3964   3973   4135   4141   4146
                        4152   4167   4211   4220
WAM0    016132          3387   3846#
WAM01   016140          3847#  3857
```

```
WAM1    016176  3354  3856#
WAM2    016210  3322  3419  3861#
WAM2A   016244  3866#
WAM3    016254  3289  3440  3871#
WAM3A   016334  3876  3880#
WAM3B   016352  3881  3883#
WBUFF   036402  3791  3800  3849  3864  3874  4163  4248  4393  5379#
WC      000512  1682#  2695*  2803*  2885*  3499*  3521*  3555*  3596*  3645*  3692*  3732*  3900*  4531
WCDP0   001070  1829#  3439  4171
WCDP2   001056  1824#  3444  4173
WCS1    001034  1809#  3281*  3303*  3314*  3335*  3346*  3368*  3379*  3400*  3411*  3431*  3452*  3463*
                3474*  4080
WCS2    001036  1810#  3282*  3304*  3315*  3336*  3347*  3369*  3380*  3401*  3412*  3432*  3453*  3464*
                3475*  4084
WDATA   035054  2801  3501  3523  3557  3598  3647  3695  3735  5321#
WDS     001040  1811#  3283*  3305*  3316*  3337*  3348*  3370*  3381*  3402*  3413*  3433*  3454*  3465*
                3476*  4089
WER     001042  1812#  3284*  3306*  3317*  3338*  3349*  3371*  3382*  3403*  3414*  3434*  3455*  3466*
                3477*  4093
WMSG16  035650  4186  4280  4413  5351#
WMSG17  035662  4198  4292  4359  4424  5352#
WMSG2   035454  3935  5334#
WMSG20  035667  4202  4298  4367  4436  5353#
WMSG21  035674  4194  4288  4355  4420  5354#
WMSG23  035702  4110  5355#
WMSG24  035716  4048  5356#
WMSG25  035734  5357#
WMSG26  035751  5358#
WMSG27  035770  4545  5359#
WMSG28  036003  4352  5360#
WMSG29  036021  4350  5361#
WMSG3   035472  3781  5335#
WMSG31  036040  4496  5362#
WMSG32  036075  4188  4282  4415  5363#
WMSG4   035513  3906  5336#
WMSG6   035540  4078  5337#
WMSG6A  035546  5338#
WMSG6B  035553  5339#
WMSG6C  035560  5340#
WMSG6D  035565  4082  5341#
WMSG6E  035573  4087  5342#
WMSG6F  035600  4091  5343#
WMSG6G  035605  5344#
WMSG6H  035612  5345#
WMSG6I  035617  5346#
WMSG6J  035624  5347#
WMSG6K  035631  5348#
WMSG6L  035636  5349#
WMSG6M  035643  5350#
WPGFL   001010  1793#  2050*  2095*  3790*  3891
WSTCK   017576  4067  4076#  4505
WSTG    017744  4081  4086  4090  4094  4101#
WSTG0   020012  4107  4112#
WSTX    020064  4096  4098  4100  4102  4105  4123#
WTAD    000766  1784#  3874*  3878*  3882*  3914  3919*  3921*  3924*  3975  3979*  3981*  3984*  3985
                3987*
```

```
W1DCHK  021644            4159    4386    4392#
W1DO    021674            4397    4399#   4455
W1DOA   021712            4403    4405#
W1D1    021720            4401    4407#
W1D2    021776            4410    4419#
W1D2A   022050            4429    4431#
W1D3    022140            4406    4408    4445#
W1D4    022152            4449#   4454
W1D4A   022162            4450    4452#
W1D5    022166            4448    4453#
W2FLG   000774            1787#   4157*   4160*   4206    4230    4396    4402    4428    4449
XDUMPM  000623            1730#   5115*
XXDPM   000621            1728#   2077    5106*   5131
$CNTG   036105            4993    5365#
$ENDAD  002654            1595    2142#
$MNEW   036120            4999    5367#
$MSWR   036111            4995    5366#
$QUEST  036130            5024    5368#
$READ   025230            5001    5004#
$SVPC   = 001000          1580#   1601
.       = 037016          1570#   1574    1580    1582#   1586#   1590#   1594#   1597#   1601#   1651#   1657#   1663#   1667#
                          1673#   1678#   5136    5318#   5370#   5380#
```

```
$CHNMO   1613#   2077


. ABS.  037016     000


 ERRORS DETECTED:  0

 CZTUCG,CZTUCG/CRF/NL:TOC=CZTUCG.P11
 RUN-TIME: 5 11 2 SECONDS
 RUN-TIME RATIO: 24/18=1.3
 CORE USED:  17K  (34 PAGES)
```