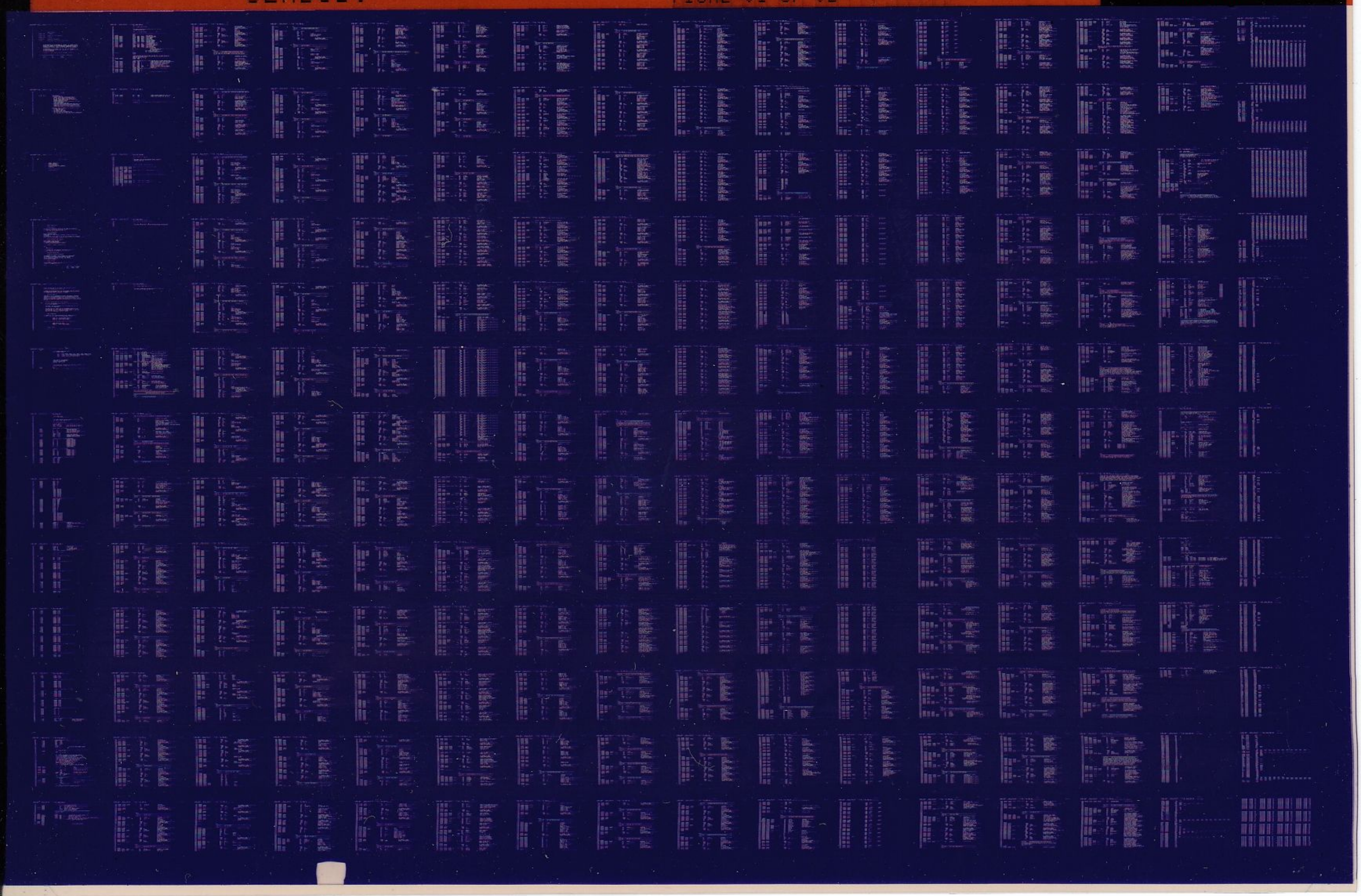
KDJ11-A KDJ11 CPU DIAG
CZKDJB0

AH-T705B-MC
FICHE 01 OF 02

JUL 1984
digital
Made In USA



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                                                        .REM &
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IDENTIFICATION

PRODUCT CODE: AC-T704B-MC

PRODUCT NAME: CZKDJB0 KDJ11 CPU DIAGNOSTIC

PRODUCT DATE: 15-MAR-84

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHORS: HENRY ENMAN, JIM PITTMAN, BARRY IRRGANG


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                                                                &
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39
40                                                          .REM &
41                                          HISTORY
42                                          -------
43          OCT-83  REV. A          FIRST RELEASE
44          FEB-84  REV. B          CORRECTIONS MADE TO:
45                                  1. CORRECT VECTOR AREA MAINTENANCE PROBLEM
46                                  2. SET APT SWR TO 2000 SO THAT DEFAULT IS TO
47                                     NOT TEST BEVENT WHEN  IN APT ENVIRONMENT.
48                                  3. PREVENT $TESTN FROM GETTING OUT OF SYNC WHEN
49                                     SKIPPING DESELECTED TESTS.
50                                  4. PREVENT EXECUTION OF RESET INSTRUCTION TEST WHEN
51                                     IN APT ENVIRONMENT.
52                                  5. CHANGE MARK INSTRUCTION TEST.
53                                  6. TURN CACHE MEMORY SYSTEM OFF DURING NON-CACHE TESTS.
54                                  7. ENSURE THAT CPU ERROR REGISTER IS CLEARED AFTER
55                                     COMPLETION OF TEST THAT MIGHT CAUSE IT TO BE SE".
56                                  8. SAVE PC AND CONTENTS OF R6 ON UNEXPECTED INTERRUPTS
57
58                                  ADDITIONAL TESTS TO IMPROVE TEST COVERAGE INCLUDE:
59                                  1. RED ZONE TRAP TEST
60                                  2. I/O TIME OUT TRAP TEST
61                                  3. ODD ADDRESS TRAP TEST
62                                  4. PRE-FETCH BUFFER INVALIDATION TEST
63                                  5. TEST FOR SLOW C BIT ON ROR, ROL AND SXT INSTRUCTIONS
64                                  6. WAIT INSTRUCTION TEST WHEN BEVENT TEST IS SELECTED
65                                                                      &
```

```
66                                                              .REM &
67
68
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                                                                .REM &


                1.0   GENERAL INFORMATION

                1.1   PROGRAM ABSTRACT

THIS IS AN APT COMPATIBLE VERSION OF THE KDJ11 CPU DIAGNOSTIC.
IT FOCUSES ON TESTING THE KDJ11 BASIC INSTRUCTION SET INCLUDING
EIS, TRAPS AND THE ALTERNATE REGISTER SET.

                1.2   SYSTEM REQUIREMENTS

KDJ11-A PROCESSOR MODULE
ENSURE THAT HALT TRAP OPTION IS DISABLED (JUMPER W9 INSTALLED)
32KW MEMORY
Q-22 BACKPLANE (18 BIT QBUS MAY BE USED WITH REDUCED TEST COVERAGE)
SERIAL LINE UNIT AND CONSOLE TERMINAL (CONSOLE TERMINAL NOT REQUIRED FOR APT)

                1.3   RELATED DOCUMENTS AND STANDARDS

KDJ11-A MODULE SPECIFICATION REV 2.2
PDP11 MAINDEC SYSMAC PACKAGE
J11 CONTROL CHIP SPECIFICATION 21-17679-00
J11 DATA CHIP SPECIFICATION 21-17677-00

                1.4   DIAGNOSTIC HIERARCY PREREQUISITES

NONE

                1.5   ASSUMPTIONS

IT IS ASSUMED THAT THE DIAGNOSTIC OPERATOR IS FAMILIAR WITH
THE XXDP+ OPERATING SYSTEM AND THE J11 MICRO-ODT.

                2.0   OPERATING INSTRUCTIONS

                2.1   LOADING AND STARTING PROCEEDURE

LOAD PROGRAM INTO MEMORY USING STANDARD XXDP+ PROCEEDURES.
THE PROGRAM IS STARTED BY LOADING ADDRESS 200 AND USING
THE J11 MICRO-ODT G COMMAND TO START. THE PROGRAM
IDENTIFICATION MESSAGE WILL BE TYPED AFTER THE FIRST PASS
OF THE COMPLETE PROGRAM.

                2.2   PROGRAM OPTIONS

THE FOLLOWING ASSIGNMENTS HAVE BEEN MADE FOR THE KDJ11-A
DIAGNOSTIC SWITCH REGISTER BITS:

BIT#15     14       13       12       11       10       9       8
+--------+--------+--------+--------+--------+--------+--------+--------+
                                                DON'T    18 BIT  EXTENDED
                                                TEST     ADDRESS CACHE
                                                BEVENT     ONLY  TESTS
```

```
140                 *-------*---- --*-------*-------*-------*-------*---- --*-------*
141
142                 DEFAULT SETTINGS ARE TO TEST BEVENT, THE OTHER BITS HAVE NO
143                 EFFECT ON THE OPERATION OF THE CPU TEST.
144
145                 TO CHANGE THE SWITCH REGISTER; HALT THE PROGRAM, LOAD THE SOFTWARE
146                 SWITCH REGISTER (ADDRESS 176) WITH THE DESIRED OPTIONS AND RESTART
147                 THE PROGRAM USING THE J11 MICRO ODT P COMMAND.
148
149                 2.2   OPERATION UNDER APT
150
151                 OPERATION IN THE APT ENVIRONMENT REQUIRES SOME SPECIAL CONSIDERA-
152                 TIONS DUE TO THE ASYNCHRONOUS HALTS OF THE DIAGNOSTIC BY THE APT
153                 MONITOR. IF THE EFFECTS OF THESE HALTS ARE NOT ANTICIPATED, FALSE
154                 ERRORS MAY BE REPORTED. THEREFORE, WHEN OPERATING IN THE APT ENVIRON-
155                 MENT THE FOLLOWING DIFFERENCES IN THE EXECUTION OF THE PROGRAM SHOULD
156                 BE NOTED:
157
158                 1. THE RESET INSTRUCTION TEST IS NOT EXECUTED
159
160                 2. BIT 10 IN THE SOFTWARE SWITCH REGISTER IS SET SO THAT BEVENT
161                    IS NOT TESTED UNDER APT.
162
163                 3. THE SERIAL LINE UNIT INTERRUPT TEST IS EXECUTED ONLY ON THE
164                    FIRST PASS OF THE PROGRAM.
165
166                 4. RED ZONE TRAP TEST CHECKS FOR APT ENVIRONMENT BEFORE CALLING
167                    ERROR ROUTINE. IF IN APT MODE AND AN ERROR OCCURS, IT WILL RETRY
168                    TEST ONE MORE TIME. IF IT PASSES ON SECOND ATTEMPT, THEN FIRST
169                    ERROR WILL BE CONSIDERED TO BE APT INDUCED.
170
171
172                 3.0   ERROR INFORMATION
173
174                 ALL ERRORS WILL HALT AFTER REPORTING TO APT. ERRORS RELATING
175                 TO BOARD TESTS WILL PRINT THE FOLLOWING ERROR MESSAGE:
176
177                                 ERROR WHILE TESTING BOARD FUNCTIONS
178                                 ERROR # = (UNIQUE ERROR NUMBER)
179                                 ERROR PC = (PC AT TIME OF ERROR)
180
181                 ERRORS RELATED TO CPU TESTS WILL PRINT THE FOLLOWING MESSAGE.
182
183                                 ERROR DURING CPU TESTS
184                                 ERROR # = (UNIQUE ERROR NUMBER)
185                                 ERROR PC = (PC AT TIME OF ERROR)
186
187
188                 4.0   PROGRESS REPORT
189
190                 AT THE END OF EACH PASS THE DIAGNOSTIC NAME AND PASS COUNT ARE PRINTED.
191
192
```

```
                                .TITLE PROGRAM HEADER AND TABLES
                                .SBTTL  PROGRAM HEADER

                                        .MCALL  NEWTST,ERRDEF,.EQUAT,.KT11,.$40CAT,.$EOP,.$APTBLS,SETUP
                                        .MCALL  .$TYPE,.$TYPDEC,ERRDF,BGNTST,ENDTST,BGNMOD,ENDMOD,CKLOOP
                                        .MCALL  .HEADER,.SETUP,.$TRAP,BGNSUB,ENDSUB,.$ACT11,.$APTHDR
                                        .MCALL  .$APTYPE,.$ERROR,.$TYPOCT,.$READ



                                .TITLE  KDJ11-A CPU DIAGNOSTIC
                                ;*COPYRIGHT (C) OCTOBER,1983
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
                                ;*
000001                          $TN=1
160000                          $SWR=160000     ;;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYPOUT
```

```
                        .TITLE GLOBAL AREAS
                        .SBTTL  GLOBAL EQUATES SECTION
                        ;++
                        ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                        ; ARE USED IN MORE THAN ONE TEST.
                        ;--
                        .SBTTL  BASIC DEFINITIONS
                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 1000 ***
001000                  STACK=  1000
                        .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                        ;*MISCELLANEOUS DEFINITIONS
000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                  LF=     12              ;;CODE FOR LINE FEED
000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER

                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
000007                  R7=     %7              ;;GENERAL REGISTER
000006                  SP=     %6              ;;STACK POINTER
000007                  PC=     %7              ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  PR1=    40              ;;PRIORITY LEVEL 1
000100                  PR2=    100             ;;PRIORITY LEVEL 2
000140                  PR3=    140             ;;PRIORITY LEVEL 3
000200                  PR4=    200             ;;PRIORITY LEVEL 4
000240                  PR5=    240             ;;PRIORITY LEVEL 5
000300                  PR6=    300             ;;PRIORITY LEVEL 6
000340                  PR7=    340             ;;PRIORITY LEVEL 7

                        ;*"SWITCH REGISTER" SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
```

```
                        000400          SW08=   400
                        000200          SW07=   200
                        000100          SW06=   100
                        000040          SW05=   40
                        000020          SW04=   20
                        000010          SW03=   10
                        000004          SW02=   4
                        000002          SW01=   2
                        000001          SW00=   1
                                        .EQUIV  SW09,SW9
                                        .EQUIV  SW08,SW8
                                        .EQUIV  SW07,SW7
                                        .EQUIV  SW06,SW6
                                        .EQUIV  SW05,SW5
                                        .EQUIV  SW04,SW4
                                        .EQUIV  SW03,SW3
                                        .EQUIV  SW02,SW2
                                        .EQUIV  SW01,SW1
                                        .EQUIV  SW00,SW0

                                        ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
                        100000          BIT15=  100000
                        040000          BIT14=  40000
                        020000          BIT13=  20000
                        010000          BIT12=  10000
                        004000          BIT11=  4000
                        002000          BIT10=  2000
                        001000          BIT09=  1000
                        000400          BIT08=  400
                        000200          BIT07=  200
                        000100          BIT06=  100
                        000040          BIT05=  40
                        000020          BIT04=  20
                        000010          BIT03=  10
                        000004          BIT02=  4
                        000002          BIT01=  2
                        000001          BIT00=  1
                                        .EQUIV  BIT09,BIT9
                                        .EQUIV  BIT08,BIT8
                                        .EQUIV  BIT07,BIT7
                                        .EQUIV  BIT06,BIT6
                                        .EQUIV  BIT05,BIT5
                                        .EQUIV  BIT04,BIT4
                                        .EQUIV  BIT03,BIT3
                                        .EQUIV  BIT02,BIT2
                                        .EQUIV  BIT01,BIT1
                                        .EQUIV  BIT00,BIT0

                                        ;*BASIC "CPU" TRAP VECTOR ADDRESSES
                        000004          ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
                        000010          RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
                        000014          TBITVEC=14              ;;"T" BIT
                        000014          TRTVEC= 14              ;;TRACE TRAP
                        000014          BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
                        000020          IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
                        000024          PWRVEC= 24              ;;POWER FAIL
```

```
                        000030          EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
                        000034          TRAPVEC=34              ;;"TRAP" TRAP
                        000060          TKVEC=  60              ;;TTY KEYBOARD VECTOR
                        000064          TPVEC=  64              ;;TTY PRINTER VECTOR
                        000240          PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
                                        .SBTTL  MEMORY MANAGEMENT DEFINITIONS

                                        ;*KT11 VECTOR ADDRESS

                        000250          MMVEC=  250

                                        ;*KT11 STATUS REGISTER ADDRESSES

                        177572          SR0=    177572
                        177574          SR1=    177574
                        177576          SR2=    177576
                        172516          SR3=    172516

                                        ;*USER "I" PAGE DESCRIPTOR REGISTERS

                        177600          UIPDR0= 177600
                        177602          UIPDR1= 177602
                        177604          UIPDR2= 177604
                        177606          UIPDR3= 177606
                        177610          UIPDR4= 177610
                        177612          UIPDR5= 177612
                        177614          UIPDR6= 177614
                        177616          UIPDR7= 177616

                                        ;*USER "D" PAGE DESCRIPTOR REGISTORS

                        177620          UDPDR0= 177620
                        177622          UDPDR1= 177622
                        177624          UDPDR2= 177624
                        177626          UDPDR3= 177626
                        177630          UDPDR4= 177630
                        177632          UDPDR5= 177632
                        177634          UDPDR6= 177634
                        177636          UDPDR7= 177636

                                        ;*USER "I" PAGE ADDRESS REGISTERS

                        177640          UIPAR0= 177640
                        177642          UIPAR1= 177642
                        177644          UIPAR2= 177644
                        177646          UIPAR3= 177646
                        177650          UIPAR4= 177650
                        177652          UIPAR5= 177652
                        177654          UIPAR6= 177654
                        177656          UIPAR7= 177656

                                        ;*USER "D" PAGE ADDRESS REGISTERS

                        177660          UDPAR0= 177660
                        177662          UDPAR1= 177662
                        177664          UDPAR2= 177664
```

```
                        177666          UDPAR3= 177666
                        177670          UDPAR4= 177670
                        177672          UDPAR5= 177672
                        177674          UDPAR6= 177674
                        177676          UDPAR7= 177676

                                        ;*SUPERVISOR "I" PAGE DESCRIPTOR REGISTERS

                        172200          SIPDR0= 172200
                        172202          SIPDR1= 172202
                        172204          SIPDR2= 172204
                        172206          SIPDR3= 172206
                        172210          SIPDR4= 172210
                        172212          SIPDR5= 172212
                        172214          SIPDR6= 172214
                        172216          SIPDR7= 172216

                                        ;*SUPERVISOR "D" PAGE DESCRIPTOR REGISTERS

                        172220          SDPDR0= 172220
                        172222          SDPDR1= 172222
                        172224          SDPDR2= 172224
                        172226          SDPDR3= 172226
                        172230          SDPDR4= 172230
                        172232          SDPDR5= 172232
                        172234          SDPDR6= 172234
                        172236          SDPDR7= 172236

                                        ;*SUPERVISOR "I" PAGE ADDRESS REGISTERS

                        172240          SIPAR0= 172240
                        172242          SIPAR1= 172242
                        172244          SIPAR2= 172244
                        172246          SIPAR3= 172246
                        172250          SIPAR4= 172250
                        172252          SIPAR5= 172252
                        172254          SIPAR6= 172254
                        172256          SIPAR7= 172256

                                        ;*SUPERVISOR "D" PAGE ADDRESS REGISTERS

                        172260          SDPAR0= 172260
                        172262          SDPAR1= 172262
                        172264          SDPAR2= 172264
                        172266          SDPAR3= 172266
                        172270          SDPAR4= 172270
                        172272          SDPAR5= 172272
                        172274          SDPAR6= 172274
                        172276          SDPAR7= 172276

                                        ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS

                        172300          KIPDR0= 172300
                        172302          KIPDR1= 172302
                        172304          KIPDR2= 172304
                        172306          KIPDR3= 172306
```

```
                        KIPDR4= 172310
                        KIPDR5= 172312
                        KIPDR6= 172314
                        KIPDR7= 172316

                        ;*KERNEL "D" PAGE DESCRIPTOR REGISTERS

                        KDPDR0= 172320
                        KDPDR1= 172322
                        KDPDR2= 172324
                        KDPDR3= 172326
                        KDPDR4= 172330
                        KDPDR5= 172332
                        KDPDR6= 172334
                        KDPDR7= 172336

                        ;*KERNEL "I" PAGE ADDRESS REGISTERS

                        KIPAR0= 172340
                        KIPAR1= 172342
                        KIPAR2= 172344
                        KIPAR3= 172346
                        KIPAR4= 172350
                        KIPAR5= 172352
                        KIPAR6= 172354
                        KIPAR7= 172356

                        ;*KERNEL "D" PAGE ADDRESS REGISTERS

                        KDPAR0= 172360
                        KDPAR1= 172362
                        KDPAR2= 172364
                        KDPAR3= 172366
                        KDPAR4= 172370
                        KDPAR5= 172372
                        KDPAR6= 172374
                        KDPAR7= 172376

                        ;THESE ARE FLOATING POINT ACCUMULATOR EQUATES
000000                  AC0=    %0
000001                  AC1=    %1
000002                  AC2=    %2
000003                  AC3=    %3
000004                  AC4=    %4
000005                  AC5=    %5
000006                  AC6=    %6
000007                  AC7=    %7

000244                  FPVEC=  244

                        ;THESE ARE CACHE REGISTER EQUATES
177746                  CCR=    177746          ;CACHE CONTROL REGISTER
177744                  MSER=   177744          ;MEMORY SYSTEM ERROR REGISTER
177752                  HITMIS= 177752          ;HIT/MISS REGISTER
177766                  CPEREG= 177766          ;CPU ERROR REGISTER
```

```
                        ;MISCELANEOUS DEFINITIONS
177546                  BEVENT= 177546          ;BEVENT CONTROL REGISTER
177560                  RCSR=   177560
177562                  RBUF=   177562
177564                  XCSR=   177564
177566                  XBUF=   177566
000000                  ERRTN=  HALT
000001                  $TSTNU=1
000001                  ERRNUM= 1               ;INITIALIZE ERROR NUMBER COUNTER
002000                  AUSWR=  2000            ;SWR FOR APT--NO BEVENT TESTING


                        ;THIS EQUATE DEFINES THE BOTTOM OF THE PROGRAM STACK POINTER
001000                          STBOT=  1000
000000                  .ASECT
                        .SBTTL  TRAP CATCHER

000000                          .=0
                        ;*ALL UNUSED LOCATIONS OF THE VECTOR AREA CONTAIN
                        ;*A ".+2, IOT" SEQUENCE TO CATCH AND PROCESS ILLEGAL
                        ;*TRAPS AND INTERRUPTS THAT MIGHT OCCUR.
                        ;*THE IOT TRAP WHICH IS TAKEN ON THE ILLEGAL TRAP/INT
                        ;*TRAPS TO THE $SCOPE ROUTINE WHICH (IF THE RETURN PC IS
                        ;*LESS THAN 1002) JUMPS TO THE $ERROR ROUTINE.
                        ;*THE $ERROR ROUTINE WILL REPORT THE ERROR AS FOLLOWS:
                        ;*      PC=YYYYYY UNEXPECTED TRAP TO XXX
                        ;*AND RETURN TO THE PROGRAM AT PC=YYYYYY+2
                        ;*WHERE XXX=LOCATION OF ILLEGAL TRAP
                        ;*      YYYYYY=PC AT TIME OF TRAP
                        ;*NOTE: IF THE PROCESSOR IS NOT AN 11/05 THE PROGRAM
                        ;*      CAN BE STARTED AT ADDRESS 0 AS WELL AS ADDRESS 200.

000000  000000          $4OCAT: HALT                    ;;HALT
000002  000737                  BR      .-100           ;;BRANCH TO 177700 & TIME OUT (NOT ON
                                                        ;;11/05)
000004  001266                  .WORD   START           ;;VECTOR TO STARTING ADDRESS
000006  000340                  .WORD   340             ;;WITH PRIORITY LEVEL 7
        000174                  .=174
000174  000000          DISPREG:.WORD   0               ;;SOFTWARE DISPLAY REGISTER
000176  000000          SWREG:  .WORD   0               ;;SOFTWARE SWITCH REGISTER
                        .SBTTL  STARTING ADDRES(ES)
000200  000137  001266          JMP     @#START ;;GO TO START OF PROGRAM
                        .SBTTL  ACT11 HOOKS

                        ;;**************************************************************
                        ;HOOKS REQUIRED BY ACT11
        000204                  $SVPC=.                 ;SAVE PC
        000046                  .=46
000046  042016                  $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
        000052                  .=52
000052  000000                  .WORD   0               ;;2)SET LOC.52 TO ZERO
        000204                  .=$SVPC                 ;; RESTORE PC
                        .SBTTL  APT PARAMETER BLOCK

                        ;;**************************************************************
                        ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
```

```
                                ;;*****************************************************************
                                        .$X=.   ;;SAVE CURRENT LOCATION
                                        .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
                                        200     ;;; OR APT START UP
                                        .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
                                        $APTHDR ;;POINT TO APT HEADER BLOCK
                                        .=.$X   ;;RESET LOCATION COUNTER
                                ;;*****************************************************************
                                ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
                                ;INTERFACE SPEC.

000204                          $APTHD:
000204  000000                 $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
000206  001000                 $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
000210  000001                 $TSTM:  .WORD   1       ;;RUN TIM OF LONGEST TEST
000212  000002                 $PASTM: .WORD   2       ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
000214  000000                 $UNITM: .WORD   0       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
000216  000014                         .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
000204                          .=.$X                   ;SAVE CURRENT LOCATION COUNT
000002                          .=2
000002  000000                 0
000004  000006                 6
000006  000004                 4                               ;SET UP SOME VECTORS
000204                          .=.$X                           ;RESTORE LOCATION COUNT
001000                          .=1000
```

```
                                .SBTTL  GLOBAL DATA SECTION

                                ;++
                                ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                                ; IN MORE THAN ONE TEST.
                                ;--
                                .SBTTL  APT MAILBOX-ETABLE

                                ;;*****************************************************************
                                .EVEN
001000                          $MAIL:                          ;;APT MAILBOX
001000  000000                  $MSGTY: .WORD   AMSGTY   ;;MESSAGE TYPE CODE
001002  000000                  $FATAL: .WORD   AFATAL   ;;FATAL ERROR NUMBER
001004  000000                  $TESTN: .WORD   ATESTN   ;;TEST NUMBER
001006  000000                  $PASS:  .WORD   APASS    ;;PASS COUNT
001010  000000                  $DEVCT: .WORD   ADEVCT   ;;DEVICE COUNT
001012  000000                  $UNIT:  .WORD   AUNIT    ;;I/O UNIT NUMBER
001014  000000                  $MSGAD: .WORD   AMSGAD   ;;MESSAGE ADDRESS
001016  000000                  $MSGLG: .WORD   AMSGLG   ;;MESSAGE LENGTH
001020                          $ETABLE:                        ;;APT ENVIRONMENT TABLE
001020     000                  $ENV:   .BYTE   AENV     ;;ENVIRONMENT BYTE
001021     000                  $ENVM:  .BYTE   AENVM    ;;ENVIRONMENT MODE BITS
001022  000000                  $SWREG: .WORD   ASWREG   ;;APT SWITCH REGISTER
001024  002000                  $USWR:  .WORD   AUSWR    ;;USER SWITCHES
001026  000000                  $CPUOP: .WORD   ACPUOP   ;;CPU TYPE,OPTIONS
                                ;*                      BITS 15-11=CPU TYPE
                                ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
                                ;*                              11/70=06,PDQ=07,Q=10
                                ;*                      BIT 10=REAL TIME CLOCK
                                ;*                      BIT  9=FLOATING POINT PROCESSOR
                                ;*                      BIT  8=MEMORY MANAGEMENT
001030                          $ETEND:
                                .MEXIT

                                ;THESE LOCATIONS ARE USED IN MORE THAN ONE TEST TO STORE VECTOR DATA
                                ;WHEN THE TEST NEEDS TO HAVE AN ERROR CONDITION RESPOND DIFFERENTLY
                                ;FROM THE DEFAULT RESPONCE.
001030  000000                  SLOC00: .WORD   0
001032  000000                  SLOC01: .WORD   0

                                ;THESE LOCATIONS ARE USED IN MORE THAN ONE TEST TO STORE WORKING DATA.
001034  000000                  EXPDAT: .WORD   0               ;STORES EXPECTED (GOOD) DATA FOR COMPARISONS
001036  000000                  RECDAT: .WORD   0               ;STORES RECIEVED DATA TO BE VERIFIED
001040  000000                  COUNT:  .WORD   0               ;ERROR INDICATOR FOR FLOATING POINT TESTS
001042  000000                  FLAG:   .WORD   0               ;USED TO STORE "FLAG" CONDITIONS
001044  000000                  ERRCNT: .WORD   0               ;STORAGE FOR ERROR COUNT
001046  177570                  SWR:    .WORD   DSWR            ;STORAGE FOR SWITCH REGISTER ADDRESS
001050  177570                  DISPLAY:.WORD   DDISP           ;STORAGE FOR DISPLAY REGISTER ADDRESS
001052  000000                  $ERFLG: .WORD   0               ;ERROR FLAG
                                ;THESE LOCATIONS ARE USED BY MORE THAN ONE TEST AS LOOP COUNTERS
001054  000000                  DCOUNT: .WORD   0
001056  000000                  ALLCTR: .WORD   0
001060  000000                  LOOPIN: .WORD   0
001062  000000                  SAVSP1: .WORD   0               ;STORAGE FOR UNEXPECTED TRAP DATA
001064  000000                  SAVSP2: .WORD   0               ;       "       "       "       "
```

```
                631
                632
                633
                634
001066  000000  635                 SEQ:    .WORD   0               ;STORES SEQUENCE NUMBER FOR JUMP TESTS
001070  000000  636                 SPS:    .WORD   0               ;STORES STACK POINTER FOR JUMP TESTS
001072  000000  637                 SPSJ:   .WORD   0               ;STORES STACK POINTER FOR JUMP TESTS
                638
                639
                640
001074  177777  641                 WAITIN: .WORD   177777
                642
                643                 ;!!!!!!THIS IS IT. THE PROGRAM TEST LOCATION AND WRITE BUFFER!!!!!!!!!!!!!!!!!!
001076          644                 TSTLOC:
001076  000002  645                         .BLKW   2
```

```
                                        .SBTTL  GLOBAL TEXT SECTION

                                        ;++
                                        ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                        ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                        ; MORE THAN ONE TEST.
                                        ;--

                                        ;
                                        ; FORMAT STATEMENTS USED IN PRINT CALLS
                                        ;

001102  005015  040503  044103  ERRMSG::.ASCIZ  <CR><LF>/CACHE SYSTEM ERROR/
001110  020105  054523  052123
001116  046505  042440  051122
001124  051117     000
001127     015  042412  051122  CPUERR: .ASCIZ  <CR><LF>/ERROR DURING CPU TESTS/
001134  051117  042040  051125
001142  047111  020107  050103
001150  020125  042524  052123
001156  000123
001160  005015  051105  047522  BRDERR: .ASCIZ  <CR><LF>/ERROR WHILE TESTING BOARD FUNCTIONS/
001166  020122  044127  046111
001174  020105  042524  052123
001202  047111  020107  047502
001210  051101  020104  052506
001216  041516  044524  047117
001224  000123
001226  005015  051105  047522  ERR1:   .ASCIZ  <CR><LF>/ERROR # =/
001234  020122  020043  000075
001242  005015  051105  047522  ERR2:   .ASCIZ  <CR><LF>/ERROR PC =/
001250  020122  041520  036440
001256     000
001257     015  020012  020040  $CRLF:  .ASCIZ  <CR><LF>/   /
001264     000
        001266                          .EVEN
```

```
                        .SBTTL  GLOBAL ERROR REPORT SECTION

                        ;++
                        ; THE GLOBAL ERROR REPORT SECTION CONTAINS MESSAGE PRINTING AREAS
                        ; USED BY MORE THAN TEST TO OUTPUT ADDITIONAL ERROR INFORMATION.
                        ;--
```

```
                        .SBTTL  GLOBAL SUBROUTINES SECTION

                        ;++
                        ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                        ; THAT ARE USED IN MORE THAN ONE TEST.
                        ;--
```

```
                                START:
001266                                  MOV     #14,@#CCR               ;SET CACHE TO FORCE MISS
                                .SBTTL  INITIALIZE THE COMMON TAGS
001274  012706  001000                  MOV     #STACK,SP               ;;SETUP THE STACK POINTER
                                ;;INITIALIZE A FEW VECTORS
001300  012737  043470  000030          MOV     #$ERROR,@#EMTVEC        ;;EMT VECTOR FOR ERROR ROUTINE
001306  012737  000340  000032          MOV     #340,@#EMTVEC+2         ;;LEVEL 7
001314  012737  043152  000034          MOV     #$TRAP,@#TRAPVEC        ;;TRAP VECTOR FOR TRAP CALLS
001322  012737  000340  000036          MOV     #340,@#TRAPVEC+2        ;LEVEL 7
001330  005067  177452                  CLR     $PASS                   ;;CLEAR THE PASS COUNT
001334  016767  040424  040414          MOV     $ENDCT,$EOPCT           ;;SETUP END-OF-PROGRAM COUNTER
001342  105067  177504                  CLRB    $ERFLG                  ;;CLEAR THE ERROR FLAG
                                ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
001346  013746  000004                  MOV     @#ERRVEC,-(SP)          ;;SAVE ERROR VECTOR
001352  012737  001406  000004          MOV     #64$,@#ERRVEC           ;;SET UP ERROR VECTOR
001360  012767  177570  177460          MOV     #DSWR,SWR               ;;SETUP FOR A HARDWARE SWICH REGISTER
001366  012767  177570  177454          MOV     #DDISP,DISPLAY          ;;AND A HARDWARE DISPLAY REGISTER
001374  022777  177777  177444          CMP     #-1,@SWR                ;;TRY TO REFERENCE HARDWARE SWR
001402  001012                          BNE     66$                     ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                                        ;;AND  THE HARDWARE SWR IS NOT = -1
001404  000403                          BR      65$                     ;;BRANCH IF NO TIMEOUT
001406  012716  001414          64$:    MOV     #65$,(SP)               ;;SET UP FOR TRAP RETURN
001412  000002                          RTI
001414  012767  000176  177424  65$:    MOV     #SWREG,SWR              ;;POINT TO SOFTWARE SWR
001422  012767  000174  177420          MOV     #DISPREG,DISPLAY
001430  012637  000004          66$:    MOV     (SP)+,@#ERRVEC          ;;RESTORE ERROR VECTOR

                                .MACRO  $$SETMAIL       ?$ARG1
                                        CLR     $PASS                   ;;CLEAR PASS COUNT
                                        BITB    #APTSIZE,$ENVM          ;;TEST USER SIZE UNDER APT
                                        BEQ     $ARG1                   ;;YES,USE NON-APT SWITCH
                                        MOV     #$SWREG,SWR             ;;NO,USE APT SWITCH REGISTER
                                $ARG1:
                                .ENDM   $$SETMAIL
001434  005067  177346                  CLR     $PASS                   ;;CLEAR PASS COUNT
001440  132767  000200  177353          BITB    #APTSIZE,$ENVM          ;;TEST USER SIZE UNDER APT
001446  001403                          BEQ     67$                     ;;YES,USE NON-APT SWITCH
001450  012767  001022  177370          MOV     #$SWREG,SWR             ;;NO,USE APT SWITCH REGISTER
001456                          67$:
001456  012737  043470  000020          MOV     #$ERROR,@#IOTVEC        ;;SET UP IOT VECTORS
001464  012737  000340  000022          MOV     #340,@#IOTVEC+2         ;;TO GO TO ERROR ROUTINE
001472  005037  177766                  CLR     @#177766                ;CLEAR CPU ERROR REGISTER
001476  005067  177302          RESTART: CLR    $TESTN                  ;RESET $TESTN TO ZERO
001502  012737  000014  177746          MOV     #14,@#CCR               ;SET CACHE TO FORCE MISS

                                .SBTTL  BASE INSTRUCTION SET TESTS
                                ;*************************************************************************
                                ;*************************************************************************
                                ;                       BEGIN BASE INSTRUCTION SET TESTING
                                ;*************************************************************************
                                ;*************************************************************************
001510                          FRSTST:
                                ;;*********************************************************************
                                ;*TEST 1         TEST BEQ BNE INSTRUCTIONS
                                ;;*********************************************************************
```

```
                                ;THESE TWO INSTRUCTIONS ARE FUNDAMENTAL TO RECOGNIZING ERROR CONDITIONS
                                ;;*****************************************************************
001510                          TST1:
001510  005267  177270                  INC     $TESTN                  ;INCREMENT TEST NUMBER
001514  000277                          SCC
001516  000244                          CLZ                             ;CC=0100 - Z BIT CLEARED
001520  001401                          BEQ     1$                      ;*TEST INSTR -TRY TO CAUSE A BEQ ERROR
001522  001003                          BNE     2$                      ;BRANCH IF GOOD
                                                                        ;THE Z FLAG DIDNT CLEAR OR BRANCH FAILED.
                                                                        ;FAILURE AT THIS LOCATION
                                                                        ;COULD MEAN A BUS PROBLEM, MICRO-CODE PROBLEM
                                                                        ;CONDITION CODE PROBLEM OR JUST ABOUT ANYTHING
                                                                        ;ELSE.
001524                          1$:
001524  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
001526  000001                          .WORD   1                       ;UNIQUE ERROR NUMBER
001530  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
001532  000257                  2$:     CCC                             ;
001534  000264                          SEZ                             ;COND CODES = 0100 (ZERO)
001536  001001                          BNE     3$                      ;*TEST INSTR* TRY TO BRANCH ON ZERO FLAG
001540  001403                          BEQ     4$                      ;*TEST INSTR* BRANCH IF GOOD
                                                                        ;BRANCH FAILURE WITH Z BIT SET
001542                          3$:
001542  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
001544  000002                          .WORD   2                       ;UNIQUE ERROR NUMBER
001546  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
001550                          4$:
                                M2:
                                ;;*****************************************************************
                                ;*TEST 2         TEST BRANCH ON CARRY
                                ;;*****************************************************************
                                ;THIS IS A TEST TO SEE IF THE MODULE FORM ANTICIPATED IS FEASIBLE.
                                ;;*****************************************************************
001550                          TST2:
001550  005267  177230                  INC     $TESTN                  ;INCREMENT TEST NUMBER
001554  000257                          CCC                             ;CC=0000
001556  103003                          BCC     2$                      ;*TEST INSTR*
                                                                        ;BRANCH CARRY CLEAR FAILED
001560                          1$:
001560  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
001562  000003                          .WORD   3                       ;UNIQUE ERROR NUMBER
001564  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
001566  000261                  2$:     SEC                             ;CC=1111
001570  103403                          BCS     4$                      ;*TEST INSTR*
                                                                        ; BRANCH CARRY SET FAILED
001572                          3$:
001572  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
001574  000004                          .WORD   4                       ;UNIQUE ERROR NUMBER
001576  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
001600                          4$:

001600                          M3:
                                ;;*****************************************************************
                                ;*TEST 3         TEST DATA PATHS
                                ;;*****************************************************************
```

```
  807  001600                          TST3:
  808  001600  005267  177200                INC     $TESTN                  ;INCREMENT TEST NUMBER
  809  001604  005000                        CLR     R0
  810  001606  001005                        BNE     1$                      ;TRY TO INSURE WE ARE TESTING
  811                                                                        ;THE DATA PATH AND NOT THE "CLR R0" INSTRUCTION
  812  001610  005010                        CLR     (R0)                    ;FORCE LOCATION TO ZERO
  813  001612  001003                        BNE     1$                      ;TRY TO INSURE 0=0
  814  001614  005737  000000                TST     @#0                     ;AGAIN, TRY TO INSURE THAT 0=0
  815  001620  001403                        BEQ     2$                      ;BRANCH IF GOOD
  816                                                                        ;LOCATION 0 NOT SETUP PROPERLY
  817  001622                          1$:
  818  001622  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
  819  001624  000005                        .WORD   5                       ;UNIQUE ERROR NUMBER
  820  001626  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  821  001630                          2$:
  822
  823  001630                          M4:
  824                                  ;;*****************************************************************
  825                                  ;*TEST 4         TEST DATA PATHS - ONES AND ZEROS
  826                                  ;;*****************************************************************
  827  001630                          TST4:
  828  001630  005267  177150                INC     $TESTN                  ;INCREMENT TEST NUMBER
  829  001634  012737  125252  000000        MOV     #125252,@#0             ;0=125252
  830  001642  022737  125252  000000        CMP     #125252,@#0             ;SEE IF DATA MADE IT
  831  001650  001403                        BEQ     2$                      ;BRANCH IF IF DATA IS GOOD
  832                                                                        ;ERROR! EITHER THE BUS IS BAD,
  833                                                                        ;OR THE MOV OR COMPARE
  834                                                                        ;INSTRUCTIONS FAILED
  835  001652                          1$:
  836  001652  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
  837  001654  000006                        .WORD   6                       ;UNIQUE ERROR NUMBER
  838  001656  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  839  001660                          2$:                                   ;END OF TEST
  840
  841                                  ;
  842  001660                          M5:
  843                                  ;;*****************************************************************
  844                                  ;*TEST 5         TEST DATA PATHS - DATA 0'S AND 1'S
  845                                  ;;*****************************************************************
  846  001660                          TST5:
  847  001660  005267  177120                INC     $TESTN                  ;INCREMENT TEST NUMBER
  848  001664  012737  052525  000000        MOV     #052525,@#0             ;SETUP DATA
  849  001672  023727  000000  052525        CMP     @#0,#052525             ; TEST FOR CORRECT DATA
  850  001700  001403                        BEQ     2$
  851  001702                          1$:
  852  001702  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
  853  001704  000007                        .WORD   7                       ;UNIQUE ERROR NUMBER
  854  001706  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  855  001710                          2$:
  856
  857                                  ;
  858  001710                          M6:
  859                                  ;;*****************************************************************
  860                                  ;*TEST 6         TEST DATA PATHS - 1'S
  861                                  ;;*****************************************************************
  862  001710                          TST6:
```

```
                                        INC     $TESTN                  ;INCREMENT TEST NUMBER
                                        CLR     @#0
                                        COM     @#0                     ;SET UP MEMORY LOCATION 0 = 111111
                                        CMP     @#0,#177777             ; TEST DATA
                                        BEQ     2$                      ;BRANCH IF NO ERROR
                                1$:
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   10                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                2$:

                                ;
                                GPROTS:
                                ;;**************************************************************************
                                ;*TEST 7         R0 BIT TESTS
                                ;;**************************************************************************
                                TST7:
                                        INC     $TESTN                  ;INCREMENT TEST NUMBER
                                        MOV     #177777,R0              ;R0=177777
                                        CMP     R0,#177777              ;DOES R0=177777
                                        BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   11                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                1$:     CLR     R0                      ;R0=0
                                        CMP     R0,#0                   ;DOES R0=0
                                        BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   12                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                2$:     MOV     #125252,R0              ;R0=125252
                                        CMP     R0,#125252              ;DOES R0=125252
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   13                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                3$:     MOV     #52525,R0               ;R0=52525
                                        CMP     R0,#52525               ;DOES R0=52525
                                        BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   14                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                4$:

                                ;
                                GPR1TS:
                                ;;**************************************************************************
                                ;*TEST 10        R1 BIT TESTS
                                ;;**************************************************************************
                                TST10:
                                        INC     $TESTN                  ;INCREMENT TEST NUMBER
                                        MOV     #177777,R1              ;R1=177777
```

```
                                        CMP     R1,#177777      ;DOES R1=177777
002054  020127  177777                  BEQ     1$              ;YES GO ON
002060  001403                                                  ;NO GO TO ERROR
                                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002062  104000                          .WORD   15              ;UNIQUE ERROR NUMBER
002064  000015                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002066  001127                  1$:     CLR     R1              ;R1=0
002070  005001                          CMP     R1,#0           ;DOES R1=0
002072  020127  000000                  BEQ     2$              ;YES GO ON
002076  001403                                                  ;NO GO TO ERROR
                                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002100  104000                          .WORD   16              ;UNIQUE ERROR NUMBER
002102  000016                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002104  001127                  2$:     MOV     #125252,R1      ;R1=125252
002106  012701  125252                  CMP     R1,#125252      ;DOES R1=125252
002112  020127  125252                  BEQ     3$              ;YES GO ON
002116  001403                                                  ;NO GO TO ERROR
                                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002120  104000                          .WORD   17              ;UNIQUE ERROR NUMBER
002122  000017                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002124  001127                  3$:     MOV     #52525,R1       ;R1=52525
002126  012701  052525                  CMP     R1,#52525       ;DOES R1=52525
002132  020127  052525                  BEQ     4$              ;YES GO ON
002136  001403                                                  ;NO GO TO ERROR
                                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002140  104000                          .WORD   20              ;UNIQUE ERROR NUMBER
002142  000020                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002144  001127
002146                          4$:
                                        ;
002146                          GPR2TS:
                                        ;;*************************************************************************
                                        ;*TEST 11        R2 BIT TESTS
                                        ;;*************************************************************************
002146                          TST11:
002146  005267  176632                  INC     $TESTN          ;INCREMENT TEST NUMBER
002152  012702  177777                  MOV     #177777,R2      ;R2=177777
002156  020227  177777                  CMP     R2,#177777      ;DOES R2=177777
002162  001403                          BEQ     1$              ;YES GO ON
                                                                ;NO GO TO ERROR
002164  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002166  000021                          .WORD   21              ;UNIQUE ERROR NUMBER
002170  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002172  005002                  1$:     CLR     R2              ;R2=0
002174  020227  000000                  CMP     R2,#0           ;DOES R2=0
002200  001403                          BEQ     2$              ;YES GO ON
                                                                ;NO GO TO ERROR
002202  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002204  000022                          .WORD   22              ;UNIQUE ERROR NUMBER
002206  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
002210  012702  125252          2$:     MOV     #125252,R2      ;R2=125252
002214  020227  125252                  CMP     R2,#125252      ;DOES R2=125252
002220  001403                          BEQ     3$              ;YES GO ON
                                                                ;NO GO TO ERROR
002222  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
002224  000023                          .WORD   23              ;UNIQUE ERROR NUMBER
```

```
  975  002226  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  976  002230  012702  052525          3$:   MOV     #52525,R2               ;R2=52525
  977  002234  020227  052525                CMP     R2,#52525               ;DOES R2=52525
  978  002240  001403                        BEQ     4$                      ;YES GO ON
  979                                                                        ;NO GO TO ERROR
  980  002242  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
  981  002244  000024                        .WORD   24                      ;UNIQUE ERROR NUMBER
  982  002246  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  983  002250                          4$:
  984
  985                                  ;
  986  002250                          GPR3TS:
  987                                  ;;*********************************************************************
  988                                  ;*TEST 12        R3 BIT TESTS
  989                                  ;;*********************************************************************
  990  002250                          TST12:
  991  002250  005267  176530                INC     $TESTN                  ;INCREMENT TEST NUMBER
  992  002254  012703  177777                MOV     #177777,R3              ;R3=177777
  993  002260  020327  177777                CMP     R3,#177777              ;DOES R3=177777
  994  002264  001403                        BEQ     1$                      ;YES GO ON
  995                                                                        ;NO GO TO ERROR
  996  002266  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
  997  002270  000025                        .WORD   25                      ;UNIQUE ERROR NUMBER
  998  002272  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
  999  002274  005003                  1$:   CLR     R3                      ;R3=0
 1000  002276  020327  000000                CMP     R3,#0                   ;DOES R3=0
 1001  002302  001403                        BEQ     2$                      ;YES GO ON
 1002                                                                        ;NO GO TO ERROR
 1003  002304  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 1004  002306  000026                        .WORD   26                      ;UNIQUE ERROR NUMBER
 1005  002310  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 1006  002312  012703  125252          2$:   MOV     #125252,R3              ;R3=125252
 1007  002316  020327  125252                CMP     R3,#125252              ;DOES R3=125252
 1008  002322  001403                        BEQ     3$                      ;YES GO ON
 1009                                                                        ;NO GO TO ERROR
 1010  002324  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 1011  002326  000027                        .WORD   27                      ;UNIQUE ERROR NUMBER
 1012  002330  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 1013  002332  012703  052525          3$:   MOV     #52525,R3               ;R3=52525
 1014  002336  020327  052525                CMP     R3,#52525               ;DOES R3=52525
 1015  002342  001403                        BEQ     4$                      ;YES GO ON
 1016                                                                        ;NO GO TO ERROR
 1017  002344  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 1018  002346  000030                        .WORD   30                      ;UNIQUE ERROR NUMBER
 1019  002350  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 1020  002352                          4$:
 1021
 1022                                  ;
 1023  002352                          GPR4TS:
 1024                                  ;;*********************************************************************
 1025                                  ;*TEST 13        R4 BIT TESTS
 1026                                  ;;*********************************************************************
 1027  002352                          TST13:
 1028  002352  005267  176426                INC     $TESTN                  ;INCREMENT TEST NUMBER
 1029  002356  012704  177777                MOV     #177777,R4              ;R4=177777
 1030  002362  020427  177777                CMP     R4,#177777              ;DOES R4=177777
```

```
1031  002366  001403                        BEQ     1$                      ;YES GO ON
1032                                                                          ;NO GO TO ERROR
1033  002370  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1034  002372  000031                        .WORD   31                      ;UNIQUE ERROR NUMBER
1035  002374  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1036  002376  005004                1$:     CLR     R4                      ;R4=0
1037  002400  020427  000000                CMP     R4,#0                   ;DOES R4=0
1038  002404  001403                        BEQ     2$                      ;YES GO ON
1039                                                                          ;NO GO TO ERROR
1040  002406  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1041  002410  000032                        .WORD   32                      ;UNIQUE ERROR NUMBER
1042  002412  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1043  002414  012704  125252        2$:     MOV     #125252,R4              ;R4=125252
1044  002420  020427  125252                CMP     R4,#125252              ;DOES R4=125252
1045  002424  001403                        BEQ     3$                      ;YES GO ON
1046                                                                          ;NO GO TO ERROR
1047  002426  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1048  002430  000033                        .WORD   33                      ;UNIQUE ERROR NUMBER
1049  002432  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1050  002434  012704  052525        3$:     MOV     #52525,R4               ;R4=52525
1051  002440  020427  052525                CMP     R4,#52525               ;DOES R4=52525
1052  002444  001403                        BEQ     4$                      ;YES GO ON
1053                                                                          ;NO GO TO ERROR
1054  002446  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1055  002450  000034                        .WORD   34                      ;UNIQUE ERROR NUMBER
1056  002452  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1057  002454                        4$:
1058
1059                                ;
1060  002454                        GPR5TS:
1061                                ;;*************************************************************************
1062                                ;*TEST 14        R5 BIT TESTS
1063                                ;;*************************************************************************
1064  002454                        TST14:
1065  002454  005267  176324                INC     $TESTN                  ;INCREMENT TEST NUMBER
1066  002460  012705  177777                MOV     #177777,R5              ;R5=177777
1067  002464  020527  177777                CMP     R5,#177777              ;DOES R5=177777
1068  002470  001403                        BEQ     1$                      ;YES GO ON
1069                                                                          ;NO GO TO ERROR
1070  002472  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1071  002474  000035                        .WORD   35                      ;UNIQUE ERROR NUMBER
1072  002476  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1073  002500  005005                1$:     CLR     R5                      ;R5=0
1074  002502  020527  000000                CMP     R5,#0                   ;DOES R5=0
1075  002506  001403                        BEQ     2$                      ;YES GO ON
1076                                                                          ;NO GO TO ERROR
1077  002510  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1078  002512  000036                        .WORD   36                      ;UNIQUE ERROR NUMBER
1079  002514  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1080  002516  012705  125252        2$:     MOV     #125252,R5              ;R5=125252
1081  002522  020527  125252                CMP     R5,#125252              ;DOES R5=125252
1082  002526  001403                        BEQ     3$                      ;YES GO ON
1083                                                                          ;NO GO TO ERROR
1084  002530  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1085  002532  000037                        .WORD   37                      ;UNIQUE ERROR NUMBER
1086  002534  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
1087  002536  012705  052525          3$:     MOV     #52525,R5               ;R5=52525
1088  002542  020527  052525                  CMP     R5,#52525               ;DOES R5=52525
1089  002546  001403                          BEQ     4$                      ;YES GO ON
1090                                                                          ;NO GO TO ERROR
1091  002550  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1092  002552  000040                          .WORD   40                      ;UNIQUE ERROR NUMBER
1093  002554  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1094  002556                              4$:
1095
1096
1097  002556                              GPR6TS:
1098                                      ;;*************************************************************************
1099                                      ;*TEST 15       R6 BIT TESTS
1100                                      ;;*************************************************************************
1101  002556                              TST15:
1102  002556  005267  176222                      INC     $TESTN                  ;INCREMENT TEST NUMBER
1103  002562  012706  177777                      MOV     #177777,R6              ;R6=177777
1104  002566  020627  177777                      CMP     R6,#177777              ;DOES R6=177777
1105  002572  001403                              BEQ     1$                      ;YES GO ON
1106                                                                              ;NO GO TO ERROR
1107  002574  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1108  002576  000041                              .WORD   41                      ;UNIQUE ERROR NUMBER
1109  002600  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1110  002602  005006                      1$:     CLR     R6                      ;R6=0
1111  002604  020627  000000                      CMP     R6,#0                   ;DOES R6=0
1112  002610  001403                              BEQ     2$                      ;YES GO ON
1113                                                                              ;NO GO TO ERROR
1114  002612  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1115  002614  000042                              .WORD   42                      ;UNIQUE ERROR NUMBER
1116  002616  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1117  002620  012706  125252              2$:     MOV     #125252,R6              ;R6=125252
1118  002624  020627  125252                      CMP     R6,#125252              ;DOES R6=125252
1119  002630  001403                              BEQ     3$                      ;YES GO ON
1120                                                                              ;NO GO TO ERROR
1121  002632  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1122  002634  000043                              .WORD   43                      ;UNIQUE ERROR NUMBER
1123  002636  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1124  002640  012706  052525              3$:     MOV     #52525,R6               ;R6=52525
1125  002644  020627  052525                      CMP     R6,#52525               ;DOES R6=52525
1126  002650  001403                              BEQ     4$                      ;YES GO ON
1127                                                                              ;NO GO TO ERROR
1128  002652  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1129  002654  000044                              .WORD   44                      ;UNIQUE ERROR NUMBER
1130  002656  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1131  002660  012706  001000              4$:     MOV     #STBOT,R6               ;RESTORE SP
1132
1133
1134  002664                              PSWBTS:
1135                                      ;;*************************************************************************
1136                                      ;*TEST 16       PSW LOW BYTE BIT TESTS
1137                                      ;;*************************************************************************
1138  002664                              TST16:
1139  002664  005267  176114                      INC     $TESTN                  ;INCREMENT TEST NUMBER
1140  002670  012737  000377  177776              MOV     #377,@#177776           ;PS=357 T BIT SHOULDN'T SET
1141  002676  022737  000357  177776              CMP     #357,@#177776           ;DOES PS=357
1142  002704  001403                              BEQ     1$                      ;YES GO ON
```

```
1143
1144  002706  104000                        ERROR                   ;NO GO TO ERROR
1145  002710  000045                        .WORD   45              ;ALL ERRORS TO TRAP TO EMT VECTOR
1146  002712  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1147  002714  005037  177776          1$:   CLR     @#177776        ;ADDRESS OF ERROR MESSAGE
1148  002720  022737  000000  177776        CMP     #0,@#177776     ;PS=0
1149  002726  001403                        BEQ     2$              ;DOES PS=0
1150                                                                ;YES GO ON
1151  002730  104000                        ERROR                   ;NO GO TO ERROR
1152  002732  000046                        .WORD   46              ;ALL ERRORS TO TRAP TO EMT VECTOR
1153  002734  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1154  002736  012737  000105  177776  2$:   MOV     #105,@#177776   ;ADDRESS OF ERROR MESSAGE
1155  002744  022737  000105  177776        CMP     #105,@#177776   ;PS=105
1156  002752  001403                        BEQ     3$              ;DOES PS=105
1157                                                                ;YES GO ON
1158  002754  104000                        ERROR                   ;NO GO TO ERROR
1159  002756  000047                        .WORD   47              ;ALL ERRORS TO TRAP TO EMT VECTOR
1160  002760  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1161  002762  012737  000252  177776  3$:   MOV     #252,@#177776   ;ADDRESS OF ERROR MESSAGE
1162  002770  022737  000252  177776        CMP     #252,@#177776   ;PS=252
1163  002776  001403                        BEQ     4$              ;DOES PS=252
1164                                                                ;YES GO ON
1165  003000  104000                        ERROR                   ;NO GO TO ERROR
1166  003002  000050                        .WORD   50              ;ALL ERRORS TO TRAP TO EMT VECTOR
1167  003004  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1168  003006                          4$:                           ;ADDRESS OF ERROR MESSAGE
1169
1170
1171  003006                          MSP0:
1172                                  ;;**********************************************************************
1173                                  ;*TEST 17       TEST SINGLE OPERAND INSTRUCTIONS- MODE 0
1174                                  ;;**********************************************************************
1175                                  ;THE INC, COM, CLR, AND DECREMENT INSTRUCTIONS ARE VERIFED.
1176                                  ;;**********************************************************************
1177  003006                          TST17:
1178  003006  005267  175772                INC     $TESTN          ;INCREMENT TEST NUMBER
1179  003012  005004                        CLR     R4              ;INITIALIZE R4 WITH DATA
1180  003014  005104                        COM     R4              ;
1181  003016  005004                        CLR     R4              ;*TEST INSTRUCTION
1182  003020  001403                        BEQ     2$              ;BRANCH IF R4 CLEARED
1183  003022                          1$:
1184  003022  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1185  003024  000051                        .WORD   51              ;UNIQUE ERROR NUMBER
1186  003026  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1187  003030  005104                  2$:   COM     R4              ;*TEST COMPLIMENT INSTRUCTION
1188  003032  005204                        INC     R4              ;*TEST INCREMENT INSTRUCTION
1189  003034  001403                        BEQ     4$              ;BRANCH IF R4 =0
1190                                                                ;COMPLIMENT OR INCREMENT FAILED
1191  003036                          3$:
1192  003036  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1193  003040  000052                        .WORD   52              ;UNIQUE ERROR NUMBER
1194  003042  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1195  003044                          4$:
1196
1197                                  ;
1198  003044                          MSP8:
```

```
                        ;;*****************************************************************
                        ;*TEST 20       TEST SINGLE OPS - EVEN BYTE OF CLRB, DECB, AND COMB
                        ;;*****************************************************************
003044                  TST20:
003044  005267  175734          INC     #TESTN                  ;INCREMENT TEST NUMBER
003050  005004                  CLR     R4
003052  005104                  COM     R4                      ;SETUP TEST REGISTER
003054  105004                  CLRB    R4                      ;*TEST CLEAR BYTE INSTRUCTION
003056  001403                  BEQ     2$                      ;BRANCH IF GOOD
                                                                ;CLEAR EVEN BYTE FAILED
003060                  1$:
003060  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003062  000053                  .WORD   53                      ;UNIQUE ERROR NUMBER
003064  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003066  105304          2$:     DECB    R4                      ;*TEST DECREMENT BYTE
003070  100002                  BPL     3$                      ;DECREMENT BYTE FAILED
003072  105104                  COMB    R4                      ;*TEST COMPLIMENT BYTE
003074  001403                  BEQ     4$                      ;BRANCH IF GOOD
                                                                ;COMPLIMENT OR DECREMENT FAILED TO WORK
003076                  3$:
003076  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003100  000054                  .WORD   54                      ;UNIQUE ERROR NUMBER
003102  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003104                  4$:
                        ;
003104                  MSPC:
                        ;;*****************************************************************
                        ;*TEST 21       TEST SINGLE OPS - MODE 1 CLRB, COMB, AND INCB
                        ;;*****************************************************************
003104                  TST21:
003104  005267  175674          INC     #TESTN                  ;INCREMENT TEST NUMBER
003110  005004                  CLR     R4
003112  005014                  CLR     (R4)
003114  005114                  COM     (R4)                    ;SETUP TEST DATA
003116  005014                  CLR     (R4)                    ;*TEST INSTRUCTION
003120  001403                  BEQ     2$                      ;BRANCH IF GOOD
                                                                ;MODE 1 FAILED
003122                  1$:
003122  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003124  000055                  .WORD   55                      ;UNIQUE ERROR NUMBER
003126  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003130  005114          2$:     COM     (R4)                    ;*TEST INSTRUCTION
003132  001403                  BEQ     3$                      ;(0)SHOULD = -1
003134  100002                  BPL     3$                      ;
003136  005214                  INC     (R4)                    ;*TEST INSTRUCTION
003140  001403                  BEQ     4$                      ;BRANCH IF GOOD
                                                                ;COM OR INC FAILED TO ALTER LOC 0 CORRECTLY
003142                  3$:
003142  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003144  000056                  .WORD   56                      ;UNIQUE ERROR NUMBER
003146  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003150                  4$:
                        ;
003150                  MSPD:
```

```
1255                                    ;;*****************************************************************
1256                                    ;*TEST 22       TEST SINGLE OPS MODE1-EVEN BYTE-CLRB,COMB,INCB
1257                                    ;;*****************************************************************
1258  003150                            TST22:
1259  003150  005267  175630                  INC     #TESTN                  ;INCREMENT TEST NUMBER
1260  003154  005004                          CLR     R4
1261  003156  005014                          CLR     (R4)
1262  003160  005114                          COM     (R4)            ;SETUP TEST DATA
1263  003162  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
1264  003164  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
1265  003166  001403                          BEQ     2$              ;BRANCH IF GOOD
1266                                                                  ;CLEAR (0) EVEN BYTE FAILED
1267  003170                            1$:
1268  003170  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1269  003172  000057                          .WORD   57                      ;UNIQUE ERROR NUMBER
1270  003174  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1271  003176  105214                    2$:   INCB    (R4)            ;*TEST INSTRUCTION
1272  003200  100405                          BMI     3$              ; TEST FLAGS
1273  003202  001404                          BEQ     3$
1274  003204  105114                          COMB    (R4)            ;*TEST INSTRUCTION
1275  003206  105214                          INCB    (R4)
1276  003210  105214                          INCB    (R4)
1277  003212  001403                          BEQ     4$              ;BRANCH IF GOOD
1278                                                                  ;COMB OR INCB FAILED
1279  003214                            3$:
1280  003214  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1281  003216  000060                          .WORD   60                      ;UNIQUE ERROR NUMBER
1282  003220  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1283  003222                            4$:
1284
1285
1286  003222                            MSPE0:
1287                                    ;;*****************************************************************
1288                                    ;*TEST 23       TEST SINGLE OPS - ODD BYTE - CLRB, COMB, DECB
1289                                    ;;*****************************************************************
1290  003222                            TST23:
1291  003222  005267  175556                  INC     #TESTN                  ;INCREMENT TEST NUMBER
1292  003226  005004                          CLR     R4
1293  003230  005014                          CLR     (R4)
1294  003232  005114                          COM     (R4)            ;SETUP TEST DATA
1295  003234  005204                          INC     R4              ;POINT TO ODD BYTE
1296  003236  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
1297  003240  001403                          BEQ     1$              ;BRANCH IF GOOD
1298                                                                  ;CLEAR ODD BYTE FAILED
1299  003242  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1300  003244  000061                          .WORD   61                      ;UNIQUE ERROR NUMBER
1301  003246  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1302  003250  005304                    1$:   DEC     R4              ;POINT TO EVEN BYTE
1303  003252  005214                          INC     (R4)            ;LOC 0=1 0
1304  003254  005204                          INC     R4              ;POINT TO ODD BYTE
1305  003256  105114                          COMB    (R4)            ;*TEST INSTRUCTION
1306  003260  105214                          INCB    (R4)            ;LOC 0=-1 0
1307  003262  100003                          BPL     2$              ;BRANCH IF ERROR
1308  003264  001402                          BEQ     2$              ;
1309  003266  105214                          INCB    (R4)            ;*TEST INSTRUCTION
1310  003270  001403                          BEQ     3$              ;BRANCH IF GOOD
```

```
1311
1312  003272                                    ;MODE 1, ODD BYTE FAILED
1313  003272  104000                    2$:
1314  003274  000062                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1315  003276  001127                            .WORD   62              ;UNIQUE ERROR NUMBER
1316  003300                                     .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1317                                     3$:
1318                                     ;
1319  003300                             MSPF:
1320                                     ;;*****************************************************************
1321                                     ;*TEST 24       TEST SINGLE OP - MODE 2 - CLR, COM, INC
1322                                     ;;*****************************************************************
1323  003300                             TST24:
1324  003300  005267  175500                    INC     $TESTN                  ;INCREMENT TEST NUMBER
1325  003304  005004                             CLR     R4
1326  003306  105104                             COMB    R4
1327  003310  005204                             INC     R4              ;R4=400
1328  003312  005014                             CLR     (R4)            ;400=0
1329  003314  005114                             COM     (R4)            ;400=-1
1330  003316  005024                             CLR     (R4)+           ;*TEST INSTRUCTION
1331  003320  001403                             BEQ     1$              ;BRANCH IF GOOD
1332                                                                     ;MODE 2 CLEAR FAILED
1333  003322  104000                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1334  003324  000063                             .WORD   63              ;UNIQUE ERROR NUMBER
1335  003326  001127                             .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1336  003330  005304                     1$:     DEC     R4
1337  003332  005304                             DEC     R4              ;R4=400
1338  003334  005124                             COM     (R4)+           ;*TEST INSTRUCTION
1339  003336  100004                             BPL     2$              ;BRANCH IF FAILURE
1340  003340  005304                             DEC     R4
1341  003342  005304                             DEC     R4              ;R4=400
1342  003344  005224                             INC     (R4)+           ;*TEST INSTRUCTION
1343  003346  001403                             BEQ     3$              ;BRANCH IF GOOD
1344                                                                     ;MODE 2 FAILURE
1345  003350                             2$:
1346  003350  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1347  003352  000064                            .WORD   64              ;UNIQUE ERROR NUMBER
1348  003354  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1349  003356                             3$:
1350
1351                                     ;
1352  003356                             MSPG:
1353                                     ;;*****************************************************************
1354                                     ;*TEST 25       TEST CLRB, COMB, DECB, MODE 2 - EVEN BYTE
1355                                     ;;*****************************************************************
1356  003356                             TST25:
1357  003356  005267  175422                    INC     $TESTN                  ;INCREMENT TEST NUMBER
1358  003362  005004                             CLR     R4
1359  003364  105104                             COMB    R4
1360  003366  005204                             INC     R4              ;R4=400
1361  003370  005014                             CLR     (R4)
1362  003372  005114                             COM     (R4)            ;400=-1
1363  003374  105024                             CLRB    (R4)+           ;*TEST INSTRUCTION
1364  003376  001403                             BEQ     1$              ;BRANCH IF GOOD
1365                                                                     ;MODE 2 EVEN BYTE FAILED
1366  003400  104000                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
1367  003402  000065                    .WORD   65                      ;UNIQUE ERROR NUMBER
1368  003404  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1369  003406  005304            1$:     DEC     R4
1370  003410  105324                    DECB    (R4)+           ;*TEST INSTRUCTION
1371  003412  100003                    BPL     2$              ;BRANCH IF BAD
1372  003414  005304                    DEC     R4              ;POINT TO EVEN BYTE
1373  003416  105124                    COMB    (R4)+           ;*TEST INSTRUCTION
1374  003420  001403                    BEQ     3$              ;BRANCH IF GOOD
1375                                                            ;MODE 2, EVEN BYTE FAILED
1376  003422                    2$:
1377  003422  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1378  003424  000066                    .WORD   66                      ;UNIQUE ERROR NUMBER
1379  003426  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1380  003430                    3$:
1381
1382
1383  003430                    MSPH:
1384                              ;;*****************************************************************
1385                              ;*TEST 26        TEST CLRB, COMB, INCB MODE 2 - ODD BYTE
1386                              ;;*****************************************************************
1387  003430                    TST26:
1388  003430  005267  175350            INC     $TESTN                  ;INCREMENT TEST NUMBER
1389  003434  005004                    CLR     R4
1390  003436  105104                    COMB    R4
1391  003440  005204                    INC     R4              ;R4=400
1392  003442  005014                    CLR     (R4)
1393  003444  005114                    COM     (R4)            ;400=-1 -1
1394  003446  005214                    INC     (R4)            ;POINT TO ODD BYTE
1395  003450  105024                    CLRB    (R4)+           ;*TEST INSTRUCTION
1396  003452  001403                    BEQ     1$              ;BRANCH IF GOOD
1397                                                            ;MODE 2,ODD BYTE FAILED
1398  003454  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1399  003456  000067                    .WORD   67                      ;UNIQUE ERROR NUMBER
1400  003460  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1401  003462  005304            1$:     DEC     R4              ;POINT TO ODD BYTE
1402  003464  005304                    DEC     R4
1403  003466  105224                    INCB    (R4)+           ;400=1 0
1404  003470  105124                    COMB    (P4)+           ;*TEST INSTRUCTION
1405  003472  100003                    BPL     2$              ;BRANCH IF MODE 2 FAILED
1406  003474  005304                    DEC     R4              ;POINT TO ODD BYTE
1407  003476  105224                    INCB    (R4)+
1408  003500  001403                    BEQ     3$              ;BRANCH IF GOOD
1409                                                            ;MODE 2,ODD BYTE FAILED
1410  003502                    2$:
1411  003502  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1412  003504  000070                    .WORD   70                      ;UNIQUE ERROR NUMBER
1413  003506  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1414  003510                    3$:
1415
1416
1417  00351C                    MSPI:
1418                              ;;*****************************************************************
1419                              ;*TEST 27        TEST CLR, COM, INC - MODE 3
1420                              ;;*****************************************************************
1421  003510                    TST27:
1422  003510  005267  175270            INC     $TESTN                  ;INCREMENT TEST NUMBER
```

```
1423  003514  005004                    CLR     R4                      ;
1424  003516  005014                    CLR     (R4)                    ;0=0
1425  003520  105114                    COMB    (R4)                    ;
1426  003522  005214                    INC     (R4)                    ;0=400
1427  003524  005034                    CLR     @(R4)+                  ;*TEST INSTRUCTION
1428  003526  001403                    BEQ     1$                      ;BRANCH IF GOOD
1429                                                                    ;MODE 3 FAILED, 400 SHOULD=0
1430  003530  104000                    ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1431  003532  000071                    .WORD   71                              ;UNIQUE ERROR NUMBER
1432  003534  001127                    .WORD   CPUERR                          ;ADDRESS OF ERROR MESSAGE
1433  003536  005304            1$:     DEC     R4
1434  003540  005304                    DEC     R4                      ;R4=0
1435  003542  005134                    COM     @(R4)+                  ;*TEST INSTRUCTION
1436  003544  100004                    BPL     2$                      ;BRANCH IF BAD
1437  003546  005304                    DEC     R4
1438  003550  005304                    DEC     R4                      ;REPOSITION POINTER
1439  003552  005234                    INC     @(R4)+                  ;*TEST INSTRUCTION
1440  003554  001403                    BEQ     3$                      ;BRANCH IF GOOD
1441                                                                    ;MODE 3 FAILED
1442  003556                    2$:
1443  003556  104000                    ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1444  003560  000072                    .WORD   72                              ;UNIQUE ERROR NUMBER
1445  003562  001127                    .WORD   CPUERR                          ;ADDRESS OF ERROR MESSAGE
1446  003564                    3$:
1447
1448                                    ;
1449  003564                    MSPJ:
1450                                    ;;*********************************************************************
1451                                    ;*TEST 30        TEST CLRB, COMB, INCB - MODE 3, EVEN/ODD BYTE
1452                                    ;;*********************************************************************
1453  003564                    TST30:
1454  003564  005267  175214            INC     $TESTN                          ;INCREMENT TEST NUMBER
1455  003570  005004                    CLR     R4                      ;R4=0
1456  003572  005001                    CLR     R1
1457  003574  105101                    COMB    R1
1458  003576  005201                    INC     R1                      ;R1=400
1459  003600  005011                    CLR     (R1)
1460  003602  005121                    COM     (R1)+                   ;400=-1
1461  003604  005011                    CLR     (R1)                    ;
1462  003606  105111                    COMB    (R1)                    ;402=000 377
1463  003610  005014                    CLR     (R4)                    ;
1464  003612  105114                    COMB    (R4)                    ;
1465  003614  005214                    INC     (R4)                    ;0=400
1466  003616  105034                    CLRB    @(R4)+                  ;*TEST INSTRUCTION 400=377 000
1467  003620  001403                    BEQ     1$                      ;BRANCH IF MODE 3 EVEN BYTE CLEARED
1468                                                                    ; TEST INSTRUCTION FAILED
1469  003622  104000                    ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1470  003624  000073                    .WORD   73                              ;UNIQUE ERROR NUMBER
1471  003626  001127                    .WORD   CPUERR                          ;ADDRESS OF ERROR MESSAGE
1472  003630  005304            1$:     DEC     R4                      ;REPOSTION POINTER
1473  003632  005304                    DEC     R4
1474  003634  105134                    COMB    @(R4)+                  ;*TEST INSTRUCTION
1475  003636  005304                    DEC     R4
1476  003640  005304                    DEC     R4                      ;REPOSITION POINTER
1477  003642  105234                    INCB    @(R4)+                  ;*TEST INSTRUCTION
1478  003644  001403                    BEQ     3$                      ;BRANCH IF GOOD
```

```
1479
1480  003646                          2$:
1481  003646  104000                        ERROR
1482  003650  000074                        .WORD   74              ;UNIQUE ERROR NUMBER
1483  003652  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1484  003654  005304                  3$:   DEC     R4
1485  003656  005304                        DEC     R4
1486  003660  005214                        INC     (R4)            ;R4=401
1487  003662  105234                        INCB    @(R4)+          ;*TEST INSTRUCTION
1488  003664  001004                        BNE     4$              ;BRANCH IF 402 NEQ 0
1489  003666  005304                        DEC     R4
1490  003670  005304                        DEC     R4              ;R4=401
1491  003672  105034                        CLRB    @(R4)+          ;401=0
1492  003674  001403                        BEQ     5$              ;BRANCH IF GOOD
1493                                                                ;ODD BYTE FAILED
1494  003676                          4$:
1495  003676  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1496  003700  000075                        .WORD   75              ;UNIQUE ERROR NUMBER
1497  003702  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1498  003704  005304                  5$:   DEC     R4
1499  003706  005304                        DEC     R4              ;R4=401
1500  003710  105134                        COMB    @(R4)+          ;403=377
1501  003712  005304                        DEC     R4
1502  003714  005304                        DEC     R4
1503  003716  105234                        INCB    @(R4)+          ;*TEST INSTRUCTION
1504  003720  001403                        BEQ     7$              ;BRANCH IF GOOD
1505                                                                ;MODE3 ODD BYTE FAILED.
1506  003722                          6$:
1507  003722  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1508  003724  000076                        .WORD   76              ;UNIQUE ERROR NUMBER
1509  003726  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1510  003730                          7$:
1511
1512                                ;
1513  003730                        MSPL:
1514                                ;;*********************************************************************
1515                                ;*TEST 31       TEST CLR, COM, DEC - MODE 4
1516                                ;;*********************************************************************
1517  003730                        TST31:
1518  003730  005267  175050               INC     $TESTN                  ;INCREMENT TEST NUMBER
1519  003734  005004                       CLR     R4
1520  003736  105104                       COMB    R4
1521  003740  005204                       INC     R4              ;R4=400
1522  003742  005014                       CLR     (R4)            ;
1523  003744  005124                       COM     (R4)+           ;400=-1
1524  003746  005014                       CLR     (R4)            ;
1525  003750  005224                       INC     (R4)+           ;402=1
1526  003752  005044                       CLR     -(R4)           ;*TEST INSTRUCTION
1527  003754  001403                       BEQ     1$              ;BRANCH IF GOOD
1528                                                                ;MODE 4 FAILED
1529  003756  104000                       ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1530  003760  000077                       .WORD   77              ;UNIQUE ERROR NUMBER
1531  003762  001127                       .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1532  003764  005344                 1$:   DEC     -(R4)           ;*TEST INSTRUCTION 400=-2
1533  003766  005114                       COM     (R4)            ;400=1
1534  003770  001405                       BEQ     2$              ;BRANCH IF BAD
```

```
1535  003772  100404                        BMI     2$              ;BRANCH IF BAD
1536  003774  005204                        INC     R4
1537  003776  005204                        INC     R4              ;R4=400
1538  004000  005344                        DEC     -(R4)           ;*TEST INSTRUCTION
1539  004002  001403                        BEQ     3$              ;BRANCH IF GOOD
1540                                                                ;MODE 4 FAILED
1541  004004                          2$:
1542  004004  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1543  004006  000100                        .WORD   100                     ;UNIQUE ERROR NUMBER
1544  004010  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1545  004012                          3$:
1546
1547                                  ;
1548  004012                          MSPM:
1549                                  ;;*******************************************************************
1550                                  ;*TEST 32        TEST COMB, INCB, CLRB - MODE 4, ODD BYTE
1551                                  ;;*******************************************************************
1552  004012                          TST32:
1553  004012  005267  174766                INC     $TESTN                  ;INCREMENT TEST NUMBER
1554  004016  005004                        CLR     R4
1555  004020  105104                        COMB    R4              ;
1556  004022  005204                        INC     R4              ;R4=400
1557  004024  005044                        CLR     -(R4)           ;376=0
1558  004026  105114                        COMB    (R4)
1559  004030  005224                        INC     (R4)+           ;376=001 000
1560  004032  005014                        CLR     (R4)
1561  004034  005124                        COM     (R4)+           ;400=1
1562  004036  005204                        INC     R4              ;R4=403
1563  004040  105044                        CLRB    -(R4)           ; TEST INST. CLEAR ODD BYTE (401)
1564  004042  001403                        BEQ     2$              ;BRANCH IF GOOD
1565                                                                ;MODE 4 BYTE FAILED
1566  004044                          1$:
1567  004044  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1568  004046  000101                        .WORD   101                     ;UNIQUE ERROR NUMBER
1569  004050  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1570  004052  005204                2$:     INC     R4
1571  004054  005204                        INC     R4              ;R4=403
1572  004056  105144                        COMB    -(R4)           ; TEST INST. 401=377
1573  004060  005304                        DEC     R4
1574  004062  005304                        DEC     R4
1575  004064  105244                        INCB    -(R4)           ; TEST INST. 401=0
1576  004066  001403                        BEQ     4$              ;BRANCH IF GOOD
1577                                                                ;MODE 4 ODD BYTE FAILED
1578  004070                          3$:
1579  004070  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1580  004072  000102                        .WORD   102                     ;UNIQUE ERROR NUMBER
1581  004074  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1582  004076  105344                4$:     DECB    -(R4)           ;*TEST INST.
1583  004100  001403                        BEQ     6$              ;BRANCH IF GOOD
1584                                                                ;MODE 4 DECREMENT ODD BYTE FAILED
1585  004102                          5$:
1586  004102  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1587  004104  000103                        .WORD   103                     ;UNIQUE ERROR NUMBER
1588  004106  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1589  004110                          6$:
1590
```

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1591
1592  004110                                  ;
1593                                          MSPN:
1594                                          ;;*****************************************************************
1595                                          ;*TEST 33        TEST CLR, COM, INC - MODE 5
1596  004110                                  ;;*****************************************************************
1597  004110  005267  174670                 TST33:  INC     $TESTN                  ;INCREMENT TEST NUMBER
1598  004114  005004                                 CLR     R4
1599  004116  005014                                 CLR     (R4)
1600  004120  105114                                 COMB    (R4)
1601  004122  005224                                 INC     (R4)+           ;0=400
1602  004124  005054                                 CLR     @-(R4)          ;*TEST INST. 400=0
1603  004126  001403                                 BEQ     1$              ;BRANCH IF GOOD
1604                                                                          ;MODE 5 FAILED
1605  004130  104000                                 ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1606  004132  000104                                 .WORD   104                     ;UNIQUE ERROR NUMBER
1607  004134  001127                                 .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1608  004136  005204                         1$:     INC     R4
1609  004140  005204                                 INC     R4              ;RESET POINTER TO 0
1610  004142  005154                                 COM     @-(R4)          ;*TEST INST. 376=1
1611  004144  001407                                 BEQ     2$              ;BRANCH IF BAD
1612  004146  005204                                 INC     R4
1613  004150  005204                                 INC     R4              ;REPOSITION POINTER
1614  004152  005354                                 DEC     @-(R4)          ;*TEST INST. 376=0
1615  004154  001403                                 BEQ     2$              ;BRANCH IF BAD
1616  004156  005224                                 INC     (R4)+           ;0=401 R4=2
1617  004160  105254                                 INCB    @-(R4)          ;*TEST INST.,400= 0 376
1618  004162  001403                                 BEQ     3$              ;BRANCH IF GOOD
1619                                                                          ;MODE 5 FAILED
1620  004164                                  2$:
1621  004164  104000                                 ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1622  004166  000105                                 .WORD   105                     ;UNIQUE ERROR NUMBER
1623  004170  001127                                 .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1624  004172                                  3$:
1625
1626                                          ;
1627  004172                                  MSP0:
1628                                          ;;*****************************************************************
1629                                          ;*TEST 34        TEST NEG MODE 5
1630                                          ;;*****************************************************************
1631  004172                                  TST34:  INC     $TESTN                  ;INCREMENT TEST NUMBER
1632  004172  005267  174606                         CLR     R4
1633  004176  005004                                 COMB    R4
1634  004200  105104                                 INC     R4              ;R4=400
1635  004202  005204                                 CLR     R1
1636  004204  005001                                 COMB    R1
1637  004206  105101                                 DEC     R1              ;R1=376
1638  004210  005301                                 CLR     R2              ;R2=0
1639  004212  005002                                 CLR     (R2)            ;0=0
1640  004214  005012                                 CLR     (R4)            ;
1641  004216  005014                                 COM     (R4)            ;400=-1
1642  004220  005114                                 CLR     (R1)            ;376=0
1643  004222  005011                                 NEG     @-(R4)          ;0=0
1644  004224  005454                                 BEQ     2$              ;BRANCH IF GOOD
1645  004226  001403                                                         ;NEG FAILED
1646
```

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1647  004230                          1$:
1648  004230  104000                      ERROR
1649  004232  000106                      .WORD   106             ;ALL ERRORS TO TRAP TO EMT VECTOR
1650  004234  001127                      .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1651  004236  005334                2$:   DEC     @(R4)+          ;ADDRESS OF ERROR MESSAGE
1652  004240  005454                      NEG     @-(R4)          ;0=-1
1653  004242  001403                      BEQ     3$              ;0=1
1654  004244  102402                      BVS     3$              ;BRANCH IF BAD
1655  004246  100401                      BMI     3$              ;BRANCH IF BAD
1656  004250  103403                      BCS     4$              ;BRANCH IF BAD
1657                                                            ;BRANCH IF GOOD
1658  004252                          3$:                         ;NEG FAILED
1659  004252  104000                      ERROR
1660  004254  000107                      .WORD   107             ;ALL ERRORS TO TRAP TO EMT VECTOR
1661  004256  001127                      .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1662  004260  005334                4$:   DEC     @(R4)+          ;ADDRESS OF ERROR MESSAGE
1663  004262  001403                      BEQ     6$              ; TEST RESULT OF NEGATE
1664                                                            ;BRANCH IF GOOD
1665  004264                          5$:                         ;RESULT OF NEGATE BAD
1666  004264  104000                      ERROR
1667  004266  000110                      .WORD   110             ;ALL ERRORS TO TRAP TO EMT VECTOR
1668  004270  001127                      .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1669  004272  105212                6$:   INCB    (R2)            ;ADDRESS OF ERROR MESSAGE
1670  004274  005454                      NEG     @-(R4)          ;0=1
1671  004276  001403                      BEQ     7$              ;0=-1
1672  004300  102402                      BVS     7$              ;
1673  004302  103001                      BCC     7$              ;
1674  004304  100403                      BMI     8$              ;BRANCH IF GOOD
1675                                                            ;BAD NEGATE
1676  004306                          7$:
1677  004306  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1678  004310  000111                      .WORD   111             ;UNIQUE ERROR NUMBER
1679  004312  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1680  004314  105212                8$:   INCB    (R2)            ;0=0
1681  004316  001403                      BEQ     10$             ;BRANCH IF GOOD
1682  004320                          9$:
1683  004320  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1684  004322  000112                      .WORD   112             ;UNIQUE ERROR NUMBER
1685  004324  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1686  004326                          10$:
1687
1688                                  ;
1689
1690  004326                          MSPP:
1691                                  ;;*****************************************************************
1692                                  ;*TEST 35       TEST CLR, COM, INC - MODE 6
1693                                  ;;*****************************************************************
1694  004326                          TST35:
1695  004326  005267  174452              INC     #TESTN          ;INCREMENT TEST NUMBER
1696  004332  005004                      CLR     R4
1697  004334  005204                      INC     R4
1698  004336  005204                      INC     R4              ;R4=2
1699  004340  005001                      CLR     R1
1700  004342  105101                      COMB    R1
1701  004344  005201                      INC     R1              ;R1=400
1702  004346  005011                      CLR     (R1)            ;
```

```
1703  004350  005121                        COM     (R1)+           ;400=-1
1704  004352  005011                        CLR     (R1)            ;R1=402
1705  004354  005211                        INC     (R1)            ;402=1
1706  004356  005002                        CLR     R2              ;R2=0
1707  004360  005012                        CLR     (R2)            ;0=0
1708  004362  005064  000376                CLR     376(R4)         ;400=0
1709  004366  001403                        BEQ     2$              ;BRANCH IF GOOD
1710  004370                          1$:
1711  004370  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1712  004372  000113                        .WORD   113                     ;UNIQUE ERROR NUMBER
1713  004374  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1714  004376  005364  000376          2$:   DEC     376(R4)         ;400=-1
1715  004402  005164  000400                COM     400(R4)         ;402=-1
1716  004406  001405                        BEQ     3$              ;BRANCH IF BAD
1717  004410  005264  000400                INC     400(R4)         ;402=-2
1718  004414  005264  000400                INC     400(R4)
1719  004420  001403                        BEQ     4$              ;BRANCH IF GOOD
1720                                                                  ;MODE 6 FAILED
1721  004422                          3$:
1722  004422  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1723  004424  000114                        .WORD   114                     ;UNIQUE ERROR NUMBER
1724  004426  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1725  004430  005261  177776          4$:   INC     -2(R1)          ;400=0
1726  004434  001403                        BEQ     6$              ;BRANCH IF GOOD
1727                                                                  ;ERROR! INC MODE 6 FAILED
1728  004436                          5$:
1729  004436  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1730  004440  000115                        .WORD   115                     ;UNIQUE ERROR NUMBER
1731  004442  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1732  004444                          6$:
1733
1734                                  ;
1735                                  ;
1736                                  ;
1737  004444                          MSPQ:
1738                                  ;;*****************************************************************
1739                                  ;*TEST 36        TEST NEG MODE 6
1740                                  ;;*****************************************************************
1741  004444                          TST36:
1742  004444  005267  174334                INC     $TESTN                          ;INCREMENT TEST NUMBER
1743  004450  005001                        CLR     R1              ;R1=0
1744  004452  005004                        CLR     R4
1745  004454  105104                        COMB    R4
1746  004456  005204                        INC     R4              ;R4=400
1747  004460  005014                        CLR     (R4)            ;
1748  004462  005114                        COM     (R4)            ;400=-1
1749  004464  005044                        CLR     -(R4)           ;376=0
1750  004466  005044                        CLR     -(R4)           ;
1751  004470  005224                        INC     (R4)+           ;374=1 R4=376
1752  004472  005464  000002                NEG     2(R4)           ;400=1
1753  004476  001403                        BEQ     1$              ;NEGATE FAILED
1754  004500  102402                        BVS     1$
1755  004502  100401                        BMI     1$
1756  004504  103403                        BCS     2$              ;BRANCH IF GOOD
1757                                                                  ;NEGATE FAILED
1758  004506                          1$:
```

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1759  004506  104000                        ERROR
1760  004510  000116                        .WORD   116             ;ALL ERRORS TO TRAP TO EMT VECTOR
1761  004512  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1762  004514  005364  000002        2$:     DEC     2(R4)           ;ADDRESS OF ERROR MESSAGE
1763  004520  001403                        BEQ     4$              ; TEST RESULT OF NEGATE
1764                                                                ;BRANCH IF GOOD
1765  004522                        3$:                             ;RESULT OF NEGATE FAILED
1766  004522  104000                        ERROR
1767  004524  000117                        .WORD   117             ;ALL ERRORS TO TRAP TO EMT VECTOR
1768  004526  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1769  004530  005464  000000        4$:     NEG     0(R4)           ;ADDRESS OF ERROR MESSAGE
1770  004534  001403                        BEQ     5$              ;*0=0
1771                                                                ; BRANCH IF GOOD
1772  004536  104000                        ERROR                   ;NEGATE FAILED
1773  004540  000120                        .WORD   120             ;ALL ERRORS TO TRAP TO EMT VECTOR
1774  004542  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1775  004544  105461  000374        5$:     NEGB    374(R1)         ;ADDRESS OF ERROR MESSAGE
1776  004550  102403                        BVS     6$              ;374=0 377
1777  004552  001402                        BEQ     6$              ;
1778  004554  100001                        BPL     6$
1779  004556  103403                        BCS     7$
1780                                                                ;BRANCH IF GOOD
1781  004560                        6$:                             ;NEGATE FAILED
1782  004560  104000                        ERROR
1783  004562  000121                        .WORD   121             ;ALL ERRORS TO TRAP TO EMT VECTOR
1784  004564  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1785  004566  105261  000374        7$:     INCB    374(R1)         ;ADDRESS OF ERROR MESSAGE
1786  004572  001403                        BEQ     9$              ;374=0
1787                                                                ;BRANCH IF GOOD
1788  004574                        8$:                             ;NEGATE FAILED
1789  004574  104000                        ERROR
1790  004576  000122                        .WORD   122             ;ALL ERRORS TO TRAP TO EMT VECTOR
1791  004600  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
1792  004602                        9$:     ;                       ;ADDRESS OF ERROR MESSAGE
1793
1794
1795  004602                        MSPR:
1796                                ;;**************************************************************
1797                                ;*TEST 37        TEST CLR, COM, INC - MODE 7
1798                                ;;**************************************************************
1799  004602                        TST37:
1800  004602  005267  174176                INC     $TESTN                  ;INCREMENT TEST NUMBER
1801  004606  005001                        CLR     R1              ;R1=0
1802  004610  005004                        CLR     R4              ;
1803  004612  105104                        COMB    R4              ;
1804  004614  005204                        INC     R4              ;R4=400
1805  004616  005011                        CLR     (R1)
1806  004620  105111                        COMB    (R1)
1807  004622  005211                        INC     (R1)
1808  004624  005211                        INC     (R1)
1809  004626  005211                        INC     (R1)            ;;0=402
1810  004630  005014                        CLR     (R4)            ;400=0
1811  004632  005064  000002                CLR     2(R4)           ;
1812  004636  005164  000002                COM     2(R4)           ;402=-1
1813  004642  005074  177400                CLR     @-400(R4)       ;402=0
1814  004646  001403                        BEQ     2$              ;BRANCH IF GOOD
```

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1815  004650                          1$:
1816  004650  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1817  004652  000123                        .WORD   123                     ;UNIQUE ERROR NUMBER
1818  004654  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1819                                                                  ;INSTRUCTION FAILED
1820  004656  005171  000000        2$:     COM     @0(R1)          ;402=-1
1821  004662  100403                        BMI     4$              ;BRANCH IF GOOD
1822  004664                          3$:
1823  004664  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1824  004666  000124                        .WORD   124                     ;UNIQUE ERROR NUMBER
1825  004670  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1826
1827  004672  005104                  4$:     COM     R4
1828  004674  005274  000401                INC     @401(R4)        ;402=0
1829  004700  001403                        BEQ     6$              ;BRANCH IF GOOD
1830  004702                          5$:
1831  004702  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1832  004704  000125                        .WORD   125                     ;UNIQUE ERROR NUMBER
1833  004706  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1834                                                                  ;MODE 7 FAILED
1835  004710                          6$:
1836
1837                                  ;
1838  004710                          MSPS:
1839                                  ;;*********************************************************************
1840                                  ;*TEST 40       TEST NEG MODE 7
1841                                  ;;*********************************************************************
1842  004710                          TST40:
1843  004710  005267  174070                INC     $TESTN                  ;INCREMENT TEST NUMBER
1844  004714  005004                        CLR     R4
1845  004716  005014                        CLR     (R4)            ;0=0
1846  004720  005002                        CLR     R2              ;
1847  004722  105102                        COMB    R2
1848  004724  005202                        INC     R2              ;R2=400
1849  004726  005012                        CLR     (R2)            ;400=0
1850  004730  005172  177400                NEG     @-400(R2)       ;NEG OF 0=0
1851  004734  103401                        BCS     1$              ;****
1852  004736  001403                        BEQ     2$              ;BRANCH IF GOOD
1853  004740                          1$:
1854  004740  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1855  004742  000126                        .WORD   126                     ;UNIQUE ERROR NUMBER
1856  004744  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1857                                                                  ;
1858  004746  005314                  2$:     DEC     (R4)            ;0=-1
1859  004750  005474  000400                NEG     @+400(R4)       ;0=1
1860  004754  001403                        BEQ     3$              ;BRANCH IF ERROR
1861  004756  102402                        BVS     3$              ;
1862  004760  100401                        BMI     3$              ;
1863  004762  103403                        BCS     4$              ;BRANCH IF GOOD
1864  004764                          3$:
1865  004764  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1866  004766  000127                        .WORD   127                     ;UNIQUE ERROR NUMBER
1867  004770  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1868                                                                  ;NEGATE MODE 7 FAILED
1869  004772                          4$:
1870
```

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1871
1872  004772                          ;
1873                                  MSPT:
1874                                  ;;*****************************************************************
1875                                  ;*TEST 41        TEST SINGLE OPERAND MODE 2 REG 7
1876  004772                          ;;*****************************************************************
1877  004772  005267  174006         TST41:  INC     @TESTN                  ;INCREMENT TEST NUMBER
1878  004776  005004                         CLR     R4
1879  005000  105104                         COMB    R4
1880  005002  005204                         INC     R4              ;R4=400
1881  005004  005027                         CLR     (R7)+           ;CLEAR NEXT LOCATION
1882  005006  177777                 1@:     .WORD   -1              ;SETUP INITIAL DATA
1883  005010  001403                         BEQ     3@              ;BRANCH IF GOOD
1884  005012                          2@:
1885  005012  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1886  005014  000130                         .WORD   130                     ;UNIQUE ERROR NUMBER
1887  005016  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1888  005020                          3@:
1889
1890                                  ;
1891
1892  005020                          MSPU:
1893                                  ;;*****************************************************************
1894                                  ;*TEST 42        TEST TST MODE 0
1895                                  ;;*****************************************************************
1896  005020                          TST42:  INC     @TESTN                  ;INCREMENT TEST NUMBER
1897  005020  005267  173760                 CLR     R4              ;R4=0
1898  005024  005004                         SCC                     ;CONDITION CODES =1111
1899  005026  000277                         CLZ                     ;CC=1011
1900  005030  000244                         TST     R4              ;*TEST INSTRUCTION
1901  005032  005704                         BCS     1@
1902  005034  103403                         BVS     1@
1903  005036  102402                         BMI     1@              ;BRANCH IF ERROR
1904  005040  100401                         BEQ     2@              ;BRANCH IF GOOD
1905  005042  001403                 1@:
1906  005044                                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1907  005044  104000                         .WORD   131                     ;UNIQUE ERROR NUMBER
1908  005046  000131                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1909  005050  001127                                                 ;TST MODE 0 FAILED
1910                                  2@:     DEC     R4              ;R4=-1
1911  005052  005304                         SCC
1912  005054  000277                         CLN                     ;CC=0111
1913  005056  000250                         TST     R4              ;*TEST INSTRUCTION MODE 0
1914  005060  005704                         BCS     3@              ;BRANCH IF ERROR
1915  005062  103403                         BVS     3@
1916  005064  102402                         BEQ     3@
1917  005066  001401                         BMI     4@              ;BRANCH IF GOOD
1918  005070  100403                 3@:
1919  005072                                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1920  005072  104000                         .WORD   132                     ;UNIQUE ERROR NUMBER
1921  005074  000132                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1922  005076  001127                                                 ;TST FAILED
1923
1924  005100                          4@:
1925
1926                                  ;
```

```
1927  005100                          MSPV0:
1928                                  ;;*****************************************************************
1929                                  ;*TEST 43       TEST TST MODE 0 BYTE
1930                                  ;;*****************************************************************
1931  005100                          TST43:
1932  005100  005267  173700                INC     @TESTN                  ;INCREMENT TEST NUMBER
1933  005104  005004                        CLR     R4
1934  005106  105104                        COMB    R4              ;0=000 377
1935  005110  000277                        SCC
1936  005112  000250                        CLN                     ;CC=0111
1937  005114  105704                        TSTB    R4              ;*TEST INSTRUCTION ON EVEN BYTE
1938  005116  102403                        BVS     1@              ;BRANCH IF ERROR
1939  005120  103402                        BCS     1@              ;
1940  005122  102401                        BVS     1@              ;
1941  005124  100403                        BMI     2@              ;BRANCH IF GOOD
1942  005'26                        1@:
1943  005126  104000                        ERROR                           ;ALL ERRURS TO TRAP TO EMT VECTOR
1944  005130  000133                        .WORD   133                     ;UNIQUE ERROR NUMBER
1945  005132  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1946                                        ;
1947  005134  005204                2@:     INC     R4              ;POINT TO 1
1948  005136  105704                        TSTB    R4              ; TEST INSTRUCTION
1949  005140  001403                        BEQ     4@              ;BRANCH IF GOOD
1950  005142                        3@:
1951  005142  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1952  005144  000134                        .WORD   134                     ;UNIQUE ERROR NUMBER
1953  005146  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1954                                                                ;TST FAILED ON BYTE
1955  005150                        4@:
1956
1957                                  ;
1958  005150                          MSPV:
1959                                  ;;*****************************************************************
1960                                  ;*TEST 44       TEST TST MODE 1
1961                                  ;;*****************************************************************
1962  005150                          TST44:
1963  005150  005267  173630                INC     @TESTN                  ;INCREMENT TEST NUMBER
1964  005154  005004                        CLR     R4
1965  005156  005014                        CLR     (R4)            ;0=0
1966  005160  000277                        SCC
1967  005162  000244                        CLZ                     ;CC=1011
1968  005164  005714                        TST     (R4)            ;*TEST INSTRUCTION IN MODE 1
1969  005166  103403                        BCS     1@              ;BRANCH IF ERROR
1970  005170  102402                        BVS     1@              ;
1971  005172  100401                        BMI     1@              ;
1972  005174  001403                        BEQ     2@              ;BRANCH IF GOOD
1973  005176                        1@:
1974  005176  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1975  005200  000135                        .WORD   135                     ;UNIQUE ERROR NUMBER
1976  005202  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1977
1978  005204  005214                2@:     INC     (R4)            ;0=1
1979  005206  000277                        SCC
1980  005210  005714                        TST     (R4)            ; TEST INSTRUCTION
1981  005212  001403                        BEQ     3@              ;BRANCH IF ERROR
1982  005214  102402                        BVS     3@
```

```
1983  005216  103401                  BCS     3$
1984  005220  100003                  BPL     4$              ;BRANCH IF GOOD
1985  005222                  3$:
1986  005222  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1987  005224  000136                  .WORD   136                     ;UNIQUE ERROR NUMBER
1988  005226  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1989                                                                  ;TST FAILED MODE 1
1990  005230                  4$:
1991
1992                                  ;
1993  005230                  MSPX:
1994                                  ;;*****************************************************************
1995                                  ;*TEST 45        TEST TST MODE 1 BYTE
1996                                  ;;*****************************************************************
1997  005230                  TST45:
1998  005230  005267  173550          INC     $TESTN                  ;INCREMENT TEST NUMBER
1999  005234  005004                  CLR     R4              ;R4=0
2000  005236  005014                  CLR     (R4)
2001  005240  105114                  COMB    (R4)
2002  005242  005214                  INC     (R4)            ;0=001 000
2003  005244  000277                  SCC
2004  005246  000244                  CLZ                     ;CC=1011
2005  005250  105714                  TSTB    (R4)            ;*TEST INTRUCTION
2006  005252  103403                  BCS     1$              ;BRANCH IF ERROR
2007  005254  102402                  BVS     1$              ;
2008  005256  100401                  BMI     1$
2009  005260  001403                  BEQ     2$              ;BRANCH IF GOOD
2010  005262                  1$:
2011  005262  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2012  005264  000137                  .WORD   137                     ;UNIQUE ERROR NUMBER
2013  005266  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2014
2015  005270  005204          2$:     INC     R4              ;R4=1
2016  005272  000277                  SCC
2017  005274  105714                  TSTB    (R4)            ; TEST INSTRUCTION
2018  005276  001403                  BEQ     3$              ;BRANCH IF ERROR
2019  005300  100402                  BMI     3$
2020  005302  102401                  BVS     3$
2021  005304  103003                  BCC     4$              ;BRANCH IF GOOD
2022  005306                  3$:
2023  005306  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2024  005310  000140                  .WORD   140                     ;UNIQUE ERROR NUMBER
2025  005312  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2026                                                                  ;
2027  005314                  4$:
2028
2029                                  ;
2030  005314                  MSPY:
2031                                  ;;*****************************************************************
2032                                  ;*TEST 46        TEST TST MODE 2
2033                                  ;;*****************************************************************
2034  005314                  TST46:
2035  005314  005267  173464          INC     $TESTN                  ;INCREMENT TEST NUMBER
2036  005320  005004                  CLR     R4              ;
2037  005322  005024                  CLR     (R4)+           ;0=0
2038  005324  005014                  CLR     (R4)
```

```
2039  005326  005114                        COM     (R4)            ;2=-1
2040  005330  005004                        CLR     R4              ;R4=0
2041  005332  000277                        SCC                     ;
2042  005334  000244                        CLZ                     ;CC=1011
2043  005336  005724                        TST     (R4)+           ; TEST INSTRUCTION
2044  005340  103403                        BCS     1$              ;BRANCH IF ERROR
2045  005342  102402                        BVS     1$
2046  005344  100401                        BMI     1$
2047  005346  001403                        BEQ     2$              ;BRANCH IF GOOD
2048  005350                          1$:
2049  005350  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2050  005352  000141                        .WORD   141                     ;UNIQUE ERROR NUMBER
2051  005354  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2052                                                                  ;MODE 2 TEST FAILED
2053  005356  005724                  2$:   TST     (R4)+           ;TST LOC2
2054  005360  103403                        BCS     3$
2055  005362  102402                        BVS     3$
2056  005364  001401                        BEQ     3$
2057  005366  100403                        BMI     4$
2058  005370                          3$:
2059  005370  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2060  005372  000142                        .WORD   142                     ;UNIQUE ERROR NUMBER
2061  005374  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2062                                                                  ;MODE 2 FAILED
2063  005376                          4$:
2064
2065                                    ;
2066  005376                          MSPZ:
2067                                    ;;**************************************************************************
2068                                    ;*TEST 47       TEST TST MODE 2 BYTE
2069                                    ;;**************************************************************************
2070  005376                          TST47:
2071  005376  005267  173402                INC     $TESTN                  ;INCREMENT TEST NUMBER
2072  005402  005004                        CLR     R4
2073  005404  005024                        CLR     (R4)+           ;
2074  005406  105144                        COMB    -(R4)           ;0=377 000
2075  005410  005304                        DEC     R4              ;R4=0
2076  005412  000277                        SCC
2077  005414  000244                        CLZ                     ;CC=1011
2078  005416  105724                        TSTB    (R4)+           ;
2079  005420  102403                        BVS     1$              ;BRANCH IF ERROR
2080  005422  103402                        BCS     1$
2081  005424  100401                        BMI     1$
2082  005426  001403                        BEQ     2$              ;BRANCH IF GOOD
2083  005430                          1$:
2084  005430  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2085  005432  000143                        .WORD   143                     ;UNIQUE ERROR NUMBER
2086  005434  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2087                                                                  ;MODE 2 EVEN BYTE FAILED
2088  005436  000277                  2$:   SCC
2089  005440  000250                        CLN                     ;CC=0111
2090  005442  105724                        TSTB    (R4)+           ;
2091  005444  001403                        BEQ     3$              ;
2092  005446  103402                        BCS     3$
2093  005450  102401                        BVS     3$
2094  005452  100403                        BMI     4$              ;BRANCH IF GOOD
```

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2095  005454                          3$:
2096  005454  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2097  005456  000144                        .WORD   144                     ;UNIQUE ERROR NUMBER
2098  005460  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2099                                                                        ;MODE 2 ODD BYTE FAILED
2100  005462                          4$:
2101
2102
2103  005462                          MSPAA:
2104                                  ;;*****************************************************************
2105                                  ;*TEST 50        TEST TST MODE 3
2106                                  ;;*****************************************************************
2107  005462                          TST50:
2108  005462  005267  173316                INC     $TESTN                  ;INCREMENT TEST NUMBER
2109  005466  005004                        CLR     R4
2110  005470  005014                        CLR     (R4)
2111  005472  105114                        COMB    (R4)
2112  005474  005214                        INC     (R4)            ;0=400
2113  005476  005034                        CLR     @(R4)+          ;400=0
2114  005500  005004                        CLR     R4              ;R4=0
2115  005502  000277                        SCC
2116  005504  000244                        CLZ                     ;CC=1011
2117  005506  005734                        TST     @(R4)+          ; TEST MODE 3
2118  005510  103403                        BCS     1$              ;BRANCH IF ERROR
2119  005512  102402                        BVS     1$              ;
2120  005514  100401                        BMI     1$
2121  005516  001403                        BEQ     2$              ;BRANCH IF GOOD
2122  005520                          1$:
2123  005520  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2124  005522  000145                        .WORD   145                     ;UNIQUE ERROR NUMBER
2125  005524  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2126                                                                        ;MODE 3 FAILED
2127  005526  005304                  2$:   DEC     R4
2128  005530  005304                        DEC     R4              ;R4=0
2129  005532  005334                        DEC     @(R4)+          ;400=-1
2130  005534  005004                        CLR     R4
2131  005536  000277                        SCC
2132  005540  000250                        CLN                     ;CC=0111
2133  005542  005734                        TST     @(R4)+          ; TEST INSTRUCTION
2134  005544  103403                        BCS     3$              ;
2135  005546  001402                        BEQ     3$              ;BRANCH IF ERROR
2136  005550  102401                        BVS     3$              ;
2137  005552  100403                        BMI     4$              ;BRANCH IF GOOD
2138                                                                ;ERROR MODE 3
2139  005554                          3$:
2140  005554  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2141  005556  000146                        .WORD   146                     ;UNIQUE ERROR NUMBER
2142  005560  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2143  005562                          4$:
2144
2145
2146  005562                          MSPBB:
2147                                  ;;*****************************************************************
2148                                  ;*TEST 51        TEST TST MODE 3 AUTO-INC
2149                                  ;;*****************************************************************
2150  005562                          TST51:
```

```
2151  005562  005267  173216          INC     $TESTN                  ;INCREMENT TEST NUMBER
2152  005566  005004                  CLR     R4
2153  005570  005014                  CLR     (R4)            ;0=0
2154  005572  105114                  COMB    (R4)            ;
2155  005574  005214                  INC     (R4)            ;0=400
2156  005576  005001                  CLR     R1
2157  005600  105101                  COMB    R1
2158  005602  005201                  INC     R1              ;R1=400
2159  005604  005011                  CLR     (R1)            ;400=0
2160  005606  000277                  SCC
2161  005610  005734                  TST     @(R4)+          ;400=0
2162  005612  103403                  BCS     1$              ;ERROR IF CARRY
2163  005614  102402                  BVS     1$              ;ERROR IF OVERFLOW
2164  005616  100401                  BMI     1$              ;ERROR IF MINUS
2165  005620  001403                  BEQ     2$              ;ERROR IF NOT EQUAL
2166                                                          ;CC SHOULD = 0100
2167  005622                  1$:
2168  005622  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2169  005624  000147                  .WORD   147                     ;UNIQUE ERROR NUMBER
2170  005626  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2171  005630  005304          2$:     DEC     R4
2172  005632  005304                  DEC     R4
2173  005634  005704                  TST     R4              ;SEE IF AUTO-INC WORKED
2174  005636  001403                  BEQ     4$              ;ERROR IF R4 NE 0
2175                                                          ;AUTO-INC FAILED
2176  005640                  3$:
2177  005640  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2178  005642  000150                  .WORD   150                     ;UNIQUE ERROR NUMBER
2179  005644  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2180  005646                  4$:
2181
2182                                  ;
2183  005646                  MSTB3:
2184                                  ;;*************************************************************************
2185                                  ;*TEST 52       TEST TST MODE 3 BYTE
2186                                  ;;*************************************************************************
2187  005646                  TST52:
2188  005646  005267  173132          INC     $TESTN                  ;INCREMENT TEST NUMBER
2189  005652  005004                  CLR     R4
2190  005654  005014                  CLR     (R4)
2191  005656  105114                  COMB    (R4)
2192  005660  005214                  INC     (R4)
2193  005662  005214                  INC     (R4)            ;0=401
2194  005664  005001                  CLR     R1
2195  005666  105101                  COMB    R1
2196  005670  005201                  INC     R1              ;R1=400
2197  005672  005011                  CLR     (R1)
2198  005674  005111                  COM     (R1)
2199  005676  105011                  CLRB    (R1)            ;400=377 000
2200  005700  105734                  TSTB    @(R4)+          ;** TEST INSTRUCTION
2201  005702  001403                  BEQ     1$              ;ERROR IF EQUAL
2202  005704  103402                  BCS     1$              ;ERROR IF CARRY SET
2203  005706  102401                  BVS     1$              ;ERROR IR OVERFLOW
2204  005710  100403                  BMI     2$              ;BRANCH IF MINUS
2205                                                          ;CC ERROR
2206  005712                  1$:
```

```
2207  005712  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2208  005714  000151                    .WORD   151                     ;UNIQUE ERROR NUMBER
2209  005716  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2210  005720  005304            2$:     DEC     R4
2211  005722  005304                    DEC     R4
2212  005724  001403                    BEQ     4$                      ;BRANCH IF AUTO-INC WORKED
2213                                                                    ;AUTO-INC FAILED
2214  005726                    3$:
2215  005726  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2216  005730  000152                    .WORD   152                     ;UNIQUE ERROR NUMBER
2217  005732  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2218  005734                    4$:
2219
2220                                    ;
2221  005734                    MST4:
2222                                    ;;*****************************************************************
2223                                    ;*TEST 53        TEST TST MODE 4
2224                                    ;;*****************************************************************
2225  005734                    TST53:
2226  005734  005267  173044            INC     @TESTN                  ;INCREMENT TEST NUMBER
2227  005740  005004                    CLR     R4
2228  005742  005014                    CLR     (R4)            ;0=0
2229  005744  005204                    INC     R4
2230  005746  005204                    INC     R4              ;R4=2
2231  005750  000277                    SCC
2232  005752  000244                    CLZ                     ;CC=1011
2233  005754  005744                    TST     -(R4)           ;**TEST INTRUCTION
2234  005756  103403                    BCS     1$              ;ERROR IF CARRY
2235  005760  102402                    BVS     1$              ;ERROR IF OVERFLOW
2236  005762  100401                    BMI     1$              ;ERROR IF MINUS
2237  005764  001403                    BEQ     2$              ;BRANCH IF GOOD
2238                                                            ;ERROR! CC WRONG
2239  005766                    1$:
2240  005766  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2241  005770  000153                    .WORD   153                     ;UNIQUE ERROR NUMBER
2242  005772  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2243  005774  005704            2$:     TST     R4              ;INSURE CORRECT AUTO-DEC
2244  005776  001403                    BEQ     4$              ;BRANCH IF GOOD AUTO-DEC
2245                                                            ;BAD AUTO-DEC
2246  006000                    3$:
2247  006000  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2248  006002  000154                    .WORD   154                     ;UNIQUE ERROR NUMBER
2249  006004  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2250  006006                    4$:
2251
2252                                    ;
2253  006006                    MST4B:
2254                                    ;;*****************************************************************
2255                                    ;*TEST 54        TEST TST MODE 4 BYTE
2256                                    ;;*****************************************************************
2257  006006                    TST54:
2258  006006  005267  172772            INC     @TESTN                  ;INCREMENT TEST NUMBER
2259  006012  005004                    CLR     R4
2260  006014  005014                    CLR     (R4)
2261  006016  005114                    COM     (R4)
2262  006020  105114                    COMB    (R4)            ;0-377 000
```

```
2263  006022  000277                        SCC
2264  006024  005204                        INC     R4
2265  006026  005204                        INC     R4              ;R4=2
2266  006030  105744                        TSTB    -(R4)           ;**TEST INSTRUCTION
2267  006032  001403                        BEQ     1$              ;ERROR IF EQUAL TO 0
2268  006034  103402                        BCS     1$              ;ERROR IF CARRY
2269  006036  102401                        BVS     1$              ;ERROR IF OVERFLOW
2270  006040  100403                        BMI     2$              ;BRANCH IF MINUS
2271                                                                ;ERROR! CC SHOULD EQUAL 0100
2272  006042                          1$:
2273  006042  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2274  006044  000155                        .WORD   155                     ;UNIQUE ERROR NUMBER
2275  006046  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2276  006050  105744                  2$:   TSTB    -(R4)           ;**TEST EVEN BYTE
2277  006052  001403                        BEQ     4$              ;BRANCH IF GOOD
2278                                                                ;ERROR! CC SHOULD EQUAL 0100 AND R4=-1
2279  006054                          3$:
2280  006054  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2281  006056  000156                        .WORD   156                     ;UNIQUE ERROR NUMBER
2282  006060  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2283  006062                          4$:
2284                                  ;
2285  006062                          MST5:
2286                                  ;;*************************************************************
2287                                  ;*TEST 55       TEST TST MODE 5
2288                                  ;;*************************************************************
2289  006062                          TST55:
2290  006062  005267  172716                INC     $TESTN                  ;INCREMENT TEST NUMBER
2291  006066  005004                        CLR     R4              ;
2292  006070  005024                        CLR     (R4)+           ;0=0, R4=2
2293  006072  000277                        SCC
2294  006074  000244                        CLZ                             ;CC=1011
2295  006076  005754                        TST     8-(R4)                  ; TEST INSTRUCTION
2296  006100  103403                        BCS     1$                      ;ERROR IF CARRY
2297  006102  102402                        BVS     1$                      ;ERROR IF OVERFLOW
2298  006104  100401                        BMI     1$                      ;ERROR IF MINUS
2299  006106  001403                        BEQ     2$                      ;BRANCH IF GOOD
2300                                                                        ;ERROR! CC WRONG, SHOULD = 0100
2301  006110                          1$:
2302  006110  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2303  006112  000157                        .WORD   157                     ;UNIQUE ERROR NUMBER
2304  006114  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2305  006116  005704                  2$:   TST     R4
2306  006120  001403                        BEQ     4$              ;BRANCH IF AUTO-DEC WORKED
2307                                                                ;ERROR! AUTO-DEC FAILED
2308  006122                          3$:
2309  006122  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2310  006124  000160                        .WORD   160                     ;UNIQUE ERROR NUMBER
2311  006126  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2312  006130                          4$:
2313
2314                                  ;
2315  006130                          MST5B:
2316                                  ;;*************************************************************
2317                                  ;*TEST 56       TEST TST MODE 5 BYTE
2318                                  ;;*************************************************************
```

```
2319  006130
2320  006130  005267  172650  TST56:  INC     #TESTN          ;INCREMENT TEST NUMBER
2321  006134  005004          CLR     R4
2322  006136  005014          CLR     (R4)
2323  006140  105114          COMB    (R4)
2324  006142  005214          INC     (R4)            ;0=400
2325  006144  005034          CLR     @(R4)+          ;400=0, R4=2
2326  006146  005154          COM     @-(R4)          ;
2327  006150  105134          COMB    @(R4)+          ;400=377 000 R4=2
2328  006152  105754          TSTB    @-(R4)          ;**TEST INSTRUCTION
2329  006154  103403          BCS     1$              ;ERROR IF CARRY
2330  006156  100402          BMI     1$              ;ERROR IF MINUS
2331  006160  102401          BVS     1$              ;ERROR IF OVERFLOW
2332  006162  001403          BEQ     2$              ;BRANCH IF GOOD
2333                                                  ;ERROR! CC SHOULD = 0100
2334  006164          1$:
2335  006164  104000          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2336  006166  000161          .WORD   161             ;UNIQUE ERROR NUMBER
2337  006170  001127          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2338  006172  005224  2$:     INC     (R4)+           ;0=401
2339  006174  105754          TSTB    @-(R4)          ;**TEST INSTRUCTION
2340  006176  100403          BMI     4$              ;BRANCH IF GOOD
2341                                                  ;EVEN BYTE FAILURE
2342  006200          3$:
2343  006200  104000          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2344  006202  000162          .WORD   162             ;UNIQUE ERROR NUMBER
2345  006204  001127          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2346  006206          4$:
2347                                                  ;
2348                                                  ;
2349  006206          MST6:
2350                  ;;**********************************************************************
2351                  ;*TEST 57        TEST TST MODE 6
2352                  ;;**********************************************************************
2353  006206          TST57:
2354  006206  005267  172572          INC     #TESTN          ;INCREMENT TEST NUMBER
2355  006212  005004          CLR     R4
2356  006214  005014          CLR     (R4)            ;0=0
2357  006216  105104          COMB    R4
2358  006220  005204          INC     R4              ;R4=400
2359  006222  005014          CLR     (R4)
2360  006224  005114          COM     (R4)            ;400=-1
2361  006226  005764  17740   TST     -400(R4)        ;**TEST LOCATION 0
2362  006232  103403          BCS     1$              ;ERROR IF CARRY
2363  006234  102402          BVS     1$              ;ERROR IF OVERFLOW
2364  006236  100401          BMI     1$              ;ERROR IF MINUS
2365  006240  001403          BEQ     2$              ;BRANCH IF ZERO
2366                                                  ;ERROR! CC ARE WRONG
2367  006242          1$:
2368  006242  104000          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2369  006244  000163          .WORD   163             ;UNIQUE ERROR NUMBER
2370  006246  001127          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2371  006250  005004  2$:     CLR     R4              ;
2372  006252  005764  000400  TST     400(R4)         ;TST LOCATION 400
2373  006256  001401          BEQ     3$              ;ERROR IF EQUAL
2374  006260  100403          BMI     4$              ;BRANCH IF MINUS
```

```
2375
2376  006262                                  3$:                                     ;ERROR! CC ERROR
2377  006262  104000                                ERROR                             ;ALL ERRORS TO TRAP TO EMT VECTOR
2378  006264  000164                                .WORD   164                       ;UNIQUE ERROR NUMBER
2379  006266  001127                                .WORD   CPUERR                    ;ADDRESS OF ERROR MESSAGE
2380  006270                                  4$:
2381
2382                                          ;
2383  006270                                  MST7:
2384                                          ;;*****************************************************************
2385                                          ;*TEST 60        TEST TST MODE 7
2386                                          ;;*****************************************************************
2387  006270
2388  006270  005267  172510                 TST60:  INC     $TESTN                    ;INCREMENT TEST NUMBER
2389  006274  005004                                  CLR     R4
2390  006276  005014                                  CLR     (R4)
2391  006300  005124                                  COM     (R4)+           ;0=-1
2392  006302  005014                                  CLR     (R4)            ;2=0
2393  006304  005002                                  CLR     R2              ;R2=0
2394  006306  005004                                  CLR     R4
2395  006310  105104                                  COMB    R4
2396  006312  005204                                  INC     R4              ;R4=400
2397  006314  005014                                  CLR     (R4)            ;400=0
2398  006316  005774  177402                        TST     @-376(R4)       ;**TEST LOCATION 0
2399  006322  103403                                  BCS     1$              ;ERROR IF CARRY
2400  006324  102402                                  BVS     1$              ;ERROR IF OVERFLOW
2401  006326  001401                                  BEQ     1$              ;ERROR IF ZERO
2402  006330  100403                                  BMI     2$              ;BRANCH IF GOOD
2403                                                                          ;ERROR! ERROR IN CC
2404  006332                                  1$:
2405  006332  104000                                ERROR                             ;ALL ERRORS TO TRAP TO EMT VECTOR
2406  006334  000165                                .WORD   165                       ;UNIQUE ERROR NUMBER
2407  006336  001127                                .WORD   CPUERR                    ;ADDRESS OF ERROR MESSAGE
2408  006340  005222                          2$:     INC     (R2)+           ;0=-2 R2=2
2409  006342  005774  177402                        TST     @-376(R4)       ;** CHECK CONTENTS OF LOCATION 2
2410  006346  100401                                  BMI     3$              ;ERROR IF MINUS
2411  006350  001403                                  BEQ     4$              ;BRANCH IF GOOD
2412                                                                          ;ERROR! CC SHOULD = 0100
2413  006352                                  3$:
2414  006352  104000                                ERROR                             ;ALL ERRORS TO TRAP TO EMT VECTOR
2415  006354  000166                                .WORD   166                       ;UNIQUE ERROR NUMBER
2416  006356  001127                                .WORD   CPUERR                    ;ADDRESS OF ERROR MESSAGE
2417  006360                                  4$:
2418
2419                                          ;
2420                                          ;
2421  006360                                  MOM0:
2422                                          ;;*****************************************************************
2423                                          ;*TEST 61        TEST MOVE MODE 0
2424                                          ;;*****************************************************************
2425  006360
2426  006360  005267  172420                 TST61:  INC     $TESTN                    ;INCREMENT TEST NUMBER
2427  006364  005004                                  CLR     R4              ;R4=0
2428  006366  005001                                  CLR     R1
2429  006370  005101                                  COM     R1              ;R1=-1
2430  006372  010104                                  MOV     R1,R4           ;**TEST MOVE INSTRUCTION
```

```
2431  006374  001402                        BEQ     1$              ;ERROR IF R4=0
2432  006376  102401                        BVS     1$              ;ERROR IF OBERFLOW
2433  006400  100403                        BMI     2$              ;BRANCH IF MINUS
2434                                                                ;ERROR! CC SHOULD = 100-, R4 SHOULD=-1
2435  006402                          1$:
2436  006402  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2437  006404  000167                        .WORD   167                     ;UNIQUE ERROR NUMBER
2438  006406  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2439  006410  005204                  2$:   INC     R4              ;R4 SHOULD =0
2440  006412  001373                        BNE     1$              ;ERROR IF R4 NE 0
2441
2442                                        ;
2443  006414                          MDA0:
2444                                  ;;**************************************************************
2445                                  ;*TEST 62        TEST ADD MODE 0
2446                                  ;;**************************************************************
2447  006414                          TST62:
2448  006414  005267  172364                INC     $TESTN                  ;INCREMENT TEST NUMBER
2449  006420  005004                        CLR     R4              ;R4=0
2450  006422  005001                        CLR     R1
2451  006424  005101                        COM     R1              ;R1=-1
2452  006426  060104                        ADD     R1,R4           ;** TEST ADD OF R1 TO R4
2453  006430  001403                        BEQ     1$              ;ERROR IF ZERO
2454  006432  103402                        BCS     1$              ;ERROR IF CARRY
2455  006434  102401                        BVS     1$              ;ERROR IF OVERFLOW
2456  006436  100403                        BMI     2$              ;BRANCH IF MINUS
2457                                                                ;ERROR! CC SHOULD = 1000 , R4= 1
2458  006440                          1$:
2459  006440  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2460  006442  000170                        .WORD   170                     ;UNIQUE ERROR NUMBER
2461  006444  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2462  006446  005204                  2$:   INC     R4              ;R4 SHOULD =0
2463  006450  001403                        BEQ     4$              ;BRANCH IF R4=0
2464                                                                ;ERROR! R4 SHOULD = 0
2465  006452                          3$:
2466  006452  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2467  006454  000171                        .WORD   171                     ;UNIQUE ERROR NUMBER
2468  006456  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2469  006460                          4$:
2470
2471                                        ;
2472  006460                          MDS0:
2473                                  ;;**************************************************************
2474                                  ;*TEST 63        TEST SUB MODE 0
2475                                  ;;**************************************************************
2476  006460                          TST63:
2477  006460  005267  172320                INC     $TESTN                  ;INCREMENT TEST NUMBER
2478  006464  005004                        CLR     R4
2479  006466  005001                        CLR     R1
2480  006470  005201                        INC     R1                      ;R1=1 R4=0
2481  006472  160104                        SUB     R1,R4                   ;**TEST OF R4-R1, R4=-1
2482  006474  102403                        BVS     1$                      ;ERROR IF V SET
2483  006476  103002                        BCC     1$                      ;ERROR IF NO CARRY
2484  006500  001401                        BEQ     1$                      ;ERROR IF =0
2485  006502  100403                        BMI     2$                      ;BRANCH IF MINUS
2486                                                                        ;ERROR! CC SHOULD = 1001
```

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2487  006504                                  1$:
2488  006504  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2489  006506  000172                                .WORD   172                     ;UNIQUE ERROR NUMBER
2490  006510  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2491  006512  005101                          2$:   COM     R1                      ;R1=1
2492  006514  005201                                INC     R1                      ;GET TWO'S COMPLIMENT, R1=-1
2493  006516  160104                                SUB     R1,R4                   ;**TEST R4-R1 (1- 1= 0
2494  006520  001403                                BEQ     4$                      ;BRANCH IF ZERO
2495                                                                                ;ERROR! CC SHOULD = 0100
2496  006522                                  3$:
2497  006522  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2498  006524  000173                                .WORD   173                     ;UNIQUE ERROR NUMBER
2499  006526  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2500  006530                                  4$:
2501
2502
2503  006530                                  ;
2504                                          MOM27:
2505                                          ;;*************************************************************************
2506                                          ;*TEST 64        TEST MOV MODE 27,00
2507  006530                                  ;;*************************************************************************
2508  006530  005267  172250                 TST64:
2509  006534  000257                                INC     #TESTN                  ;INCREMENT TEST NUMBER
2510  006536  012704  125252                        CCC                             ;CC=0000
2511  006542  001401                                MOV     #125252,R4              ;**TEST MOVE
2512  006544  100403                                BEQ     1$                      ;ERROR IF = 0
2513                                                BMI     2$                      ;BRANCH IF MINUS
2514  006546                                                                        ;ERROR! CC SHOULD = 1000
2515  006546  104000                          1$:
2516  006550  000174                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2517  006552  001127                                .WORD   174                     ;UNIQUE ERROR NUMBER
2518  006554  012701  052525                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2519  006560  100401                          2$:   MOV     #052525,R1              ;**TEST MOVE
2520  006562  001003                                BMI     3$                      ;ERROR IF MINUS
2521                                                BNE     4$                      ;BRANCH IF NE 0
2522  006564                                                                        ;ERROR! CC SHOULD = 0000
2523  006564  104000                          3$:
2524  006566  000175                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2525  006570  001127                                .WORD   175                     ;UNIQUE ERROR NUMBER
2526  006572  060104                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2527  006574  100403                          4$:   ADD     R1,R4                   ;R1+R4=-1
2528                                                BMI     6$                      ;BRANCH IF MINUS
2529  006576                                                                        ;ERROR! MOV FAILED
2530  006576  104000                          5$:
2531  006600  000176                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2532  006602  001127                                .WORD   176                     ;UNIQUE ERROR NUMBER
2533  006604  005204                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2534  006606  001373                          6$:   INC     R4                      ;R4+1=0
2535                                                BNE     5$                      ;ERROR IF NOT ZERO
2536
2537  006610                                  ;
2538                                          MBI00:
2539                                          ;;*************************************************************************
2540                                          ;*TEST 65        TEST BIC, BIS MODE 0,0
2541  006610                                  ;;*************************************************************************
2542  006610  005267  172170                 TST65:
                                                INC     #TESTN                  ;INCREMENT TEST NUMBER
```

```
2543  006614  005004                          CLR     R4
2544  006616  005104                          COM     R4              ;R4=-1
2545  006620  012701  125252                  MOV     #125252,R1      ;SETUP R1 TEST DATA
2546  006624  012702  052525                  MOV     #052525,R2      ;R2=COMPLIMENT OF R1
2547  006630  000261                          SEC
2548  006632  040104                          BIC     R1,R4           ;**TEST BIC WITH CARRY SET
2549  006634  103003                          BCC     1$              ;ERROR IF NO CARRY
2550  006636  102402                          BVS     1$              ;ERROR IF OVERFLOW
2551  006640  001401                          BEQ     1$              ;ERROR IF 0
2552  006642  100003                          BPL     2$              ;BRANCH IF PLUS
2553                                                                  ;ERROR! CC SHOULD = 0001
2554  006644                          1$:
2555  006644  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2556  006646  000177                          .WORD   177             ;UNIQUE ERROR NUMBER
2557  006650  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2558  006652  020402                  2$:     CMP     R4,R2           ;COMPARE CONTENTS OF R4 AND R2
2559  006654  001403                          BEQ     4$              ;BRANCH IF EQUAL
2560                                                                  ;ERROR! R4 AND R2 SHOULD BE EQUAL
2561  006656                          3$:
2562  006656  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2563  006660  000200                          .WORD   200             ;UNIQUE ERROR NUMBER
2564  006662  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2565  006664  005301                  4$:     DEC     R1              ;R1=125251
2566  006666  050201                          BIS     R2,R1           ;BIS 052525 AND 125251=177775
2567  006670  100403                          BMI     6$              ;BRANCH IF MINUS VALUE
2568                                                                  ;ERROR! BAD BIS OPERATION
2569  006672                          5$:
2570  006672  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2571  006674  000201                          .WORD   201             ;UNIQUE ERROR NUMBER
2572  006676  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2573  006700  005201                  6$:     INC     R1
2574  006702  005201                          INC     R1
2575  006704  005201                          INC     R1              ;R1=0
2576  006706  001371                          BNE     5$              ;ERROR IF NE 0
2577
2578                                  ;
2579  006710                          MBC00:
2580                                  ;;**********************************************************************
2581                                  ;*TEST 66        TEST BIT, CMP MODE 0,0
2582                                  ;;**********************************************************************
2583  006710                          TST66:
2584  006710  005267  172070                  INC     $TESTN          ;INCREMENT TEST NUMBER
2585  006714  012701  125252                  MOV     #125252,R1      ;R1=125252
2586  006720  012704  100000                  MOV     #100000,R4      ;R4=100000
2587  006724  012702  052525                  MOV     #052525,R2      ;R2=052525
2588  006730  030401                          BIT     R4,R1           ;**TEST OF BIT ,CC=1000
2589  006732  001401                          BEQ     1$              ;ERROR IF EQ 0
2590  006734  100403                          BMI     2$              ;BRANCH IF GOOD
2591                                                                  ;ERROR! CC SHOULD = 1000
2592  006736                          1$:
2593  006736  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2594  006740  000202                          .WORD   202             ;UNIQUE ERROR NUMBER
2595  006742  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2596  006744  020401                  2$:     CMP     R4,R1           ;*TEST 100000-125252=25252
2597  006746  001402                          BEQ     3$              ;ERROR IF EQUAL 0
2598  006750  103001                          BCC     3$              ;ERROR IF CARRY CLEARED
```

```
2599  006752  100403                        BMI     4$              ;BRANCH IF GOOD
2600                                                                  ;ERROR! CC SHOULD = 0010
2601  006754                          3$:
2602  006754  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2603  006756  000203                        .WORD   203             ;UNIQUE ERROR NUMBER
2604  006760  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2605  006762  020104                  4$:   CMP     R1,R4           ;125252-100000 = 25252
2606  006764  001403                        BEQ     5$              ;ERROR IF EQUAL
2607  006766  103402                        BCS     5$              ;ERROR IF CARRY
2608  006770  102401                        BVS     5$              ;ERROR IF OVERFLOW
2609  006772  100003                        BPL     6$              ;BRANCH IF GOOD
2610                                                                ;ERROR! CC SHOULD =0001
2611  006774                          5$:
2612  006774  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2613  006776  000204                        .WORD   204             ;UNIQUE ERROR NUMBER
2614  007000  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2615  007002  005004                  6$:   CLR     R4
2616  007004  005204                        INC     R4              ;R4=1
2617  007006  000277                        SCC
2618  007010  030401                        BIT     R4,R1           ;R4 ↑ R1 = 2
2619  007012  001403                        BEQ     8$              ;BRANCH IF GOOD
2620                                                                ;ERROR! CC SHOULD = 0101
2621  007014                          7$:
2622  007014  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2623  007016  000205                        .WORD   205             ;UNIQUE ERROR NUMBER
2624  007020  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2625  007022                          8$:
2626                                  ;
2627                                  ;
2628  007022                          MM11:
2629                                  ;;*****************************************************************
2630                                  ;*TEST 67       TEST MOV, MOVB MODE 1,1 AND SIGN EXT ON MOVB TO GPR
2631                                  ;;*****************************************************************
2632  007022                          TST67:
2633  007022  005267  171756                INC     #TESTN                  ;INCREMENT TEST NUMBER
2634  007026  012704  000400                MOV     #400,R4         ;R4=400
2635  007032  012701  000402                MOV     #402,R1         ;R1=402
2636  007036  005014                        CLR     (R4)            ;
2637  007040  005114                        COM     (R4)            ;400=-1
2638  007042  005011                        CLR     (R1)            ;
2639  007044  105111                        COMB    (R1)            ;402=000 377
2640  007046  005002                        CLR     R2              ;R2=0
2641  007050  012703  000405                MOV     #405,R3         ;R3=405
2642  007054  000277                        SCC                     ;CC=1111
2643  007056  011412                        MOV     (R4),(R2)       ;MOV    400 TO 0 ,0=-1
2644  007060  001403                        BEQ     1$              ;ERROR IF 0
2645  007062  102402                        BVS     1$              ;ERROR IF OVERFLOW
2646  007064  103001                        BCC     1$              ;ERROR IF NO CARRY
2647  007066  100403                        BMI     2$              ;BRANCH IF GOOD
2648                                                                ;ERROR! CC SHOULD =1001
2649  007070                          1$:
2650  007070  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2651  007072  000206                        .WORD   206                     ;UNIQUE ERROR NUMBER
2652  007074  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2653  007076  005212                  2$:   INC     (R2)            ;0=0
2654  007100  001004                        BNE     3$              ;ERROR IF NOT 0
```

```
2655  007102  000257                    CCC                     ;CC=0000
2656  007104  111113                    MOVB    (R1),(R3)               ;405=377
2657  007106  001401                    BEQ     3$              ;ERROR IF EQUAL
2658  007110  100403                    BMI     4$              ;BRANCH IF GOOD
2659  007112                      3$:
2660  007112  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2661  007114  000207                    .WORD   207                     ;UNIQUE ERROR NUMBER
2662  007116  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2663  007120  105213                4$: INCB    (R3)                ;405=0
2664  007122  001373                    BNE     3$              ;ERROR IF 405 NOT 0
2665                              ;CHECK THAT SIGN EXTENSION OCCURS ON A MOVB TO GENERAL REGISTER.
2666  007124  005002                    CLR     R2              ;INIT R2 TO ZERO.
2667  007126  111102                    MOVB    (R1),R2         ;MOVE 377 TO R2
2668  007130  100005                    BPL     5$              ;ERROR! BIT 15 SHOULD BE SET.
2669  007132  102404                    BVS     5$              ;V BIT SHOULD BE CLEARED
2670  007134  103403                    BCS     5$              ;CARRY BIT SHOULD BE UNAFFECTED
2671  007136  022702  177777            CMP     #177777,R2      ;TEST R2
2672  007142  001403                    BEQ     6$              ;SIGN EXTENDED THROUGH UPPER BYTE
2673                                                            ;ERROR! BYTE SHOULD HAVE
2674                                                            ;SIGN EXTENDED THROUGH UPPER BYTE
2675  007144                      5$:
2676  007144  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2677  007146  000210                    .WORD   210                     ;UNIQUE ERROR NUMBER
2678  007150  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2679  007152                      6$:
2680
2681                              ;
2682  007152                      MA11:
2683                              ;;*****************************************************************
2684                              ;*TEST 70       TEST ADD MODE 1,1
2685                              ;;*****************************************************************
2686  007152                      TST70:
2687  007152  005267  171626            INC     $TESTN                          ;INCREMENT TEST NUMBER
2688  007156  012704  000400            MOV     #400,R4         ;R4=400
2689  007162  012701  000402            MOV     #402,R1         ;R1=402
2690  007166  012714  177753            MOV     #-25,(R4)       ;400=-25
2691  007172  012711  000024            MOV     #24,(R1)        ;402=24
2692  007176  061114                    ADD     (R1),(R4)       ;-25+24=-1
2693  007200  001404                    BEQ     1$              ;ERROR IF 0
2694  007202  103403                    BCS     1$              ;ERROR IF CARRY
2695  007204  100002                    BPL     1$              ;ERROR IF POSITIVE RESULT
2696  007206  005214                    INC     (R4)            ;-1+1=0
2697  007210  001403                    BEQ     2$              ;BRANCH IF GOOD
2698                                                            ;ERROR! CC SHOULD = 1000
2699  007212                      1$:
2700  007212  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2701  007214  000211                    .WORD   211                     ;UNIQUE ERROR NUMBER
2702  007216  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2703  007220                      2$:
2704
2705                              ;
2706  007220                      MS11:
2707                              ;;*****************************************************************
2708                              ;*TEST 71       TEST SUB MODE 1,1
2709                              ;;*****************************************************************
2710  007220                      TST71:
```

```
2711  007220  005267  171560          INC     #TESTN                  ;INCREMENT TEST NUMBER
2712  007224  012704  000400          MOV     #400,R4         ;R4=400
2713  007230  012701  000404          MOV     #404,R1         ;R1=404
2714  007234  012714  000003          MOV     #3,(R4)         ;400=3
2715  007240  012711  000006          MOV     #6,(R1)         ;406=6
2716  007244  000277                  SCC                     ;CC=1111
2717  007246  161411                  SUB     (R4),(R1)       ;6-3=3
2718  007250  001402                  BEQ     1$              ;ERROR IF 0
2719  007252  100401                  BMI     1$              ;ERROR IF MINUS
2720  007254  103003                  BCC     2$              ;BRANCH IF GOOD
2721                                                          ;ERROR! CC SHOULD = 0000
2722  007256                  1$:
2723  007256  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2724  007260  000212                  .WORD   212                     ;UNIQUE ERROR NUMBER
2725  007262  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2726  007264  161411          2$:     SUB     (R4),(R1)       ;3-3=0
2727  007266  001373                  BNE     1$              ;ERROR IF NOT 0
2728
2729                                  ;
2730  007270                  MB811:
2731                                  ;;*****************************************************************
2732                                  ;*TEST 72        TEST BIC, BIS MODE 1.1
2733                                  ;;*****************************************************************
2734  007270                  TST72:
2735  007270  005267  171510          INC     #TESTN                  ;INCREMENT TEST NUMBER
2736  007274  012704  000400          MOV     #400,R4         ;R4=400
2737  007300  012701  000402          MOV     #402,R1         ;R1=402
2738  007304  012714  052525          MOV     #052525,(R4)    ;400=052525
2739  007310  012711  125252          MOV     #125252,(R1)    ;402=125252
2740  007314  051411                  BIS     (R4),(R1)       ;R4 V R1 = -1
2741  007316  001401                  BEQ     1$              ;ERROR IF 0
2742  007320  100403                  BMI     2$              ;BRANCH IF GOOD
2743                                                          ;ERROR! CC SHOULD = 1000
2744  007322                  1$:
2745  007322  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2746  007324  000213                  .WORD   213                     ;UNIQUE ERROR NUMBER
2747  007326  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2748  007330  005211          2$:     INC     (R1)            ;402=0
2749  007332  001403                  BEQ     4$              ;BRANCH IF GOOD
2750                                                          ;ERROR! CC SHOULD = 0100
2751  007334                  3$:
2752  007334  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2753  007336  000214                  .WORD   214                     ;UNIQUE ERROR NUMBER
2754  007340  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2755  007342  005311          4$:     DEC     (R1)            ;402=-1
2756  007344  041411                  BIC     (R4),(R1)       ;R1=125252
2757  007346  001401                  BEQ     5$              ;ERROR IF 0
2758  007350  100403                  BMI     6$              ;BRANCH IF GOOD
2759                                                          ;ERROR! CC SHOULD = 1000
2760  007352                  5$:
2761  007352  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2762  007354  000215                  .WORD   215                     ;UNIQUE ERROR NUMBER
2763  007356  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2764  007360  005111          6$:     COM     (R1)            ;402=052525
2765  007362  041114                  BIC     (R1),(R4)       ;400=0
2766  007364  001403                  BEQ     8$              ;BRANCH IF GOOD
```

```
2767
2768  007366                                                ;ERROR! CC SHOULD = 0100
2769  007366  104000                       7$:
2770  007370  000216                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2771  007372  001127                             .WORD   216             ;UNIQUE ERROR NUMBER
2772  007374                                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2773                                      8$:
2774
2775  007374                              ;
2776                                      MBC11:
2777                                      ;;*****************************************************************
2778                                      ;*TEST 73        TEST BIT, CMP MODE 1,1
2779  007374                              ;;*****************************************************************
2780  007374  005267  171404             TST73:
2781  007400  012704  000400                     INC     $TESTN          ;INCREMENT TEST NUMBER
2782  007404  012714  052525                     MOV     #400,R4         ;R4=400
2783  007410  012701  000402                     MOV     #052525,(R4)    ;400=052525
2784  007414  012711  125252                     MOV     #402,R1         ;R1-402
2785  007420  000241                             MOV     #125252,(R1)    ;402=125252
2786  007422  031411                             CLC                     ;CLEAR CARRY
2787  007424  103401                             BIT     (R4),(R1)       ;**052525↑125252=0
2788  007426  001403                             BCS     1$              ;ERROR IF CARRY
2789                                            BEQ     2$              ;BRANCH IF GOOD
2790  007430                                                            ;ERROR! CC SHOULD = 0100
2791  007430  104000                       1$:
2792  007432  000217                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2793  007434  001127                             .WORD   217             ;UNIQUE ERROR NUMBER
2794  007436  021411                             .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2795  007440  001403                     2$:     CMP     (R4),(R1)       ;400-402=125253
2796  007442  103002                             BEQ     3$              ;ERROR IF ZERO
2797  007444  102001                             BCC     3$              ;ERROR IF NO CARRY
2798  007446  100403                             BVC     3$              ;ERROR IF NO OVERFLOW
2799                                            BMI     4$              ;BRANCH IF GOOD
2800  007450                                                            ;ERROR! CC SHOULD = 1000
2801  007450  104000                       3$:
2802  007452  000220                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2803  007454  001127                             .WORD   220             ;UNIQUE ERROR NUMBER
2804  007456  005014                             .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2805  007460  005214                     4$:     CLR     (R4)
2806  007462  031114                             INC     (R4)            ;400=1
2807  007464  001403                             BIT     (R1),(R4)       ;125252↑1=0
2808                                            BEQ     6$              ;BRANCH IF GOOD
2809  007466                                                            ;ERROR! CC SHOULD= 0100
2810  007466  104000                       5$:
2811  007470  000221                             ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2812  007472  001127                             .WORD   221             ;UNIQUE ERROR NUMBER
2813  007474                                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2814                                      6$:
2815
2816  007474                              ;
2817                                      MM22:
2818                                      ;;*****************************************************************
2819                                      ;*TEST 74        TEST MOV MODE 2,2
2820  007474                              ;;*****************************************************************
2821  007474  005267  171304             TST74:
2822  007500  012704  000400                     INC     $TESTN          ;INCREMENT TEST NUMBER
                                                MOV     #400,R4         ;R4=400
```

```
2823  007504  012701  000402                    MOV     #402,R1         ;R1=402
2824  007510  012714  000005                    MOV     #5,(R4)         ;400=5
2825  007514  005021                            CLR     (R1)+           ;402=0
2826  007516  005011                            CLR     (R1)            ;
2827  007520  005111                            COM     (R1)            ;404=-1
2828  007522  005741                            TST     -(R1)           ;R1=402
2829  007524  000277                            SCC                     ;CC=1111
2830  007526  012124                            MOV     (R1)+,(R4)+     ;400=0 R4=402 R1=404
2831  007530  100403                            BMI     1$              ;ERROR IF MINUS
2832  007532  103002                            BCC     1$              ;ERROR IF NO CARRY
2833  007534  102401                            BVS     1$              ;ERROR IF OVERFLOW
2834  007536  001403                            BEQ     2$              ;BRANCH IF GOOD
2835                                                                    ;ERROR! CC SHOULD= 0101
2836  007540                          1$:
2837  007540  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2838  007542  000222                            .WORD   222                     ;UNIQUE ERROR NUMBER
2839  007544  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2840  007546  005244                  2$:       INC     -(R4)           ;400=1 R4=400
2841
2842  007550  061411                            ADD     (R4),(R1)       ;1+ -1 =0
2843  007552  001403                            BEQ     4$              ;BRANCH IF GOOD
2844                                                                    ;ERROR! CC SHOULD = 0100
2845  007554                          3$:
2846  007554  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2847  007556  000223                            .WORD   223                     ;UNIQUE ERROR NUMBER
2848  007560  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2849  007562                          4$:
2850                                            ;
2851                                  MS22:
2852  007562                                    ;;*********************************************************************
2853                                            ;*TEST 75        TEST SUB MODE 2.2
2854                                            ;;*********************************************************************
2855                                  TST75:
2856  007562
2857  007562  005267  171216                    INC     $TESTN                  ;INCREMENT TEST NUMBER
2858  007566  012704  000400                    MOV     #400,R4                 ;R4=400
2859  007572  012701  000402                    MOV     #402,R1                 ;R1=402
2860  007576  012714  177760                    MOV     #177760,(R4)            ;400=177760
2861  007602  012711  177750                    MOV     #177750,(R1)            ;402=177750
2862  007606  162421                            SUB     (R4)+,(R1)+             ;R1=177770
2863  007610  001403                            BEQ     1$                      ;ERROR IF ZERO
2864  007612  102402                            BVS     1$                      ;ERROR IF OVERFLOW
2865  007614  103001                            BCC     1$                      ;ERROR IF NO CARRY
2866  007616  100403                            BMI     2$                      ;BRANCH IF GOOD
2867                                                                            ;ERROR! CC SHOULD=1000
2868  007620                          1$:
2869  007620  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2870  007622  000224                            .WORD   224                     ;UNIQUE ERROR NUMBER
2871  007624  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2872  007626  005241                  2$:       INC     -(R1)                   ;R1=1777771
2873  007630  162721  177771                    SUB     #177771,(R1)+           ;R1=0
2874  007634  100401                            BMI     3$                      ;ERROR IF MINUS
2875  007636  001403                            BEQ     4$                      ;BRANCH IF GOOD
2876                                                                            ;ERROR! CCSHOULD = 0100
2877  007640                          3$:
2878  007640  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
2879  007642  000225                        .WORD   225                     ;UNIQUE ERROR NUMBER
2880  007644  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2881  007646                          4$:
2882
2883
2884  007646                          MBB22:
2885                                  ;;**************************************************************
2886                                  ;*TEST 76        TEST BIC, BICB, BIS, BISB MODE 2,2
2887                                  ;;**************************************************************
2888  007646                          TST76:
2889  007646  005267  171132                INC     $TESTN                  ;INCREMENT TEST NUMBER
2890  007652  012704  000400                MOV     #400,R4         ;R4=400
2891  007656  012701  000402                MOV     #402,R1         ;R1=402
2892  007662  012702  000404                MOV     #404,R2         ;R2=404
2893  007666  012714  141401                MOV     #141401,(R4)    ;400=303 001
2894  007672  012711  177405                MOV     #177405,(R1)    ;402=377 005
2895  007676  012722  000070                MOV     #70,(R2)+       ;404=2070
2896  007702  012722  177777                MOV     #-1,(R2)+       ;406=-1
2897  007706  042421                        BIC     (R4)+,(R1)+     ;402=074004
2898  007710  001401                        BEQ     1$              ;ERROR IF ZERO
2899  007712  100003                        BPL     2$              ;BRANCH IF GOOD
2900                                                                ;CC SHOULD = 1000
2901  007714                          1$:
2902  007714  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2903  007716  000226                        .WORD   226                     ;UNIQUE ERROR NUMBER
2904  007720  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2905  007722  052421                2$:     BIS     (R4)+,(R1)+     ;404=074074
2906  007724  142421                        BICB    (R4)+,(R1)+     ;406=074
2907  007726  005301                        DEC     R1              ;R4=405 R1=406
2908  007730  152421                        BISB    (R4)+,(R1)+     ;406=-1 R4=406 R1=407
2909  007732  100403                        BMI     4$              ;BRANCH IF GOOD
2910                                                                ;406 SHOULD=-1
2911  007734                          3$:
2912  007734  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2913  007736  000227                        .WORD   227                     ;UNIQUE ERROR NUMBER
2914  007740  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2915  007742  005214                4$:     INC     (R4)            ;406 SHOULD=0
2916  007744  001403                        BEQ     6$              ;BRANCH IF GOOD
2917                                                                ;ERROR! 406 NE 0
2918  007746                          5$:
2919  007746  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2920  007750  000230                        .WORD   230                     ;UNIQUE ERROR NUMBER
2921  007752  001127                        .WORD   CPUERR                  ;ACDRESS OF ERROR MESSAGE
2922  007754                          6$:
2923
2924
2925  007754                          MBC22:
2926                                  ;;**************************************************************
2927                                  ;*TEST 77        TEST BIT, CMP MODE 2,2
2928                                  ;;**************************************************************
2929  007754                          TST77:
2930  007754  005267  171024                INC     $TESTN                  ;INCREMENT TEST NUMBER
2931  007760  012704  000400                MOV     #400,R4         ;R4=400
2932  007764  012701  000402                MOV     #402,R1         ;R1=402
2933  007770  012714  125252                MOV     #125252,(R4)    ;400=125252
2934  007774  012721  100001                MOV     #100001,(R1)+   ;402=100001
```

```
2935  010000  012711  100002          MOV     #100002,(R1)    ;404=100002
2936  010004  005741                  TST     -(R1)           ;R1=402
2937  010006  132421                  BITB    (R4)+,(R1)+     ;**ANDED RESULT= 000
2938  010010  100401                  BMI     1$              ;ERROR IF MINUS
2939  010012  001403                  BEQ     2$              ;BRANCH IF GOOD
2940                                                          ;ERROR! CC SHOULD = 0100
2941  010014                  1$:
2942  010014  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2943  010016  000231                  .WORD   231                     ;UNIQUE ERROR NUMBER
2944  010020  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2945  010022  132124          2$:     BITB    (R1)+,(R4)+     ;** ANDED RESULT = 200
2946  010024  001401                  BEQ     3$              ;ERROR IF EQUAL
2947  010026  100403                  BMI     4$              ;BRANCH IF GOOD
2948                                                          ;ERROR! CC SHOULD= 1000 R4=402 R1=404
2949  010030                  3$:
2950  010030  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2951  010032  000232                  .WORD   232                     ;UNIQUE ERROR NUMBER
2952  010034  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2953  010036  022421          4$:     CMP     (R4)+,(R1)+     ;RESULT =+1
2954  010040  001402                  BEQ     5$              ;ERROR IF EQUAL
2955  010042  103001                  BCC     5$              ;ERROR IF NO CARRY
2956  010044  100403                  BMI     6$              ;BRANCH IF GOOD
2957                                                          ;ERROR! CC SHOULD = 0000
2958  010046                  5$:
2959  010046  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2960  010050  000233                  .WORD   233                     ;UNIQUE ERROR NUMBER
2961  010052  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2962  010054  005341          6$:     DEC     -(R1)           ;404=100001
2963  010056  005741                  TST     -(R1)           ;R4=404 R1=402
2964  010060  022124                  CMP     (R1)+,(R4)+     ;RESULT =0
2965  010062  001403                  BEQ     8$              ;BRANCH IF GOOD
2966                                                          ;CC SHOULD = 0100 R1=404 R4=406
2967  010064                  7$:
2968  010064  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2969  010066  000234                  .WORD   234                     ;UNIQUE ERROR NUMBER
2970  010070  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2971  010072                  8$:
2972
2973                          ;
2974  010072                  MS33:
2975                          ;;**********************************************************************
2976                          ;*TEST 100       TEST SUB MODE 3,3
2977                          ;;**********************************************************************
2978  010072                  TST100:
2979  010072  005267  170706          INC     $TESTN                  ;INCREMENT TEST NUMBER
2980  010076  005004                  CLR     R4              ;R4=0
2981  010100  012701  000002          MOV     #2,R1           ;R1=2
2982  010104  012702  000400          MOV     #400,R2         ;R2=400
2983  010110  012714  000400          MOV     #400,(R4)       ;0=400
2984  010114  012711  000402          MOV     #402,(R1)       ;2=402
2985  010120  012722  000200          MOV     #200,(R2)+      ;400=200
2986  010124  012712  054320          MOV     #54320,(R2)     ;402=54320
2987  010130  163431                  SUB     @(R4)+,@(R1)+   ;54320 - 200=54120
2988  010132  001402                  BEQ     1$              ;ERROR IF ZERO
2989  010134  103401                  BCS     1$              ;ERROR IF CARRY
2990  010136  100003                  BPL     2$              ;BRANCH IF GOOD
```

```
2991
2992  010140                                                    ;ERROR! CC SHOULD =0001
2993  010140  104000                    1$:     ERROR
2994  010142  000235                            .WORD   235     ;ALL ERRORS TO TRAP TO EMT VECTOR
2995  010144  001127                            .WORD   CPUERR  ;UNIQUE ERROR NUMBER
2996  010146  022712  054120            2$:     CMP     #54120,(R2)     ;ADDRESS OF ERROR MESSAGE
2997  010152  001403                            BEQ     4$      ; TEST R4 AUTO-INC AND RESULT
2998                                                            ;BRANCH IF GOOD
2999  010154                                                    ;ERROR! CC SHOULD = 0100 R4=2 R1=4
3000  010154  104000                    3$:     ERROR
3001  010156  000236                            .WORD   236     ;ALL ERRORS TO TRAP TO EMT VECTOR
3002  010160  001127                            .WORD   CPUERR  ;UNIQUE ERROR NUMBER
3003  010162  005067  167612            4$:     CLR     0       ;ADDRESS OF ERROR MESSAGE
3004  010166  005067  167610                    CLR     2       ;RESTORE VECTORS
3005                                                            ;       "
3006
3007                                             ;
3008  010172                            MCB44:
3009                                    ;;**********************************************************************
3010                                    ;*TEST 101       TEST CMP, BIT MODE 4,4
3011                                    ;;**********************************************************************
3012  010172                            TST101:
3013  010172  005267  170606                    INC     $TESTN          ;INCREMENT TEST NUMBER
3014  010176  012704  000400                    MOV     #400,R4         ;R4=400
3015  010202  012701  000402                    MOV     #402,R1         ;R1=402
3016  010206  012721  125366                    MOV     #125366,(R1)+   ;402=125366 R1=404
3017  010212  012724  173001                    MOV     #173001,(R4)+   ;400=173001 R4=402
3018  010216  024441                            CMP     -(R4),-(R1)     ;173001 - 125366=045603 CC=0000
3019  010220  103401                            BCS     1$              ;ERROR IF CARRY
3020  010222  100003                            BPL     2$              ;BRANCH IF GOOD
3021                                                            ;BAD COMPARE
3022  010224                            1$:
3023  010224  104000                            ERROR
3024  010226  000237                            .WORD   237     ;ALL ERRORS TO TRAP TO EMT VECTOR
3025  010230  001127                            .WORD   CPUERR  ;UNIQUE ERROR NUMBER
3026  010232  005204            2$:     INC     R4              ;ADDRESS OF ERROR MESSAGE
3027  010234  005201                    INC     R1              ;R1=403
3028  010236  000261                    SEC                     ;SET CARRY
3029  010240  134144                    BITB    -(R1),-(R4)     ;173^1=0
3030  010242  103001                    BCC     3$              ;C SHOULD REMAIN SET
3031  010244  001403                    BEQ     4$              ;BRANCH IF GOOD
3032                                                            ;INCORRECT COMPARE R4=400 R1=402
3033  010246                            3$:
3034  010246  104000                    ERROR
3035  010250  000240                    .WORD   240             ;ALL ERRORS TO TRAP TO EMT VECTOR
3036  010252  001127                    .WORD   CPUERR          ;UNIQUE ERROR NUMBER
3037  010254  005724            4$:     TST     (R4)+           ;ADDRESS OF ERROR MESSAGE
3038  010256  005201                    INC     R1              ;R4=402
3039  010260  124441                    CMPB    -(R4),-(R1)     ;R1=403
3040  010262  001403                    BEQ     6$              ;173 - 173=0
3041                                                            ;BRANCH IF GOOD
3042  010264                                                    ;BAD COMPARE
3043  010264  104000            5$:     ERROR
3044  010266  000241                    .WORD   241             ;ALL ERRORS TO TRAP TO EMT VECTOR
3045  010270  001127                    .WORD   CPUERR          ;UNIQUE ERROR NUMBER
3046  010272                    6$:                             ;ADDRESS OF ERROR MESSAGE
```

```
3047
3048
3049  010272                                  ;
3050                                          MA55:
3051                                          ;;**********************************************************************
3052                                          ;*TEST 102      TEST ADD MODE 5,5
3053  010272                                  ;;**********************************************************************
3054  010272  005267  170506                 TST102:
3055  010276  012704  000400                         INC     #TESTN                  ;INCREMENT TEST NUMBER
3056  010302  012724  000001                         MOV     #400,R4
3057  010306  012724  177776                         MOV     #1,(R4)+                ;400=1
3058  010312  012724  000400                         MOV     #-2,(R4)+               ;402=-2
3059  010316  012714  000402                         MOV     #400,(R4)+              ;404=400
3060  010322  012701  000410                         MOV     #402,(R4)               ;406=402 R4=406
3061  010326  065451                                  MOV     #410,R1                 ;R1=410
3062  010330  001402                                  ADD     @-(R4),@-(R1)           ;1+ -2= -1
3063  010332  100001                                  BEQ     1$                      ;ERROR IF ZERO
3064  010334  103003                                  BPL     1$                      ;ERROR IF PLUS
3065                                                  BCC     2$                      ;BRANCH IF GOOD
3066  010336                                                                          ;ERROR! BAD ADD
3067  010336  104000                          1$:
3068  010340  000242                                 ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3069  010342  001127                                 .WORD   242                     ;UNIQUE ERROR NUMBER
3070  010344  062704  000004                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3071  010350  065154                          2$:    ADD     #4,R4                   ;R4=410
3072  010352  001403                                 ADD     @-(R1),@-(R4)           ;-1 + 1 = 0
3073                                                  BEQ     4$                      ;BRANCH IF GOOD
3074  010354                                                                          ;ERROR! CC SHOULD= 0100 R4=406 R1=402
3075  010354  104000                          3$:
3076  010356  000243                                 ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3077  010360  001127                                 .WORD   243                     ;UNIQUE ERROR NUMBER
3078  010362                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3079                                          4$:
3080                                          ;
3081                                          ;
3082                                          ;
3083                                          ;---------------------------------
3084                                          ;TEST DOP BIT(B) MODE 6,6
3085                                          ;
3086                                                  ;
3087                                                  ;
3088                                                  ;
3089  010362                                  MB66:
3090                                          ;;**********************************************************************
3091                                          ;*TEST 103      TEST BIT, BITB MODE 6,6
3092                                          ;;**********************************************************************
3093  010362                                  TST103:
3094  010362  005267  170416                         INC     #TESTN                  ;INCREMENT TEST NUMBER
3095  010366  005004                                  CLR     R4                      ;R4=0
3096  010370  012701  000400                         MOV     #400,R1                 ;
3097  010374  012721  125252                         MOV     #125252,(R1)+           ;400=125252
3098  010400  012721  000001                         MOV     #1,(R1)+                ;402=1
3099  010404  012721  100000                         MOV     #100000,(R1)+           ;404=1000000  R1=406
3100  010410  036461  000400  177774                 BIT     400(R4),-4(R1)          ;(400)&(402)=0
3101  010416  001403                                  BEQ     2$                      ;BRANCH IF GOOD
3102                                                                                  ;CC SHOULD = 0100
```

```
3103  010420                                  1$:
3104  010420  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3105  010422  000244                                .WORD   244                     ;UNIQUE ERROR NUMBER
3106  010424  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3107  010426  136461  000405  177772  2$:     BITB    405(R4),-6(R1)          ;(405)↑(400)=200
3108  010434  001401                          BEQ     3$                      ;ERROR IF ZERO
3109  010436  100403                          BMI     4$                      ;BRANCH IF GOOD
3110                                                                          ;CC SHOULD = 1000
3111  010440                                  3$:
3112  010440  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3113  010442  000245                                .WORD   245                     ;UNIQUE ERROR NUMBER
3114  010444  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3115  010446                                  4$:
3116
3117                                          ;
3118  010446                                  MS77:
3119                                          ;;*****************************************************************
3120                                          ;*TEST 104       TEST SUB MODE 7,7
3121                                          ;;*****************************************************************
3122  010446                                  TST104:
3123  010446  005267  170332                        INC     $TESTN                  ;INCREMENT TEST NUMBER
3124  010452  012704  000400                        MOV     #400,R4         ;
3125  010456  005001                                CLR     R1
3126  010460  012724  177776                        MOV     #-2,(R4)+               ;400=-2
3127  010464  012724  177777                        MOV     #-1,(R4)+               ;402=-1
3128  010470  012724  000400                        MOV     #400,(R4)+              ;404=400 R4=406
3129  010474  012711  000402                        MOV     #402,(R1)               ;0=402
3130  010500  005201                                INC     R1                      ;R1=1
3131  010502  167471  177372  000403                SUB     @-406(R4),@403(R1)      ;-2 - -1 = -1
3132  010510  001401                                BEQ     1$                      ;ERROR  IF ZERO
3133  010512  100403                                BMI     2$                      ;BRANCH IF GOOD
3134                                                                          ;CC SHOULD=1000
3135  010514                                  1$:
3136  010514  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3137  010516  000246                                .WORD   246                     ;UNIQUE ERROR NUMBER
3138  010520  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3139  010522  167174  177777  177776  2$:     SUB     @-1(R1),@-2(R4)         ;-1 - -1 = 0
3140  010530  001403                          BEQ     4$                      ;BRANCH IF GOOD
3141                                                                          ;ERROR! ERROR ON SUBTRACT 400=0
3142  010532                                  3$:
3143  010532  104000                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3144  010534  000247                                .WORD   247                     ;UNIQUE ERROR NUMBER
3145  010536  001127                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3146  010540  005067  167234                4$:     CLR     0                       ;RESTORE VECTORS
3147  010544  005067  167232                        CLR     2                       ;       "
3148
3149
3150                                          ;
3151  010550                                  MRL0:
3152                                          ;;*****************************************************************
3153                                          ;*TEST 105       TEST ROL, ROLB MODE 0
3154                                          ;;*****************************************************************
3155  010550                                  TST105:
3156  010550  005267  170230                        INC     $TESTN                  ;INCREMENT TEST NUMBER
3157  010554  012704  125252                        MOV     #125252,R4              ;R4=125252
3158  010560  000277                                SCC                             ;CC=1111
```

```
3159  010562  006104                        ROL     R4              ;R4=052525 WITH CARRY SET
3160  010564  102004                        BVC     1$              ;ERROR IF V CLEAR
3161  010566  103003                        BCC     1$              ;ERROR IF CARRY CLEAR
3162  010570  022704  052525                CMP     #052525,R4      ;SEE IF R0 = EXPECTED
3163  010574  001403                        BEQ     2$              ;ERROR IF R4 NE EXPECTED
3164                                                                ;ERROR! ROL FAILED, CC SHOULD=0011
3165  010576                          1$:
3166  010576  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3167  010600  000250                        .WORD   250             ;UNIQUE ERROR NUMBER
3168  010602  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3169  010604  012704  125252          2$:   MOV     #125252,R4      ;R4=125252
3170  010610  000257                        CCC                     ;CC=0000
3171  010612  106104                        ROLB    R4              ;ROTATE EVEN BYTE
3172  010614  103005                        BCC     3$              ;ERROR IF NO CARRY
3173  010616  102004                        BVC     3$              ;ERROR IF NO OVERFLOW
3174  010620  100403                        BMI     3$              ;ERROR IF MINUS
3175  010622  022704  125124                CMP     #125124,R4      ;SEE IF R4 = EXPECTED
3176  010626  001403                        BEQ     4$              ;BRANCH IF GOOD
3177                                                                ;ERROR! ROLB FAILED, CC SHOULD=1011, R4=125125
3178  010630                          3$:
3179  010630  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3180  010632  000251                        .WORD   251             ;UNIQUE ERROR NUMBER
3181  010634  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3182  010636                          4$:
3183
3184
3185  010636                          ;
3186                                  MRLB1:
3187                                  ;;**********************************************************************
3188                                  ;*TEST 106      TEST ROL, ROLB MODE 1
3189  010636                          ;;**********************************************************************
3190  010636  005267  170142          TST106:
3191  010642  005004                        INC     $TESTN          ;INCREMENT TEST NUMBER
3192  010644  012714  052525                CLR     R4              ;R4=0
3193  010650  006114                        MOV     #52525,(R4)     ;0=52525
3194  010652  100005                        ROL     (R4)            ;**TEST INSTRUCTION, 0=125252
3195  010654  102004                        BPL     1$              ;ERROR IF PLUS
3196  010656  103403                        BVC     1$              ;ERROR IF NO OVERFLOW
3197  010660  021427  125252                BCS     1$              ;ERROR IF CARRY
3198  010664  001403                        CMP     (R4),#125252    ;SEE IF R4=EXPECTED
3199                                        BEQ     2$              ;BRANCH IF GOOD
3200  010666                                                        ;BAD ROL ,CC SHOULD=1010
3201  010666  104000                  1$:
3202  010670  000252                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3203  010672  001127                        .WORD   252             ;UNIQUE ERROR NUMBER
3204  010674  012714  125252                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3205  010700  005204                  2$:   MOV     #125252,(R4)    ;0=125252
3206  010702  000277                        INC     R4              ;R4=1
3207  010704  106114                        SCC                     ;CC=1111
3208  010706  100406                        ROLB    (R4)            ;**TEST INSTRUCTION
3209  010710  103005                        BMI     3$              ;ERROR IF RESULT IS POSITIVE
3210  010712  102004                        BCC     3$              ;ERROR IF NO CARRY
3211  010714  005304                        BVC     3$              ;ERROR IF V CLEAR
3212  010716  022714  052652                DEC     R4              ;R4=0
3213  010722  001403                        CMP     #52652,(R4)     ;ERROR IF 0 NE EXPECTED
3214                                        BEQ     4$              ;BRANCH IF GOOD
                                                                    ;ERROR! BAD ROLB ODD BYTE,CC SHOULD=1011
```

```
3215  010724
3216  010724  104000
3217  010726  000253
3218  010730  001127
3219  010732
3220
3221
3222  010732
3223
3224
3225
3226  010732
3227  010732  005267  170046
3228  010736  005004
3229  010740  012714  100000
3230  010744  000257
3231  010746  006124
3232  010750  103002
3233  010752  102001
3234  010754  001403
3235
3236  010756
3237  010756  104000
3238  010760  000254
3239  010762  001127
3240  010764  005304
3241  010766  005304
3242  010770  001012
3243  010772  012714  004040
3244  010776  000241
3245  011000  106124
3246  011002  103405
3247  011004  102404
3248  011006  005304
3249  011010  022714  004100
3250  011014  001403
3251
3252  011016
3253  011016  104000
3254  011020  000255
3255  011022  001127
3256  011024
3257
3258
3259  011024
3260
3261
3262
3263  011024
3264  011024  005267  167754
3265  011030  005004
3266  011032  012714  052525
3267  011036  000277
3268  011040  006137  000000
3269  011044  100005
3270  011046  102004
```

```
3$:
        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
        .WORD   253                     ;UNIQUE ERROR NUMBER
        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4$:

;
MRL2:
;;*************************************************************************
;*TEST 107       TEST ROL, ROLB MODE 2
;;*************************************************************************
TST107:
        INC     $TESTN                  ;INCREMENT TEST NUMBER
        CLR     R4                      ;R4=0
        MOV     #100000,(R4)            ;0=100000
        CCC                             ;CC=0000
        ROL     (R4)+                   ;*TEST INSTRUCTION
        BCC     1$                      ;ERROR IF NO CARRY
        BVC     1$                      ;ERROR IF NO OVERFLOW
        BEQ     2$                      ;BRANCH IF GOOD
                                        ;ROL FAILED .CCSHOULD= 0100
1$:
        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
        .WORD   254                     ;UNIQUE ERROR NUMBER
        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2$:     DEC     R4
        DEC     R4
        BNE     3$                      ;ERROR IN AUTO-DEC
        MOV     #4040,(R4)              ;0=4040
        CLC
        ROLB    (R4)+                   ;**TEST INSTURCTION
        BCS     3$                      ;ERROR IF CARRY SET
        BVS     3$                      ;ERROR IF V
        DEC     R4
        CMP     #04100,(R4)             ;SEE IF 0= EXPECTED RESULT
        BEQ     4$                      ;BRANCH IF GOOD
                                        ;ERROR! BAD ROL
3$:
        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
        .WORD   255                     ;UNIQUE ERROR NUMBER
        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4$:

;
MRL3:
;;*************************************************************************
;*TEST 110       TEST ROL, ROLB MODE 3
;;*************************************************************************
TST110:
        INC     $TESTN                  ;INCREMENT TEST NUMBER
        CLR     R4                      ;R4=0
        MOV     #052525,(R4)            ;0=52525
        SCC                             ;CC=1111
        ROL     @#0                     ;**TEST INSRUCTION MODE 3 WITH PC
        BPL     1$                      ;ERROR IF PLUS
        BVC     1$                      ;ERROR IF NO OVERFLOW
```

```
3271  011050  103403                        BCS     1$                      ;ERROR IF CARRY
3272  011052  022714  125253                CMP     #125253,(R4)            ;COMPARE RESULT WITH EXPECTED
3273  011056  001403                        BEQ     2$                      ;BRANCH IF GOOD
3274                                                                          ;BAD ROL CC SHOULD=1010
3275  011060                          1$:
3276  011060  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3277  011062  000256                        .WORD   256                     ;UNIQUE ERROR NUMBER
3278  011064  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3279  011066  012714  125252          2$:   MOV     #125252,(R4)            ;0=125252
3280  011072  000261                        SEC                             ;CC=---1
3281  011074  106137  000000                ROLB    @#0                     ;**TEST INSTRUCTION
3282  011100  100402                        BMI     3$                      ;ERROR IF MINUS
3283  011102  103001                        BCC     3$                      ;ERROR IF NO CARRY
3284  011104  102403                        BVS     4$                      ;BRANCH IF OVERFLOW
3285                                                                          ;ERROR! BAD ROL, CC SHOULD=1011
3286  011106                          3$:
3287  011106  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3288  011110  000257                        .WORD   257                     ;UNIQUE ERROR NUMBER
3289  011112  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3290  011114                          4$:
3291
3292                                  ;
3293  011114                          MRL4:
3294                                  ;;**************************************************************************
3295                                  ;*TEST 111       TEST ROL MODE 4
3296                                  ;;**************************************************************************
3297  011114                          TST111:
3298  011114  005267  167664                INC     $TESTN                  ;INCREMENT TEST NUMBER
3299  011120  005001                        CLR     R1                      ;R1=0
3300  011122  012704  000002                MOV     #2,R4                   ;R4=2
3301  011126  012711  054321                MOV     #54321,(R1)             ;0=54321
3302  011132  000277                        SCC                             ;CC=1111
3303  011134  006144                        ROL     -(R4)                   ;**TEST INSTRUCTION
3304  011136  100007                        BPL     1$                      ;ERROR IF PLUS
3305  011140  102006                        BVC     1$                      ;ERROR IF NO OVERFLOW
3306  011142  103405                        BCS     1$                      ;ERROR IF CARRY
3307  011144  022711  130643                CMP     #130643,(R1)            ;SEE IF EXPECTED RESULT
3308  011150  001002                        BNE     1$                      ;BRANCH IF ROL FAILED
3309  011152  005704                        TST     R4                      ;SEE IF AUTO-DEC WORKED
3310  011154  001403                        BEQ     2$                      ;BRANCH IF GOOD
3311                                                                          ;ERROR! BAD ROL INST
3312  011156                          1$:
3313  011156  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3314  011160  000260                        .WORD   260                     ;UNIQUE ERROR NUMBER
3315  011162  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3316  011164                          2$:
3317
3318                                  ;
3319  011164                          MMRL5:
3320                                  ;;**************************************************************************
3321                                  ;*TEST 112       TEST ROL MODE 5
3322                                  ;;**************************************************************************
3323  011164                          TST112:
3324  011164  005267  167614                INC     $TESTN                  ;INCREMENT TEST NUMBER
3325  011170  005004                        CLR     R4                      ;R4=0
3326  011172  012714  000400                MOV     #400,(R4)               ;0=400
```

```
3327  011176  012734  123456          MOV     #123456,@(R4)+          ;400=123465, R4=2
3328  011202  000277                  SCC                             ;CC=1111
3329  011204  006154                  ROL     @-(R4)                  ;**TEST INSTRUCTION
3330  011206  100410                  BMI     1$                      ;ERROR IF RESULT IS MINUS
3331  011210  103007                  BCC     1$                      ;ERROR IF NO CARRY
3332  011212  102006                  BVC     1$                      ;ERROR IF NO OVERFLOW
3333  011214  005704                  TST     R4                      ;SEE IF AUTO-DEC WORKED
3334  011216  001004                  BNE     1$                      ;ERROR OF AUTO-DEC
3335  011220  022737  047135  000400  CMP     #47135,@#400            ;SEE  IF CORRECT RESULT
3336  011226  001403                  BEQ     2$                      ;BRANCH IF GOOD
3337                                                                  ;BAD ROL MODE 5
3338  011230                        1$:
3339  011230  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3340  011232  000261                  .WORD   261                     ;UNIQUE ERROR NUMBER
3341  011234  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3342  011236                        2$:
3343
3344                                  ;
3345  011236                        MRL6:
3346                                  ;;*****************************************************************
3347                                  ;*TEST 113       TEST ROL MODE 6
3348                                  ;;*****************************************************************
3349  011236                        TST113:
3350  011236  005267  167542          INC     $TESTN                  ;INCREMENT TEST NUMBER
3351  011242  012704  000400          MOV     #400,R4                 ;R4=400
3352  011246  005001                  CLR     R1                      ;R1=0
3353  011250  012711  032525          MOV     #32525,(R1)             ;0=32525
3354  011254  000277                  SCC
3355  011256  006164  177400          ROL     -400(R4)                ;**TEST INSTRUCTION
3356  011262  100405                  BMI     1$                      ;ERROR IF MINUS
3357  011264  103404                  BCS     1$                      ;ERROR IF CARRY
3358  011266  102403                  BVS     1$                      ;ERROR IF OVERFLOW
3359  011270  022711  065253          CMP     #65253,(R1)             ;SEE IF CORRECT RESULT
3360  011274  001403                  BEQ     2$                      ;BRANCH IF GOOD
3361                                                                  ;BAD ROL MODE 6
3362  011276                        1$:
3363  011276  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3364  011300  000262                  .WORD   262                     ;UNIQUE ERROR NUMBER
3365  011302  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3366  011304                        2$:
3367
3368                                  ;
3369  011304                        MRL7:
3370                                  ;;*****************************************************************
3371                                  ;*TEST 114       TEST ROL MODE 7
3372                                  ;;*****************************************************************
3373  011304                        TST114:
3374  011304  005267  167474          INC     $TESTN                  ;INCREMENT TEST NUMBER
3375  011310  012704  000400          MOV     #400,R4                 ;R4=400
3376  011314  005037  000402          CLR     @#402                   ;402=0
3377  011320  012737  100000  000000  MOV     #100000,@#0             ;0=100000
3378  011326  006174  000002          ROL     2(R4)                   ;**TEST INSTRUCTION
3379  011332  100406                  BMI     1$                      ;ERROR IF MINUS
3380  011334  001005                  BNE     1$                      ;ERROR IF NOT ZERO
3381  011336  103004                  BCC     1$                      ;ERROR IF NO CARRY
3382  011340  102003                  BVC     1$                      ;ERROR IF NO OVERFLOW
```

```
3383  011342  005737  000000          TST     @#0                     ;CHECK RESULT
3384  011346  001403                  BEQ     2$                      ;BRANCH IF GOOD
3385                                                                    ;BAD ROL MODE 7
3386  011350                      1$:
3387  011350  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3388  011352  000263                  .WORD   263                     ;UNIQUE ERROR NUMBER
3389  011354  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3390  011356                      2$:
3391
3392                              ;
3393  011356                      MSW37:
3394                              ;;*********************************************************************
3395                              ;*TEST 115       TEST SWAB MODE 37
3396                              ;;*********************************************************************
3397  011356                      TST115:
3398  011356  005267  167422          INC     $TESTN                  ;INCREMENT TEST NUMBER
3399  011362  012704  000400          MOV     #400,R4                 ;R4=400
3400  011366  012714  040700          MOV     #40700,(R4)             ;400= 101 300
3401  011372  000337  000400          SWAB    @#400                   ;400 SHOULD = 300 101
3402  011376  100406                  BMI     1$                      ;ERROR IF MINUS
3403  011400  022714  140101          CMP     #140101,(R4)            ;SEE IF EXPECTED RESULT
3404  011404  001003                  BNE     1$                      ;BRANCH IF BAD
3405  011406  000337  000400          SWAB    @#400                   ;400=101 300
3406  011412  100403                  BMI     2$                      ;BRANCH IF GOOD
3407                                                                    ;ERROR! BAD SWAB MODE 37
3408  011414                      1$:
3409  011414  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3410  011416  000264                  .WORD   264                     ;UNIQUE ERROR NUMBER
3411  011420  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3412  011422                      2$:
3413
3414                              ;
3415  011422                      MRR0:
3416                              ;;*********************************************************************
3417                              ;*TEST 116       TEST ROR MODE 0
3418                              ;;*********************************************************************
3419  011422                      TST116:
3420  011422  005267  167356          INC     $TESTN                  ;INCREMENT TEST NUMBER
3421  011426  012704  052525          MOV     #52525,R4               ;R4=52525
3422  011432  000257                  CCC                             ;CC=0000
3423  011434  006004                  ROR     R4                      ;R4 SHOULD = 25252 WITH CARRY
3424  011436  103003                  BCC     1$                      ;ERROR IF NO CARRY
3425  011440  022704  025252          CMP     #25252,R4               ;SEE IF R4= EXPECTED
3426  011444  001403                  BEQ     2$                      ;BRANCH IF GOOD
3427                                                                    ;ROR MODE 0 FAILED
3428  011446                      1$:
3429  011446  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3430  011450  000265                  .WORD   265                     ;UNIQUE ERROR NUMBER
3431  011452  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3432  011454                      2$:
3433
3434                              ;
3435  011454                      MRRB1:
3436                              ;;*********************************************************************
3437                              ;*TEST 117       TEST RORB MODE 1
3438                              ;;*********************************************************************
```

```
3439  011454
3440  011454  005267  167324          TST117:
3441  011460  005004                          INC     $TESTN                  ;INCREMENT TEST NUMBER
3442  011462  012714  000001                  CLR     R4                      ;R4=0
3443  011466  000277                          MOV     #1,(R4)                 ;0=1
3444  011470  106014                          SCC                             ;CC=1111
3445  011472  103004                          RORB    (R4)                    ;0=000200, NO C
3446  011474  100003                          BCC     1$                      ;ERROR IF NO CARRY
3447  011476  022714  000200                  BPL     1$                      ;ERROR IF PLUS
3448  011502  001403                          CMP     #200,(R4)               ;CHECK RESULT
3449                                          BEQ     2$                      ;BRANCH IF GOOD
3450  011504                                                                  ;ERROR! BAD RESULT
3451  011504  104000                  1$:
3452  011506  000266                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3453  011510  001127                          .WORD   266                     ;UNIQUE ERROR NUMBER
3454  011512                                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3455                                  2$:
3456
3457                                  ;
3458  011512                          MJ:
3459                                  ;;*********************************************************************
3460                                  ;*TEST 120       TEST JMP - ALL MODES
3461                                  ;;*********************************************************************
3462  011512                          TST120:
3463  011512  005267  167266                  INC     $TESTN                  ;INCREMENT TEST NUMBER
3464  011516  012737  000001  001066          MOV     #1,@#SEQ                ;SETUP TEST SEQUENCER
3465  011524  012701  011600                  MOV     #MJU1,R1                ;SET MODE 1 JUMP ADDRESS
3466  011530  000111                          JMP     (R1)                    ;*JMP MODE 1
3467  011532  023727  001066  000002  MJU2:   CMP     @#SEQ,#2                ;CHECK FOR CORRECT SEQUENCE
3468  011540  001403                          BEQ     MJU2A                   ;BRANCH IF GOOD
3469                                                                          ;MODE 2 JUMP FAILED
3470  011542                                  1$:
3471  011542  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3472  011544  000267                          .WORD   267                     ;UNIQUE ERROR NUMBER
3473  011546  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3474
3475  011550  020127  011534          MJU2A:  CMP     R1,@#MJU2+2             ;CHECK FOR AUTO-INCREMENT
3476  011554  001403                          BEQ     MJU2B                   ;BRANCH IF GOOD
3477                                                                          ;ERROR! AUTO-INCR FAILED
3478  011556                                  2$:
3479  011556  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3480  011560  000270                          .WORD   270                     ;UNIQUE ERROR NUMBER
3481  011562  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3482
3483  011564  005237  001066          MJU2B:  INC     @#SEQ                   ;UPDATE TEST SEQUENCER
3484  011570  012701  011576                  MOV     #MJ2,R1                 ;SETUP MODE 3 JUMP
3485  011574  000131                          JMP     @(R1)+                  ;JUMP MODE 3
3486  011576  011630                  MJ2:    .WORD   MJU3                    ;MODE 3 DESTINATION
3487  011600  023727  001066  000001  MJU1:   CMP     @#SEQ,#1                ; TEST FOR CORRECT SEQUENCE
3488  011606  001403                          BEQ     MJU1A                   ;BRANCH IF GOOD
3489                                                                          ;ERROR! JMP OUT OF SEQUENCE
3490  011610                                  3$:
3491  011610  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3492  011612  000271                          .WORD   271                     ;UNIQUE ERROR NUMBER
3493  011614  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3494
```

```
3495  011616  005237  001066          MJU1A:  INC     @#SEQ                   ;UPDATE SEQUENCE
3496  011622  012701  011532                  MOV     #MJU2,R1                ;SETUP MODE 2 DESTINATION
3497  011626  000121                          JMP     (R1)+                   ;JUMP MODE 2
3498  011630  023727  001066  000003  MJU3:   CMP     @#SEQ,#3                ; TEST FOR CORRECT SEQUENCE
3499  011636  001403                          BEQ     MJU3A                   ;BRANCH IF GOOD
3500                                                                          ;ERROR! JMP OUT OF SEQUENCE
3501  011640                          4$:
3502  011640  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3503  011642  000272                          .WORD   272                     ;UNIQUE ERROR NUMBER
3504  011644  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3505
3506  011646  022701  011600          MJU3A:  CMP     #MJ2+2,R1               ; TEST AUTO-INCREMENT
3507  011652  001403                          BEQ     MJU3B                   ;BRANCH IF GOOD
3508                                                                          ;ERROR! AUTO-INCREMENT FAILED MODE 3
3509  011654                          5$:
3510  011654  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3511  011656  000273                          .WORD   273                     ;UNIQUE ERROR NUMBER
3512  011660  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3513
3514  011662  005237  001066          MJU3B:  INC     @#SEQ                   ;UPDATE SEQUENCER
3515  011666  012701  011746                  MOV     #MJU4+2,R1              ;SETUP DESTINATION MODE 4
3516  011672  000141                          JMP     -(R1)                   ;EXECUTE JUMP MODE 4
3517  011674  000000          MJU5:   HALT
3518  011676  022701  012012                  CMP     #MJ5,R1                 ;CHECK AUTO-DECREMENT
3519  011702  001403                          BEQ     MJU5A                   ;BRANCH IF GOOD AUTO-DEC
3520                                                                          ;ERROR! AUTO-DEC FAILED MODE 5
3521  011704                          6$:
3522  011704  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3523  011706  000274                          .WORD   274                     ;UNIQUE ERROR NUMBER
3524  011710  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3525
3526  011712  023727  001066  000005  MJU5A:  CMP     @#SEQ,#5                ; TEST CORRECT SEQUENCE
3527  011720  001403                          BEQ     MJU5B                   ;BRANCH IF GOOD SEQUENCE
3528                                                                          ;ERROR! JMP OUT OF SEQUENCE
3529  011722                          7$:
3530  011722  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3531  011724  000275                          .WORD   275                     ;UNIQUE ERROR NUMBER
3532  011726  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3533
3534  011730  005237  001066          MJU5B:  INC     @#SEQ                   ;UPDATE SEQUENCE COUNT
3535  011734  012701  012007                  MOV     #MJU6-5,R1              ;SETUP DESTINATION MODE6
3536  011740  000161  000005                  JMP     +5(R1)                  ;JUMP MODE 6
3537
3538  011744  000240          ;;
3539  011746  022701  011744  MJU4:   NOP
3540  011752  001403                          CMP     #MJU4,R1                ; TEST AUTO-DECR
3541                                           BEQ     MJU4A                   ;BRANCH IF GOOD
3542  011754                                                                  ;ERROR! MODE 4 AUTO-DEC FAILED
3543  011754  104000                  8$:
3544  011756  000276                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3545  011760  001127                          .WORD   276                     ;UNIQUE ERROR NUMBER
3546                                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3547  011762  023727  001066  000004  MJU4A:  CMP     @#SEQ,#4                ; TEST FOR CORRECT SEQUENCE
3548  011770  001403                          BEQ     MJU4B                   ;BRANCH IF CORRECT SEQUENCE
3549                                                                          ;ERROR! INCORRECT JMP SEQUENCE
3550  011772                          9$:
```

F6


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3551  011772  104000                        ERROR
3552  011774  000277                        .WORD   277             ;ALL ERRORS TO TRAP TO EMT VECTOR
3553  011776  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
3554                                                                ;ADDRESS OF ERROR MESSAGE
3555  012000  005237  001066      MJU4B:    INC     @#SEQ           ;UPDATE SEQUENCE
3556  012004  012701  012014              MOV     #MJ5+2,R1       ;SETUP MODE 5 POINTER
3557  012010  000151                        JMP     @-(R1)          ;EXECUTE MODE 5 JMP
3558                                        ;
3559  012012  011676              MJ5:      .WORD   MJU5+2          ;POINTER MODE 5
3560                                        ;
3561  012014  022737  000006  001066  MJU6:  CMP     #6,@#SEQ        ;CHECK FOR CORRECT SEQUENCE
3562  012022  001403                        BEQ     MJU6A           ;BRANCH IF GOOD
3563                                                                ;ERROR! INCORRECT SEQUENCE
3564  012024                      10$:
3565  012024  104000                        ERROR
3566  012026  000300                        .WORD   300             ;ALL ERRORS TO TRAP TO EMT VECTOR
3567  012030  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
3568                                                                ;ADDRESS OF ERROR MESSAGE
3569  012032  005237  001066      MJU6A:    INC     @#SEQ           ;UPDATE SEQUENCER
3570  012036  012701  012056              MOV     #MJ7+10,R1      ;SETUP INDEX
3571  012042  000171  177770              JMP     @-10(R1)        ;EXECUTE MODE 7 JUMP
3572  012046  012052              MJ7:      .WORD   MJU7            ;POINTER FOR MODE 7
3573  012050  000000                        HALT
3574  012052  022737  000007  001066  MJU7:  CMP     #7,@#SEQ        ; TEST FOR CORRECT SEQUENCE
3575  012060  001403                        BEQ     MJU7E           ;BRANCH IF GOOD SEQUENCE
3576                                                                ;ERROR!  TESTING OUT OF SEQUENCE
3577  012062                      11$:
3578  012062  104000                        ERROR
3579  012064  000301                        .WORD   301             ;ALL ERRORS TO TRAP TO EMT VECTOR
3580  012066  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
3581                                                                ;ADDRESS OF ERROR MESSAGE
3582  012070                      MJU7E:
3583
3584                                        ;
3585                                        ;;**********************************************************************
3586                                        ;*TEST 121      TEST THAT PRE-FETCH BUFFER CAN BE OVER WRITTEN
3587                                        ;;**********************************************************************
3588  012070                      TST121:
3589  012070  005267  166710            INC     $TESTN          ;INCREMENT TEST NUMBER
3590  012074  012701  012404            MOV     #128$,R1        ;SET UP R1 WITH ADDRESS OF ERROR
3591                                                            ;ROUTINE
3592  012100  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3593  012102  000240                    .WORD   NOP             ;NOP INSTRUCTION
3594  012104  000111            64$:    .WORD   111             ;JMP    (R1)
3595  012106  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3596  012110  000240                    .WORD   NOP             ;NOP INSTRUCTION
3597  012112  000111            65$:    .WORD   111             ;JMP    (R1)
3598  012114  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3599  012116  000240                    .WORD   NOP             ;NOP INSTRUCTION
3600  012120  000111            66$:    .WORD   111             ;JMP    (R1)
3601  012122  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3602  012124  000240                    .WORD   NOP             ;NOP INSTRUCTION
3603  012126  000111            67$:    .WORD   111             ;JMP    (R1)
3604  012130  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3605  012132  000240                    .WORD   NOP             ;NOP INSTPUCTION
3606  012134  000111            68$:    .WORD   111             ;JMP    (R1)
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3607  012136  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3608  012140  000240                    .WORD   NOP             ;NOP INSTRUCTION
3609  012142  000111            69$:    .WORD   111             ;JMP     (R1)
3610  012144  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3611  012146  000240                    .WORD   NOP             ;NOP INSTRUCTION
3612  012150  000111            70$:    .WORD   111             ;JMP     (R1)
3613  012152  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3614  012154  000240                    .WORD   NOP             ;NOP INSTRUCTION
3615  012156  000111            71$:    .WORD   111             ;JMP     (R1)
3616  012160  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3617  012162  000240                    .WORD   NOP             ;NOP INSTRUCTION
3618  012164  000111            72$:    .WORD   111             ;JMP     (R1)
3619  012166  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3620  012170  000240                    .WORD   NOP             ;NOP INSTRUCTION
3621  012172  000111            73$:    .WORD   111             ;JMP     (R1)
3622  012174  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3623  012176  000240                    .WORD   NOP             ;NOP INSTRUCTION
3624  012200  000111            74$:    .WORD   111             ;JMP     (R1)
3625  012202  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3626  012204  000240                    .WORD   NOP             ;NOP INSTRUCTION
3627  012206  000111            75$:    .WORD   111             ;JMP     (R1)
3628  012210  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3629  012212  000240                    .WORD   NOP             ;NOP INSTRUCTION
3630  012214  000111            76$:    .WORD   111             ;JMP     (R1)
3631  012216  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3632  012220  000240                    .WORD   NOP             ;NOP INSTRUCTION
3633  012222  000111            77$:    .WORD   111             ;JMP     (R1)
3634  012224  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3635  012226  000240                    .WORD   NOP             ;NOP INSTRUCTION
3636  012230  000111            78$:    .WORD   111             ;JMP     (R1)
3637  012232  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3638  012234  000240                    .WORD   NOP             ;NOP INSTRUCTION
3639  012236  000111            79$:    .WORD   111             ;JMP     (R1)
3640  012240  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3641  012242  000240                    .WORD   NOP             ;NOP INSTRUCTION
3642  012244  000111            80$:    .WORD   111             ;JMP     (R1)
3643  012246  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3644  012250  000240                    .WORD   NOP             ;NOP INSTRUCTION
3645  012252  000111            81$:    .WORD   111             ;JMP     (R1)
3646  012254  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3647  012256  000240                    .WORD   NOP             ;NOP INSTRUCTION
3648  012260  000111            82$:    .WORD   111             ;JMP     (R1)
3649  012262  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3650  012264  000240                    .WORD   NOP             ;NOP INSTRUCTION
3651  012266  000111            83$:    .WORD   111             ;JMP     (R1)
3652  012270  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3653  012272  000240                    .WORD   NOP             ;NOP INSTRUCTION
3654  012274  000111            84$:    .WORD   111             ;JMP     (R1)
3655  012276  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3656  012300  000240                    .WORD   NOP             ;NOP INSTRUCTION
3657  012302  000111            85$:    .WORD   111             ;JMP     (R1)
3658  012304  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3659  012306  000240                    .WORD   NOP             ;NOP INSTRUCTION
3660  012310  000111            86$:    .WORD   111             ;JMP     (R1)
3661  012312  012717                    MOV     (PC)+,(PC)      ;WRITE THE NOP OVER THE JMP INSTRUCTION
3662  012314  000240                    .WORD   NOP             ;NOP INSTRUCTION
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3663  012316  000111                  87$:    .WORD   111                     ;JMP    (R1)
3664  012320  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3665  012322  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3666  012324  000111                  88$:    .WORD   111                     ;JMP    (R1)
3667  012326  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3668  012330  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3669  012332  000111                  89$:    .WORD   111                     ;JMP    (R1)
3670  012334  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3671  012336  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3672  012340  000111                  90$:    .WORD   111                     ;JMP    (R1)
3673  012342  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3674  012344  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3675  012346  000111                  91$:    .WORD   111                     ;JMP    (R1)
3676  012350  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3677  012352  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3678  012354  000111                  92$:    .WORD   111                     ;JMP    (R1)
3679  012356  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3680  012360  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3681  012362  000111                  93$:    .WORD   111                     ;JMP    (R1)
3682  012364  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3683  012366  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3684  012370  000111                  94$:    .WORD   111                     ;JMP    (R1)
3685  012372  012717                          MOV     (PC)+,(PC)              ;WRITE THE NOP OVER THE JMP INSTRUCTION
3686  012374  000240                          .WORD   NOP                     ;NOP INSTRUCTION
3687  012376  000111                  95$:    .WORD   111                     ;JMP    (R1)
3688  012400  000137  012412                  JMP     @#129$                  ;JUMP OVER ERROR CALL
3689  012404                          128$:                                   ;ERROR! PRE-FETCH BUFFER WAS NOT
3690                                                                          ;OVER WRITTEN
3691  012404  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3692  012406  000302                          .WORD   302                     ;UNIQUE ERROR NUMBER
3693  012410  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3694                                  ;
3695                                  ;       NOW RESTORE THE OVER WRITTEN JMP INSTRUCTIONS FOR THE NEXT PASS.
3696                                  ;
3697  012412  012702  000040          129$:   MOV     #32.,R2                 ;SET UP R2 AS COUNTER
3698  012416  012703  012104                  MOV     #64$,R3                 ;SET UP R3 AS POINTER
3699  012422  012713  000111          130$:   MOV     #111,(R3)               ;RESTORE OVER WRITTEN JUMPS
3700  012426  062703  000006                  ADD     #6,R3                   ;POINT TO NEXT OVER WRITTEN ADDR.
3701  012432  077205                          SOB     R2,130$                 ;DO UNTIL R2=0
3702
3703                                  ;
3704  012434                          MJP:
3705                                  ;;*****************************************************************
3706                                  ;*TEST 122       TEST JMP MODES 17,27,37,67,77
3707                                  ;;*****************************************************************
3708  012434                          TST122:
3709  012434  005267  166344                  INC     $TESTN                  ;INCREMENT TEST NUMBER
3710  012440  012737  000000  001066          MOV     #0,@#SEQ                ;SETUP TEST SEQUNCER
3711  012446  000117                          JMP     (R7)                    ;JUMP MODE 17(SHOULD BE IN-LINE)
3712                                  ;
3713  012450  005737  001066          MJP17:  TST     @#SEQ                   ;CHECK SEQUENCE
3714  012454  001403                          BEQ     2$                      ;BRANCH IF GOOD
3715                                                                          ;ERROR! BAD JUMP
3716  012456                          1$:
3717  012456  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3718  012460  000303                          .WORD   303                     ;UNIQUE ERROR NUMBER
```

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3719  012462  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3720
3721  012464  005237  001066          2$:     INC     @#SEQ           ;UPDATE SEQUENCE NUMBER
3722  012470  000127  000401                  JMP     #401            ;JUMP MODE 27
3723                                                                  ;(THE #401=BR UPDATED PC+2)
3724                                          ;
3725  012474  000000                          HALT                    ;
3726                                          ;
3727  012476  023727  001066  000001  MJP27:  CMP     @#SEQ,#1        ;CHECK IF CORRECT SEQUENCE
3728  012504  001403                          BEQ     MJP27A          ;BRANCH IF IN SEQUENCE
3729                                                                  ;ERROR!  TEST OUT OF SEQUENCE
3730  012506                                  1$:
3731  012506  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3732  012510  000304                          .WORD   304             ;UNIQUE ERROR NUMBER
3733  012512  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3734
3735  012514  005237  001066          MJP27A: INC     @#SEQ           ;UPDATE SEQUENCER
3736  012520  000137  012576                  JMP     @#MJP37         ;JUMP MODE 37
3737  012524  023727  001066  000003  MJP67:  CMP     @#SEQ,#3        ;CHECK FOR CORRECT SEQUENCE
3738  012532  001403                          BEQ     MJP67A          ;BRANCH IF IN SEQUENCE
3739                                                                  ;ERROR!  TEST OUT OF SEQUENCE
3740  012534                                  2$:
3741  012534  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3742  012536  000305                          .WORD   305             ;UNIQUE ERROR NUMBER
3743  012540  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3744
3745  012542  005237  001066          MJP67A: INC     @#SEQ           ;UPDATE SEQUENCER
3746  012546  000257                          CCC                     ;INSURE ZBIT=0
3747  012550  000177  000002                  JMP     @#MJP67B        ;JUMP MODE 7
3748                                          ;
3749  012554  000000                          HALT                    ;
3750                                          ;
3751  012556  012560                  MJP67B: .WORD   MJP77           ;
3752                                          ;
3753  012560  023727  001066  000004  MJP77:  CMP     @#SEQ,#4        ; TEST FOR CORRECT SEQUENCE
3754  012566  001416                          BEQ     MJP77E          ;BRANCH IF IN SEQUENCE
3755                                                                  ;ERROR!  TEST OUT OF SEQUENCE
3756  012570                                  3$:
3757  012570  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3758  012572  000306                          .WORD   306             ;UNIQUE ERROR NUMBER
3759  012574  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3760
3761  012576  023727  001066  000002  MJP37:  CMP     @#SEQ,#2        ; TEST FOR CORRECT SEQUENCE
3762  012604  001403                          BEQ     MJP37A          ;BRANCH IF IN SEQUENCE
3763                                                                  ;ERROR!  TEST OUT OF SEQUENCE
3764  012606                                  4$:
3765  012606  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3766  012610  000307                          .WORD   307             ;UNIQUE ERROR NUMBER
3767  012612  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3768
3769  012614  005237  001066          MJP37A: INC     @#SEQ           ;UPDATE SEQUENCER
3770  012620  000167  177700                  JMP     MJP67           ;JUMP MODE 6
3771                                          ;
3772                                          ;
3773  012624                          MJP77E:
3774
```

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3775                                        ;
3776                                        ;
3777  012624                                MJSR:
3778                                        ;;*****************************************************************
3779                                        ;*TEST 123      TEST JSR ALL MODES
3780                                        ;;*****************************************************************
3781  012624                                TST123:
3782  012624  005267  166154                       INC     @#TESTN                 ;INCREMENT TEST NUMBER
3783  012630  010637  001070                       MOV     R6,@#SPS                ;SAVE STACK POINTER LOCATION
3784  012634  010637  001072                       MOV     R6,@#SPSJ               ;
3785  012640  162737  000002  001072               SUB     #2,@#SPSJ               ;SPSJ = R6 AFTER DECRIMENT
3786  012646  012737  000001  001066               MOV     #1,@#SEQ                ;SETUP SEQUENCE COUNTER
3787  012654  012701  012760                       MOV     #MJSR1,R1               ;SETUP INITIAL JUMP IN MODE 1
3788  012660  005004                               CLR     R4                      ;
3789  012662  005104                               COM     R4                      ;R4=-1 TO BE SAVED ON STACK
3790  012664  004411                               JSR     R4,(R1)                 ;JSR MODE 1
3791                                        ;
3792  012666  022737  000002  001066       MJSR2:  CMP     #2,@#SEQ                ; TEST FOR CORRECT SEQUENCE
3793  012674  001403                               BEQ     MJSR2A                  ;BRANCH IF GOOD
3794                                                                                ;ERROR! MODE 2 JUMPED TO OUT OF SEQUENCE
3795  012676                                5$:
3796  012676  104000                               ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3797  012700  000310                               .WORD   310                     ;UNIQUE ERROR NUMBER
3798  012702  001127                               .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3799
3800  012704  023706  001072       MJSR2A: CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
3801  012710  001006                               BNE     6$                      ;BRANCH IF STACK INCORRECT
3802  012712  021627  125252                       CMP     (R6),#125252            ;VERIFY CONTENTS OF STACK
3803  012716  001003                               BNE     6$                      ;BRANCH IF DATA ON STACK INCORRECT
3804  012720  022704  013050                       CMP     #MJSR4,R4               ;SEE IF CORRECT RETURN ADDRESS
3805  012724  001403                               BEQ     MJSR2B                  ;BRANCH IF GOOD
3806                                                                                ;ERROR! JSR MODE 2 FAILED
3807  012726                                6$:
3808  012726  104000                               ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3809  012730  000311                               .WORD   311                     ;UNIQUE ERROR NUMBER
3810  012732  001127                               .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3811
3812  012734  005237  001066       MJSR2B: INC     @#SEQ                   ;UPDATE SEQUENCE COUNTER
3813  012740  013706  001070                       MOV     @#SPS,R6                ;RELOAD STACK POINTER
3814  012744  012701  012756                       MOV     #MJSRA,R1               ;SETUP JSR MODE 3
3815  012750  005004                               CLR     R4                      ;DIFFERENT DATA TO R4
3816  012752  004431                               JSR     R4,@(R1)+               ;JSR MODE 3
3817  012754  000000                               HALT
3818  012756  013144                       MJSRA:  .WORD   MJSR3                   ;LITERAL FOR JUMP MODE 3
3819                                        ;
3820  012760  022737  000001  001066       MJSR1:  CMP     #1,@#SEQ                ; TEST FOR CORRECT SEQUENCE
3821  012766  001403                               BEQ     MJSR1A                  ;BRANCH IF GOOD
3822                                                                                ;ERROR! MODE 1 JUMPED TO OUT OF SEQUENCE
3823  012770                                7$:
3824  012770  104000                               ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3825  012772  000312                               .WORD   312                     ;UNIQUE ERROR NUMBER
3826  012774  001127                               .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3827
3828  012776  023706  001072       MJSR1A: CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
3829  013002  001006                               BNE     8$                      ;BRANCH IF STACK INCORRECT
3830  013004  021627  177777                       CMP     (R6),#-1                ;VERIFY CONTENT OF STACK
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3831  013010  001003                          BNE     8$                      ;BRANCH IF DATA ON STACK INCORRECT
3832  013012  022704  012666                  CMP     #MJSR2,R4               ;SEE IF CORRECT RETURN ADDRESS
3833  013016  001403                          BEQ     MJSR1B                  ;BRANCH IF GOOD
3834                                                                          ;ERROR! JSR MODE 2 FAILED
3835  013020                          8$:
3836  013020  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3837  013022  000313                          .WORD   313                     ;UNIQUE ERROR NUMBER
3838  013024  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3839
3840  013026  005237  001066          MJSR1B: INC     @#SEQ                   ;UPDATE SEQUENCE COUNTER
3841  013032  013706  001070                  MOV     @#SPS,R6                ;RELOAD STACK POINTER
3842  013036  012704  125252                  MOV     #125252,R4              ;SETUP R4 DATA
3843  013042  012701  012666                  MOV     #MJSR2,R1               ;SETUP MODE 2 JUMP ADDRESS
3844  013046  004421                          JSR     R4,(R1)+                ;+JUMP MODE 2
3845                                          ;
3846                                          ;
3847  013050  022737  000004  001066  MJSR4:  CMP     #4,@#SEQ                ; TEST FOR CORRECT SEQUENCE
3848  013056  001403                          BEQ     MJSR4A                  ;BRANCH IF GOOD
3849                                                                          ;ERROR! MODE 4 JUMPED TO OUT OF SEQUENCE
3850  013060                          9$:
3851  013060  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3852  013062  000314                          .WORD   314                     ;UNIQUE ERROR NUMBER
3853  013064  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3854
3855  013066  023706  001072          MJSR4A: CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
3856  013072  001006                          BNE     10$                     ;BRANCH IF STACK INCORRECT
3857  013074  021627  052525                  CMP     (R6),#052525            ;VERIFY CONTENTS OF STACK
3858  013100  001003                          BNE     10$                     ;BRANCH IF DATA ON STACK INCORRECT
3859  013102  022704  013236                  CMP     #MJSR6,R4               ;SEE IF CORRECT RETURN ADDRESS
3860  013106  001403                          BEQ     MJSR4B                  ;BRANCH IF GOOD
3861                                                                          ;ERROR! JSR MODE 4 FAILED
3862  013110                          10$:
3863  013110  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3864  013112  000315                          .WORD   315                     ;UNIQUE ERROR NUMBER
3865  013114  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3866
3867  013116  005237  001066          MJSR4B: INC     @#SEQ                   ;UPDATE SEQUENCE COUNTER
3868  013122  013706  001070                  MOV     @#SPS,R6                ;RELOAD STACK POINTER
3869  013126  012704  000377                  MOV     #377,R4                 ;SETUP R4 DATA
3870  013132  012701  013144                  MOV     #MJSR8+2,R1             ;SETUP JSR VECTOR
3871  013136  004451                          JSR     R4,@-(R1)               ;JSR MODE 5
3872  013140  000000                          HALT
3873  013142  013332                  MJSR8:  .WORD   MJSR5                   ;MODE 5 VECTOR
3874                                          ;
3875                                          ;
3876  013144  022737  000003  001066  MJSR3:  CMP     #3,@#SEQ                ; TEST FOR CORRECT SEQUENCE
3877  013152  001403                          BEQ     MJSR3A                  ;BRANCH IF GOOD
3878                                                                          ;ERROR! MODE 3 JUMPED TO OUT OF SEQUENCE
3879  013154                          11$:
3880  013154  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3881  013156  000316                          .WORD   316                     ;UNIQUE ERROR NUMBER
3882  013160  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3883
3884  013162  023706  001072          MJSR3A: CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
3885  013166  001006                          BNE     12$                     ;BRANCH IF STACK INCORRECT
3886  013170  021627  000000                  CMP     (R6),#0                 ;VERIFY CONTENTS OF STAACK
```

```
3887  013174  001003                        BNE     12$             ;BRANCH IF DATA ON STACK INCORRECT
3888  013176  022704  012754                CMP     #MJSRA-2,R4     ;SEE IF CORRECT RETURN ADDRESS
3889  013202  001403                        BEQ     MJSR3B          ;BRANCH IF GOOD
3890                                                                ;ERROR! JSR MODE 3 FAILED
3891  013204                          12$:
3892  013204  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3893  013206  000317                        .WORD   317             ;UNIQUE ERROR NUMBER
3894  013210  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3895
3896  013212  005237  001066          MJSR3B: INC     @#SEQ           ;UPDATE SEQUENCE COUNTER
3897  013216  013706  001070                MOV     @#SPS,R6        ;RELOAD STACK POINTER
3898  013222  012704  052525                MOV     #052525,R4      ;SETUP R4 DATA
3899  013226  012701  013052                MOV     #MJSR4+2,R1     ;SETUP JSR VECTOR
3900  013232  000257                        CCC                     ;CLEAR CONDITION CODES
3901  013234  004441                        JSR     R4,-(R1)        ;JSR MODE 4
3902                                  ;
3903                                  ;
3904  013236  022737  000006  001066 MJSR6:  CMP     #6,@#SEQ        ; TEST FOR CORRECT SEQUENCE
3905  013244  001403                        BEQ     MJSR6A          ;BRANCH IF GOOD
3906                                                                ;ERROR! MODE 6 JUMPED TO OUT OF SEQUENCE
3907  013246                          13$:
3908  013246  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3909  013250  000320                        .WORD   320             ;UNIQUE ERROR NUMBER
3910  013252  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3911
3912  013254  023706  001072          MJSR6A: CMP     @#SPSJ,R6       ;VERIFY STACK DECRIMENT
3913  013260  001006                        BNE     14$             ;BRANCH IF STACK INCORRECT
3914  013262  021627  123456                CMP     (R6),#123456    ;VERIFY CONTENTS OF STACK
3915  013266  001003                        BNE     14$             ;BRANCH IF DATA ON STACK INCORRECT
3916  013270  022704  013424                CMP     #MJSR7,R4       ;SEE IF CORRECT RETURN ADDRESS
3917  013274  001403                        BEQ     MJSR6B          ;BRANCH IF GOOD
3918                                                                ;ERROR! JSR MODE 6 FAILED
3919  013276                          14$:
3920  013276  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3921  013300  000321                        .WORD   321             ;UNIQUE ERROR NUMBER
3922  013302  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3923
3924  013304  005237  001066          MJSR6B: INC     @#SEQ           ;UPDATE SEQUENCE COUNTER
3925  013310  013706  001070                MOV     @#SPS,R6        ;RELOAD STACK POINTER
3926  013314  012704  177773                MOV     #-5,R4          ;SETUP R4 DATA
3927  013320  012701  013340                MOV     #MJSRC+10,R1    ;SETUP JSR VECTOR
3928  013324  004471  177770                JSR     R4,@-10(R1)     ;JSR MODE 7
3929  013330  013424                 MJSRC: .WORD   MJSR7           ;JSR VECTOR
3930                                  ;
3931                                  ;
3932  013332  022737  000005  001066 MJSR5:  CMP     #5,@#SEQ        ; TEST FOR CORRECT SEQUENCE
3933  013340  001403                        BEQ     MJSR5A          ;BRANCH IF GOOD
3934                                                                ;ERROR! MODE 5 JUMPED TO OUT OF SEQUENCE
3935  013342                          15$:
3936  013342  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3937  013344  000322                        .WORD   322             ;UNIQUE ERROR NUMBER
3938  013346  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3939
3940  013350  023706  001072          MJSR5A: CMP     @#SPSJ,R6       ;VERIFY STACK DECRIMENT
3941  013354  001006                        BNE     16$             ;BRANCH IF STACK INCORRECT
3942  013356  021627  000377                CMP     (R6),#377       ;VERIFY CONTENTS OF STACK
```

```
3943  013362  001003                        BNE     16$                     ;BRANCH IF DATA ON STACK INCORRECT
3944  013364  022704  013140                CMP     #MJSRB-2,R4             ;SEE IF CORRECT RETURN ADDRESS
3945  013370  001403                        BEQ     MJSR5B                  ;BRANCH IF GOOD
3946                                                                        ;ERROR! JSR MODE 5 FAILED
3947  013372                        16$:
3948  013372  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3949  013374  000323                        .WORD   323                     ;UNIQUE ERROR NUMBER
3950  013376  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3951
3952  013400  005237  001066        MJSR5B: INC     @#SEQ                   ;UPDATE SEQUENCE COUNTER
3953  013404  013706  001070                MOV     @#SPS,R6                ;RELOAD STACK POINTER
3954  013410  012704  123456                MOV     #123456,R4              ;SETUP DATA IN R4
3955  013414  012701  013246                MOV     #MJSR6+10,R1            ;SETUP JSR VECTOR
3956  013420  004461  177770                JSR     R4,-10(R1)              ;JUMP MODE 6
3957                                        ;
3958                                        ;
3959  013424  022737  000007  001066 MJSR7:  CMP     #7,@#SEQ                ; TEST FOR CORRECT SEQUENCE
3960  013432  001403                        BEQ     MJSR7A                  ;BRANCH IF GOOD
3961                                                                        ;ERROR! MODE 7 JUMPED TO OUT OF SEQUENCE
3962  013434                        17$:
3963  013434  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3964  013436  000324                        .WORD   324                     ;UNIQUE ERROR NUMBER
3965  013440  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3966
3967  013442  023706  001072        MJSR7A: CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
3968  013446  001006                        BNE     18$                     ;BRANCH IF STACK INCORRECT
3969  013450  021627  177773                CMP     (R6),#-5                ;VERIFY CONTENTS OF STAACK
3970  013454  001003                        BNE     18$                     ;BRANCH IF DATA ON STACK INCORRECT
3971  013456  022704  013330                CMP     #MJSR5-2,R4             ;SEE IF CORRECT RETURN ADDRESS
3972  013462  001403                        BEQ     MJSR7E                  ;BRANCH IF GOOD
3973                                                                        ;ERROR! JSR MODE 7 FAILED
3974  013464                        18$:
3975  013464  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3976  013466  000325                        .WORD   325                     ;UNIQUE ERROR NUMBER
3977  013470  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3978
3979  013472                        MJSR7E:
3980  013472  013706  001070                MOV     @#SPS,R6                ;REPLACE STACK
3981
3982                                        ;
3983  013476                        MJRA:
3984                                        ;;*****************************************************************
3985                                        ;*TEST 124       TEST JSR MODES 27, 37, 67, 77
3986                                        ;;*****************************************************************
3987  013476                        TST124:
3988  013476  005267  165302                INC     #TESTN                  ;INCREMENT TEST NUMBER
3989  013502  012737  000001  001066        MOV     #1,@#SEQ                ;SETUP SEQUENCER
3990  013510  010637  001070                MOV     R6,@#SPS                ;SAVE STACK ADDRESS
3991  013514  010637  001072                MOV     R6,@#SPSJ               ;SAVE STACK DECRIMENT ADDRESS
3992  013520  162737  000002  001072        SUB     #2,@#SPSJ               ;
3993  013526  012704  177777                MOV     #-1,R4                  ;SETUP R4 DATA
3994  013532  004427  000240                JSR     R4,#240                 ;EXECUTE A JSR MODE 27
3995                                        ;
3996  013536  022737  000001  001066 MJR27:  CMP     #1,@#SEQ                ;VERIFY COERRECT TEST SEQUENCE
3997  013544  001011                        BNE     1$                      ;INCORRECT TEST SEQUENCE
3998  013546  023706  001072                CMP     @#SPSJ,R6               ;VERIFY STACK POINTER
```

```
 3999  013552  001006                          BNE     1$
 4000  013554  021627  177777                  CMP     (R6),#-1        ;VERIFY R4 GOT LOADED ON THE STACK
 4001  013560  001003                          BNE     1$              ;BRANCH IF INCORRECT STACK CONTENTS
 4002  013562  020427  013536                  CMP     R4,#MJR27       ;VERIFY CORRECT RETURN ADDRESS
 4003  013566  001403                          BEQ     MJR27A          ;BRANCH IF GOOD RETURN ADDRESS ON STACK
 4004                                                                  ;ERROR! MODE 27 FAILED
 4005  013570                          1$:
 4006  013570  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 4007  013572  000326                          .WORD   326             ;UNIQUE ERROR NUMBER
 4008  013574  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 4009
 4010  013576  005237  001066          MJR27A: INC     @#SEQ           ;UPDATE SEQUENCER
 4011  013602  012704  152525                  MOV     #152525,R4      ;SETUP R4 TEST DATA
 4012  013606  013706  001070                  MOV     @#SPS,R6        ;RESET STACK POINTER
 4013  013612  004437  013704                  JSR     R4,@#MJR37      ;JSR MODE 37
 4014  013616  000000          MJR27B: HALT
 4015                                  ;
 4016  013620  023727  001066  000003  MJR67:  CMP     @#SEQ,#3        ;VERIFY TEST SEQUENCE
 4017  013626  001011                          BNE     2$              ;INCORRECT TEST SEQUENCE
 4018  013630  023706  001072                  CMP     @#SPSJ,R6       ;VERIFY STACK DECRIMENT
 4019  013634  001006                          BNE     2$              ;INCORRECT STACK DECRIMENT
 4020  013636  021627  000125                  CMP     (R6),#125       ;VERFIFY STACK WAS LOADED
 4021  013642  001003                          BNE     2$
 4022  013644  020427  013764                  CMP     R4,#MJR77       ;VERIFY RETURN ADDRESS
 4023  013650  001403                          BEQ     MJR67A          ;BRANCH IF GOOD
 4024                                                                  ;ERROR! MODE 67 FAILED
 4025  013652                          2$:
 4026  013652  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 4027  013654  000327                          .WORD   327             ;UNIQUE ERROR NUMBER
 4028  013656  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 4029
 4030  013660  005237  001066          MJR67A: INC     @#SEQ           ;UPDATE SEQUENCER
 4031  013664  013706  001070                  MOV     @#SPS,R6        ;RESET STACK
 4032  013670  012704  000001                  MOV     #1,R4           ;SETUP R4 DATA
 4033  013674  004477  000002                  JSR     R4,@MJR6B       ;JSR MODE 77
 4034  013700  000000          MJR6A:  HALT
 4035  013702  013764          MJR6B:  .WORD   MJR77                   ;DATA FOR MODE 77 JUMP
 4036                                  ;
 4037  013704  023727  001066  000002  MJR37:  CMP     @#SEQ,#2        ;VERIFY TEST SEQUENCE
 4038  013712  001011                          BNE     2$              ;INCORRECT TEST SEQUENCE
 4039  013714  023706  001072                  CMP     @#SPSJ,R6       ;VERIFY STACK DECRIMENT
 4040  013720  001006                          BNE     2$              ;INCORRECT STACK DECRIMENT
 4041  013722  021627  152525                  CMP     (R6),#152525    ;VERFIFY STACK WAS LOADED
 4042  013726  001003                          BNE     2$
 4043  013730  020427  013616                  CMP     R4,#MJR27B      ;VERIFY RETURN ADDRESS
 4044  013734  001403                          BEQ     MJR37A          ;BRANCH IF GOOD
 4045                                                                  ;ERROR! MODE 37 FAILED
 4046  013736                          2$:
 4047  013736  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 4048  013740  000330                          .WORD   330             ;UNIQUE ERROR NUMBER
 4049  013742  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 4050
 4051  013744  005237  001066          MJR37A: INC     @#SEQ           ;UPDATE SEQUENCER
 4052  013750  013706  001070                  MOV     @#SPS,R6        ;RELOAD STACK
 4053  013754  012704  000125                  MOV     #125,R4         ;SETUP R4 TEST DATA
 4054  013760  004467  177634                  JSR     R4,MJR67        ;JSR MODE 6
```

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4055
4056  013764  023727  001066  000004  MJR77:  CMP     @#SEQ,#4                ;VERIFY TEST SEQUENCE
4057  013772  001011                          BNE     2$                      ;INCORRECT TEST SEQUENCE
4058  013774  023706  001072                  CMP     @#SPSJ,R6               ;VERIFY STACK DECRIMENT
4059  014000  001006                          BNE     2$                      ;INCORRECT STACK DECRIMENT
4060  014002  021627  000001                  CMP     (R6),#1                 ;VERFIFY STACK WAS LOADED
4061  014006  001003                          BNE     2$
4062  014010  020427  013700                  CMP     R4,#MJR6A               ;VERIFY RETURN ADDRESS
4063  014014  001403                          BEQ     MJR77A                  ;BRANCH IF GOOD
4064                                                                          ;ERROR! MODE 77 FAILED
4065  014016                          2$:
4066  014016  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4067  014020  000331                          .WORD   331                     ;UNIQUE ERROR NUMBER
4068  014022  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4069
4070  014024                          MJR77A:
4071                                  ;
4072  014024  013706  001070                  MOV     @#SPS,R6                ;RESET STACK
4073
4074                                  ;
4075  014030                          MRTS:
4076                                  ;;*****************************************************************
4077                                  ;*TEST 125      TEST RTS AND RTS R6
4078                                  ;;*****************************************************************
4079  014030                          TST125:
4080  014030  005267  164750                  INC     @#TESTN                 ;INCREMENT TEST NUMBER
4081  014034  012706  001000                  MOV     #STBOT,R6               ;INSURE VALID STACK
4082  014040  012746  123456                  MOV     #123456,-(R6)           ;SETUP TEST REGISTER
4083  014044  012703  014060                  MOV     #RTS1,R3                ;SETUP TEST PC
4084  014050  000203                          RTS     R3                      ;**TEST INSTRUCTION
4085  014052  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4086  014054  000332                          .WORD   332                     ;UNIQUE ERROR NUMBER
4087  014056  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4088                                                                  ;INCORRECT PC ON RTS
4089
4090  014060  022703  123456          RTS1:   CMP     #123456,R3
4091  014064  001403                          BEQ     RTS6                    ;BRANCH IF GOOD
4092                                                                          ;ERROR! REGISTER CONTENTS INCORRECT
4093  014066  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4094  014070  000333                          .WORD   333                     ;UNIQUE ERROR NUMBER
4095  014072  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4096
4097
4098                                  ;
4099                                  ;THIS TEST CHECKS AN UN-TESTED PLA TERM
4100  014074  010601                  ;
4101  014076  012705  014114          RTS6:   MOV     R6,R1                   ;SAVE STACK IN R1
4102  014102  010506                          MOV     #1$,R5                  ;MOVE EXPECTED RETURN ADDR TO R5
4103  014104  000206                          MOV     R5,R6                   ;MOVE RETURN ADDR TO R6
4104                                          RTS     R6                      ;>>>>>>TEST INSTRUCTION<<<<<<
4105  014106  104000                                                          ;ERROR! RTS NOT EXECUTED
4106  014110  000334                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4107  014112  001127                          .WORD   334                     ;UNIQUE ERROR NUMBER
4108  014114  021506                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4109  014116  001403                  1$:     CMP     (R5),R6                 ;IS R6=31506?
4110                                          BEQ     RTSE                    ;IF IT IS THEN GO TO END OF TEST
                                                                              ;ERROR! WRONG ADDR IN R6
```

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4111  014120  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4112  014122  000335                        .WORD   335             ;UNIQUE ERROR NUMBER
4113  014124  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4114  014126  010106                RTSE:   MOV     R1,R6           ;RESTORE STACK
4115
4116  014130                        TSMMUO:
4117                                ;;*****************************************************************
4118                                ;*TEST 126      SETUP AND TEST KERNEL, SUPERVISOR AND USER STACKS
4119                                ;;*****************************************************************
4120  014130                        TST126:
4121  014130  005267  164650                INC     $TESTN          ;INCREMENT TEST NUMBER
4122  014134  012737  040000  177776        MOV     #40000,@#177776 ;SET PS TO SUP MODE
4123  014142  012706  177777                MOV     #177777,R6      ;INIT SUP STACK TO ALL ONES
4124  014146  022706  177777                CMP     #177777,R6      ;ARE ALL BITS SET
4125  014152  001403                        BEQ     1$              ;YES GO ON
4126                                                                ;NO GO TO ERROR
4127  014154  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4128  014156  000336                        .WORD   336             ;UNIQUE ERROR NUMBER
4129  014160  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4130
4131  014162  005006                1$:     CLR     R6              ;SET SUP STACK TO ALL ZEROES
4132  014164  022706  000000                CMP     #0,R6           ;ARE ALL BITS CLEARED
4133  014170  001403                        BEQ     2$              ;YES GO ON
4134                                                                ;NO GO TO ERROR
4135  014172  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4136  014174  000337                        .WORD   337             ;UNIQUE ERROR NUMBER
4137  014176  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4138
4139  014200  012706  125252        2$:     MOV     #125252,R6      ;SET SUP STACK TO ALTERNATING PATTERN
4140  014204  022706  125252                CMP     #125252,R6      ;IS SUP SP CORRECT
4141  014210  001403                        BEQ     3$              ;YES GO ON
4142                                                                ;NO GO TO ERROR
4143  014212  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4144  014214  000340                        .WORD   340             ;UNIQUE ERROR NUMBER
4145  014216  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4146
4147  014220  012706  052525        3$:     MOV     #52525,R6       ;SET SUP STACK TO ALTERNATING PATTERN
4148  014224  022706  052525                CMP     #52525,R6       ;IS SUP SP CORRECT
4149  014230  001403                        BEQ     4$              ;YES GO ON
4150                                                                ;NO GO TO ERROR
4151  014232  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4152  014234  000341                        .WORD   341             ;UNIQUE ERROR NUMBER
4153  014236  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4154
4155  014240  012706  000700        4$:     MOV     #700,R6         ;SETUP SUP SP
4156  014244  012737  140000  177776        MOV     #140000,@#177776 ;SET PS TO USER MODE
4157  014252  012706  177777                MOV     #177777,R6      ;INIT USER STACK TO ALL ONES
4158  014256  022706  177777                CMP     #177777,R6      ;ARE ALL BITS SET
4159  014262  001403                        BEQ     5$              ;YES GO ON
4160                                                                ;NO GO TO ERROR
4161  014264  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4162  014266  000342                        .WORD   342             ;UNIQUE ERROR NUMBER
4163  014270  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4164
4165  014272  005006                5$:     CLR     R6              ;SET USER STACK TO ALL ZEROES
4166  014274  022706  000000                CMP     #0,R6           ;ARE ALL BITS CLEARED
```

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4167  014300  001403                    BEQ     6$                      ;YES GO ON
4168                                                                      ;NO GO TO ERROR
4169  014302  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4170  014304  000343                    .WORD   343                     ;UNIQUE ERROR NUMBER
4171  014306  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4172
4173  014310  012706  125252      6$:   MOV     #125252,R6              ;SET USER STACK TO ALTERNATING PATTERN
4174  014314  022706  125252            CMP     #125252,R6              ;IS USER SP CORRECT
4175  014320  001403                    BEQ     7$                      ;YES GO ON
4176                                                                      ;NO GO TO ERROR
4177  014322  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4178  014324  000344                    .WORD   344                     ;UNIQUE ERROR NUMBER
4179  014326  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4180
4181  014330  012706  052525      7$:   MOV     #52525,R6               ;SET USER STACK TO ALTERNATING PATTERN
4182  014334  022706  052525            CMP     #52525,R6               ;IS USER SP CORRECT
4183  014340  001403                    BEQ     8$                      ;YES GO ON
4184                                                                      ;NO GO TO ERROR
4185  014342  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4186  014344  000345                    .WORD   345                     ;UNIQUE ERROR NUMBER
4187  014346  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4188
4189  014350  012706  000600      8$:   MOV     #600,R6                 ;SETUP USER SP
4190  014354  005037  177776            CLR     @#177776                ;SET PS TO KER MODE
4191  014360  012706  001000            MOV     #STBOT,R6               ;SETUP KERNEL SP
4192  014364  005037  000700            CLR     @#700                   ;CLEAR FIRST WORDS OF SUP, KER, AND USE STACKS
4193  014370  005037  000600            CLR     @#600                   ;
4194  014374  005037  001000            CLR     @#STBOT                 ;
4195  014400  004767  000070            JSR     PC,CHECK                ; TEST KER, SUP, AND USE STACKS
4196  014404  012737  040000  177776 RET1:  MOV     #40000,@#177776         ;SET PSW TO SUP MODE
4197  014412  022706  000700            CMP     #700,R6                 ;IS SUP SP CORRECT
4198  014416  001403                    BEQ     1$                      ;YES GO ON
4199                                                                      ;NO GO TO ERROR
4200  014420  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4201  014422  000346                    .WORD   346                     ;UNIQUE ERROR NUMBER
4202  014424  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4203
4204  014426  012737  140000  177776 1$:   MOV     #140000,@#177776        ;SET PSW TO USE MODE
4205  014434  022706  000600            CMP     #600,R6                 ;IS USE SP CORRECT
4206  014440  001403                    BEQ     2$                      ;YES GO ON
4207                                                                      ;NO GO TO ERROR
4208  014442  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4209  014444  000347                    .WORD   347                     ;UNIQUE ERROR NUMBER
4210  014446  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4211
4212  014450  005037  177776      2$:   CLR     @#177776                ;SET PSW TO KER MODE
4213  014454  022706  001000            CMP     #STBOT,R6               ;IS KER SP CORRECT
4214  014460  001403                    BEQ     3$                      ;YES GO ON
4215                                                                      ;NO GO TO ERROR
4216  014462  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4217  014464  000350                    .WORD   350                     ;UNIQUE ERROR NUMBER
4218  014466  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4219
4220  014470                      3$:
4221
4222  014470  000167  000252            JMP     MTSO
```

```
4223                                    ;
4224                                    ;ROUTINE TO CHECK STACKS AFTER TWO RTS STATEMENTS
4225                                    ;
4226  014474  012737  040000  177776  CHECK:  MOV     #40000,@#177776         ;SET PSW TO SUP MODE
4227  014502  004767  000060                  JSR     PC,CHECK1               ; TEST SUP, KER, AND USE STACKS
4228  014506  022716  000000          RET2:   CMP     #0,(SP)                 ;IS SUP STACK CLEARED
4229  014512  001403                          BEQ     1$                      ;YES GO ON
4230                                                                          ;NO GO TO ERROR
4231  014514  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4232  014516  000351                          .WORD   351                     ;UNIQUE ERROR NUMBER
4233  014520  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4234
4235  014522  012737  140000  177776  1$:     MOV     #140000,@#177776        ;SET PSW TO USE MODE
4236  014530  022716  000000                  CMP     #0,(SP)                 ;IS USE STACK CLEARED
4237  014534  001403                          BEQ     2$                      ;YES GO ON
4238                                                                          ;NO GO TO ERROR
4239  014536  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4240  014540  000352                          .WORD   352                     ;UNIQUE ERROR NUMBER
4241  014542  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4242
4243  014544  005037  177776          2$:     CLR     @#177776                ;SET PSW TO KER MODE
4244  014550  022716  014404                  CMP     #RET1,(SP)              ;DOES KER STACK HAVE CORRECT DATA
4245  014554  001403                          BEQ     3$                      ;YES GO ON
4246                                                                          ;NO GO TO ERROR
4247  014556  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4248  014560  000353                          .WORD   353                     ;UNIQUE ERROR NUMBER
4249  014562  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4250
4251  014564  000207                  3$:     RTS     PC                      ;RETURN
4252                                    ;
4253                                    ;ROUTINE TO CHECK STACKS AFTER ONE RTS
4254                                    ;
4255  014566  012737  140000  177776  CHECK1: MOV     #140000,@#177776        ;SET PSW TO USE MODE
4256  014574  004767  000060                  JSR     PC,CHECK2               ; TEST KER, SUP, AND USE STACKS
4257  014600  022716  000000          RET3:   CMP     #0,(SP)                 ;IS USE STACK CLEARED
4258  014604  001403                          BEQ     1$                      ;YES GO ON
4259                                                                          ;NO GO TO ERROR
4260  014606  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4261  014610  000354                          .WORD   354                     ;UNIQUE ERROR NUMBER
4262  014612  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4263
4264  014614  005037  177776          1$:     CLR     @#177776                ;SET PSW TO KER MODE
4265  014620  022716  014404                  CMP     #RET1,(SP)              ;IS KER STACK CORRECT
4266  014624  001403                          BEQ     2$                      ;YES GO ON
4267                                                                          ;NO GO TO ERROR
4268  014626  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4269  014630  000355                          .WORD   355                     ;UNIQUE ERROR NUMBER
4270  014632  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4271
4272  014634  012737  040000  177776  2$:     MOV     #40000,@#177776         ;SET PSW TO SUP MODE
4273  014642  022716  014506                  CMP     #RET2,(SP)              ;IS SUP STACK CORRECT
4274  014646  001403                          BEQ     3$                      ;YES GO ON
4275                                                                          ;NO GO TO ERROR
4276  014650  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4277  014652  000356                          .WORD   356                     ;UNIQUE ERROR NUMBER
4278  014654  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
4279
4280  014656  000207                    3$:     RTS     PC                      ;RETURN
4281
4282                                      ;
4283                                      ;ROUTINE TO CHECK STACKS AFTER ZERO RTS
4284                                      ;
4284  014660  022716  014600            CHECK2: CMP     @RET3,(SP)              ;IS USE STACK CORRECT
4285  014664  001403                            BEQ     1$                      ;YES GO ON
4286                                                                            ;NO GO TO ERROR
4287  014666  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4288  014670  000357                            .WORD   357                     ;UNIQUE ERROR NUMBER
4289  014672  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4290
4291  014674  012737  040000  177776  1$:     MOV     @40000,@@177776         ;SET PSW TO SUP MODE
4292  014702  022716  014506                  CMP     @RET2,(SP)              ;IS SUP STACK CORRECT
4293  014706  001403                            BEQ     2$                      ;YES GO ON
4294                                                                            ;NO GO TO ERROR
4295  014710  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4296  014712  000360                            .WORD   360                     ;UNIQUE ERROR NUMBER
4297  014714  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4298
4299  014716  005037  177776            2$:     CLR     @@177776               ;SET PSW TO KER MODE
4300  014722  022716  014404                  CMP     @RET1,(SP)              ;IS KER STACK CORRECT
4301  014726  001403                            BEQ     3$                      ;YES GO ON
4302                                                                            ;NO GO TO ERROR
4303  014730  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4304  014732  000361                            .WORD   361                     ;UNIQUE ERROR NUMBER
4305  014734  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4306
4307  014736  012737  140000  177776  3$:     MOV     #140000,@@177776        ;SET PSW TO USE MODE
4308  014744  000207                            RTS     PC                      ;RETURN
4309                                      ;
4310  014746                            MTSO:
4311  014746                            MMVCC:
4312                                      ;;*********************************************************************
4313                                      ;*TEST 127      TEST MOV CONDITION CODES - **0-
4314                                      ;;*********************************************************************
4315  014746                            TST127:
4316  014746  005267  164032                    INC     $TESTN                  ;INCREMENT TEST NUMBER
4317  014752  000277                            SCC                             ;
4318  014754  000244                            CLZ                             ;CC=1011
4319  014756  012704  000000                    MOV     #0,R4                   ;CC=0101, R4=0
4320  014762  100403                            BMI     1$                      ;ERROR IF N FLAG
4321  014764  102402                            BVS     1$                      ;ERROR IF V FLAG SET
4322  014766  103001                            BCC     1$                      ;ERROR IF C FLAG CLEAR
4323  014770  001403                            BEQ     2$                      ;SKIP IF Z FLAG SET
4324                                                                            ;CC SHOULD=0101
4325  014772                            1$:
4326  014772  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4327  014774  000362                            .WORD   362                     ;UNIQUE ERROR NUMBER
4328  014776  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4329
4330  015000  000277                    2$:     SCC
4331  015002  000251                            .WORD   251                     ;CC=0110
4332  015004  012704  100000                    MOV     #100000,R4              ;R4=100000, CC=1000
4333  015010  001403                            BEQ     3$                      ;ERROR IF Z SET
4334  015012  102402                            BVS     3$                      ;ERROR IF V SET
```

```
4335  015014  103401                  BCS     3$                      ;ERROR IF C SET
4336  015016  100403                  BMI     4$                      ;EXIT IF N SET
4337                                                                    ;ERROR! CC SHOULD= 1000
4338  015020                  3$:
4339  015020  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4340  015022  000363                  .WORD   363                     ;UNIQUE ERROR NUMBER
4341  015024  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4342
4343  015026                  4$:
4344
4345
4346  015026                  MBTCC:
4347                          ;;*************************************************************************
4348                          ;*TEST 130       TEST BIT CONDITION CODES - **0-
4349                          ;;*************************************************************************
4350  015026                  TST130:
4351  015026  005267  163752          INC     $TESTN                  ;INCREMENT TEST NUMBER
4352  015032  005004                  CLR     R4
4353  015034  005104                  COM     R4                      ;R4=-1
4354  015036  000277                  SCC                             ;
4355  015040  000244                  CLZ                             ;CC=1011
4356  015042  032704  000000          BIT     #0,R4                   ;CC=0101
4357  015046  100403                  BMI     1$                      ;ERROR IF N FLAG
4358  015050  102402                  BVS     1$                      ;ERROR IF V FLAG SET
4359  015052  103001                  BCC     1$                      ;ERROR IF C FLAG CLEAR
4360  015054  001403                  BEQ     2$                      ;SKIP IF Z FLAG SET
4361                                                                  ;ERROR! CC SHOULD=0101
4362  015056                  1$:
4363  015056  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4364  015060  000364                  .WORD   364                     ;UNIQUE ERROR NUMBER
4365  015062  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4366
4367  015064  000277          2$:     SCC
4368  015066  000251                  .WORD   251                     ;CC=0110
4369  015070  032704  100000          BIT     #100000,R4              ;CC=1000
4370  015074  001403                  BEQ     3$                      ;ERROR IF Z SET
4371  015076  102402                  BVS     3$                      ;ERROR IF V SET
4372  015100  103401                  BCS     3$                      ;ERROR IF C SET
4373  015102  100403                  BMI     4$                      ;EXIT IF N SET
4374                                                                  ;ERROR! CC SHOULD= 1000
4375  015104                  3$:
4376  015104  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4377  015106  000365                  .WORD   365                     ;UNIQUE ERROR NUMBER
4378  015110  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4379
4380  015112                  4$:
4381
4382
4383  015112                  MBCCC:
4384                          ;;*************************************************************************
4385                          ;*TEST 131       TEST BIC CONDITION CODES - **0-
4386                          ;;*************************************************************************
4387  015112                  TST131:
4388  015112  005267  163666          INC     $TESTN                  ;INCREMENT TEST NUMBER
4389  015116  005004                  CLR     R4
4390  015120  005104                  COM     R4                      ;R4=-1
```

```
4391  015122  000277                        SCC
4392  015124  000244                        CLZ                     ;CC=1011
4393  015126  042704  177777                BIC     #177777,R4      ;CC=0101
4394  015132  100403                        BMI     1$              ;ERROR IF N FLAG
4395  015134  102402                        BVS     1$              ;ERROR IF V FLAG SET
4396  015136  103001                        BCC     1$              ;ERROR IF C FLAG CLEAR
4397  015140  001403                        BEQ     2$              ;SKIP IF Z FLAG SET
4398                                                                ;ERROR! CC SHOULD=0101
4399  015142                        1$:
4400  015142  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4401  015144  000366                        .WORD   366             ;UNIQUE ERROR NUMBER
4402  015146  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4403
4404  015150  005104                2$:     COM     R4              ;R4=-1
4405  015152  000277                        SCC
4406  015154  000251                        .WORD   251             ;CC=0110
4407  015156  042704  077777                BIC     #77777,R4       ;CC=1000
4408  015162  001403                        BEQ     3$              ;ERROR IF Z SET
4409  015164  102402                        BVS     3$              ;ERROR IF V SET
4410  015166  103401                        BCS     3$              ;ERROR IF C SET
4411  015170  100403                        BMI     4$              ;EXIT IF N SET
4412                                                                ;ERROR! CC SHOULD= 1000
4413  015172                        3$:
4414  015172  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4415  015174  000367                        .WORD   367             ;UNIQUE ERROR NUMBER
4416  015176  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4417
4418  015200                        4$:
4419
4420
4421  015200                        MBSCC:
4422                                ;;**********************************************************
4423                                ;*TEST 132      TEST BIS CONDITION CODES
4424                                ;;**********************************************************
4425  015200                        TST132:
4426  015200  005267  163600                INC     $TESTN          ;INCREMENT TEST NUMBER
4427  015204  005004                        CLR     R4              ;R4=0
4428  015206  000277                        SCC
4429  015210  000246                        .WORD   246             ;CC=1001
4430  015212  052704  000000                BIS     #0,R4           ;R4=0, CC=0101
4431  015216  100403                        BMI     1$              ;ERROR IF MINUS
4432  015220  102402                        BVS     1$              ;ERROR IF V SET
4433  015222  103001                        BCC     1$              ;ERROR IF C CLEAR
4434  015224  001403                        BEQ     2$              ;BRANCH IF GOOD
4435                                                                ;ERROR! BIS CC FAILED
4436  015226                        1$:
4437  015226  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
4438  015230  000370                        .WORD   370             ;UNIQUE ERROR NUMBER
4439  015232  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
4440
4441  015234  000277                2$:     SCC
4442  015236  000241                        CLC                     ;CC=1110
4443  015240  052704  100076                BIS     #100076,R4      ;R4=100076, CC=1000
4444  015244  001403                        BEQ     3$              ;ERROR IF Z SET
4445  015246  102402                        BVS     3$              ;ERROR IF V SET
4446  015250  103401                        BCS     3$              ;ERROR IF C SET
```

```
4447  015252  100403                        BMI     4$                      ;BRANCH IF GOOD
4448                                                                          ;ERROR! BAD BIS CC
4449  015254                              3$:
4450  015254  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4451  015256  000371                        .WORD   371                     ;UNIQUE ERROR NUMBER
4452  015260  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4453
4454  015262                              4$:
4455
4456
4457  015262                              MDCCC:
4458                                      ;;**************************************************************
4459                                      ;*TEST 133       TEST DEC, INC CONDITION CODES
4460                                      ;;**************************************************************
4461  015262                              TST133:
4462  015262  005267  163516                INC     $TESTN                  ;INCREMENT TEST NUMBER
4463  015266  012704  077777                MOV     #77777,R4               ;R4=77777
4464  015272  000257                        CCC
4465  015274  000261                        SEC                             ;CC=0001
4466  015276  005204                        INC     R4                      ;R4=100000, CC=0011
4467  015300  001403                        BEQ     1$                      ;ERROR IF ZERO
4468  015302  100002                        BPL     1$                      ;ERROR IF POSITIVE
4469  015304  102001                        BVC     1$                      ;ERROR IF V CLEAR
4470  015306  103403                        BCS     2$                      ;BRANCH IF GOOD
4471                                                                          ;ERROR! INC FAILED
4472  015310                              1$:
4473  015310  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4474  015312  000372                        .WORD   372                     ;UNIQUE ERROR NUMBER
4475  015314  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4476
4477  015316  000257                      2$:     CCC
4478  015320  005204                        INC     R4                      ;R4=100001, CC=1000
4479  015322  103413                        BCS     3$                      ;ERROR IF C SET
4480  015324  102412                        BVS     3$                      ;ERROR IF V SET
4481  015326  005304                        DEC     R4                      ;R4=100000, CC=1000
4482  015330  102410                        BVS     3$                      ;ERROR IF V SET
4483  015332  103407                        BCS     3$                      ;ERROR IF C SET
4484  015334  000277                        SCC                             ;
4485  015336  000252                        .WORD   252                     ;CC=0101
4486  015340  005304                        DEC     R4                      ;R4=77777, CC=1011
4487  015342  001403                        BEQ     3$                      ;ERROR IF Z SET
4488  015344  102002                        BVC     3$                      ;ERROR IF V CLEAR
4489  015346  103001                        BCC     3$                      ;ERROR IF C CLEAR
4490  015350  100003                        BPL     4$                      ;BRANCH IF GOOD
4491                                                                          ;ERROR! BAD CC
4492  015352                              3$:
4493  015352  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4494  015354  000373                        .WORD   373                     ;UNIQUE ERROR NUMBER
4495  015356  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4496
4497  015360                              4$:
4498
4499
4500  015360                              MCTSCC:
4501                                      ;;**************************************************************
4502                                      ;*TEST 134       TEST CLR, TST, SWAB CONDITION CODES
```

```
                                ;;*****************************************************************
                                ;0100 - **00 - **00
                                ;;*****************************************************************
                                TST134:
015360                                  INC     @TESTN                  ;INCREMENT TEST NUMBER
015360  005267  163420                  SCC
015364  000277                          CLZ                             ;CC=1011
015366  000244                          CLR     R4                      ;R4=0, CC=0100
015370  005004                          BMI     1@                      ;ERROR IF MINUS
015372  100403                          BVS     1@                              ;ERROR IF V SET
015374  102402                          BCS     1@                      ;ERROR IF C SET
015376  103401                          BEQ     2@                      ;BRANCH IF GOOD
015400  001403                                                          ;ERROR! BAD CC ON CLR
                                1@:
015402                                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015402  104000                          .WORD   374                     ;UNIQUE ERROR NUMBER
015404  000374                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
015406  001127
                                2@:     COM     R4                      ;R4=-1
015410  005104                          SCC                             ;CC=1111
015412  000277                          TST     R4                      ;CC=1000
015414  005704                          BEQ     3@                      ;ERROR IF Z SET
015416  001403                          BVS     3@                      ;ERROR IF V SET
015420  102402                          BCS     3@                      ;ERROR IF C SET
015422  103401                          BMI     4@                      ;BRANCH IF GOOD
015424  100403                                                          ;ERROR! BAD TST CC
                                3@:
015426                                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015426  104000                          .WORD   375                     ;UNIQUE ERROR NUMBER
015430  000375                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
015432  001127
                                4@:     SCC                             ;CC=1111
015434  000277                          SWAB    R4                      ;CC=1000
015436  000304                          BVS     5@                      ;ERROR IF V SET
015440  102402                          BCS     5@                      ;ERROR IF C SET
015442  103401                          BMI     6@                      ;BRANCH IF GOOD
015444  100403                                                          ;ERROR! BAD SWAB CC
                                5@:
015446                                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015446  104000                          .WORD   376                     ;UNIQUE ERROR NUMBER
015450  000376                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
015452  001127
                                6@:

015454                          MADCC:
                                ;;*****************************************************************
                                ;*TEST 135       TEST ADD CONDITION CODCS - ****
                                ;;*****************************************************************
015454                          TST135:
015454  005267  163324                INC     @TESTN                  ;INCREMENT TEST NUMBER
015460  012704  077777                MOV     #77777,R4               ;R4=77777
015464  012701  000001                MOV     #1,R1                   ;R1=1
015470  000257                        CCC                             ;CC=0000
015472  060401                        ADD     R4,R1                   ;77777 + 1 = 100000 IN R1
015474  102003                        BVC     1@                      ;ERROR IF V CLEAR
```

```
4559  015476  103402                    BCS     1$                      ;ERROR IF CARRY
4560  015500  001401                    BEQ     1$                      ;ERROR IF Z SET
4561  015502  100403                    BMI     2$                      ;BRANCH IF GOOD
4562                                                                      ;ERROR! CC SHOULD =1010
4563  015504                    1$:
4564  015504  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4565  015506  000377                    .WORD   377                     ;UNIQUE ERROR NUMBER
4566  015510  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4567
4568  015512  005204            2$:     INC     R4                      ;R4=100000
4569  015514  060401                    ADD     R4,R1                   ;100000 + 100000 = 0 IN R1
4570  015516  102002                    BVC     3$                      ;ERROR IF V CLEAR
4571  015520  103001                    BCC     3$                      ;ERROR IF CARRY  CLEAR
4572  015522  001403                    BEQ     4$                      ;BRANCH IF GOOD
4573                                                                      ;ERROR! CC SHOULD = 0111
4574  015524                    3$:
4575  015524  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4576  015526  000400                    .WORD   400                     ;UNIQUE ERROR NUMBER
4577  015530  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4578
4579  015532  060401            4$:     ADD     R4,R1                   ;0 + 100000 = 100000
4580  015534  102402                    BVS     5$                      ;ERROR IF V SET
4581  015536  103401                    BCS     5$                      ;ERROR IF  SET
4582  015540  100403                    BMI     6$                      ;BRANCH IF GOOD
4583                                                                      ;ERROR! CC SHOULD = 1000
4584  015542                    5$:
4585  015542  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4586  015544  000401                    .WORD   401                     ;UNIQUE ERROR NUMBER
4587  015546  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4588
4589  015550                    6$:
4590
4591
4592  015550                    MACCC:
4593                              ;;*****************************************************************
4594                              ;*TEST 136      TEST ADC CONDITION CODES - ****
4595                              ;;*****************************************************************
4596  015550                    TST136:
4597  015550  005267  163230            INC     $TESTN                  ;INCREMENT TEST NUMBER
4598  015554  012704  177777            MOV     #177777,R4              ;R4=177777
4599  015560  000277                    SCC                             ;CC=1111
4600  015562  005504                    ADC     R4                      ;R4=0 CC=0101
4601  015564  100403                    BMI     1$                      ;ERROR IF MINUS
4602  015566  102402                    BVS     1$                      ;ERROR IF V SET
4603  015570  103001                    BCC     1$                      ;ERROR IF C SET
4604  015572  001403                    BEQ     2$                      ;BRANCH IF GOOD
4605                                                                      ;ERROR! BAD ADC
4606  015574                    1$:
4607  015574  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4608  015576  000402                    .WORD   402                     ;UNIQUE ERROR NUMBER
4609  015600  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4610
4611  015602  012704  077777    2$:     MOV     #077777,R4              ;R4=077777
4612  015606  000277                    SCC                             ;
4613  015610  000242                    CLV                             ;CC=1101
4614  015612  005504                    ADC     R4                      ;R4=100000 CC=1010
```

```
4615  015614  100003                  BPL     3$                      ;ERROR IF PLUS
4616  015616  103402                  BCS     3$                      ;ERROR IF C SET
4617  015620  001401                  BEQ     3$                      ;ERROR IF ZERO
4618  015622  102403                  BVS     4$                      ;BRANCH IF GOOD
4619                                                                  ;ERROR! BAD ADC
4620  015624                  3$:
4621  015624  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4622  015626  000403                  .WORD   403                     ;UNIQUE ERROR NUMBER
4623  015630  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4624
4625  015632  000277          4$:     SCC                             ;CC=1111
4626  015634  005504                  ADC     R4                      ;R4=100000 CC=1000
4627  015636  102402                  BVS     5$                      ;ERROR IF V SET
4628  015640  103401                  BCS     5$                      ;ERROR IF C SET
4629  015642  100403                  BMI     6$                      ;BRANCH IF GOOD
4630                                                                  ;ERROR! BAD ADC CC SHOULD= 1000
4631  015644                  5$:
4632  015644  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4633  015646  000404                  .WORD   404                     ;UNIQUE ERROR NUMBER
4634  015650  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4635
4636  015652                  6$:
4637
4638
4639  015652                  MNCCCC:
4640                          ;;*****************************************************************
4641                          ;*TEST 137      TEST NEG, CMP, COM CONDITION CODES
4642                          ;;*****************************************************************
4643  015652                  TST137:
4644  015652  005267  163126          INC     $TESTN                  ;INCREMENT TEST NUMBER
4645  015656  012704  077777          MOV     #077777,R4              ;R4=77777
4646  015662  000257                  CCC                             ;CC=0000
4647  015664  005404                  NEG     R4                      ;R4=100001      CC=1001
4648  015666  102403                  BVS     1$                      ;ERROR IF V SET
4649  015670  103002                  BCC     1$                      ;ERROR IF C CLEAR
4650  015672  001401                  BEQ     1$                      ;ERROR IF Z SET
4651  015674  100403                  BMI     2$                      ;BRANCH IF GOOD
4652                                                                  ;ERROR! BAD NEGATE
4653  015676                  1$:
4654  015676  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4655  015700  000405                  .WORD   405                     ;UNIQUE ERROR NUMBER
4656  015702  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4657
4658  015704  005004          2$:     CLR     R4                      ;R4=0
4659  015706  000257                  CCC                             ;CC=0000
4660  015710  005404                  NEG     R4                      ;CC=0101
4661  015712  100403                  BMI     3$                      ;ERROR IF N SET
4662  015714  103402                  BCS     3$                      ;ERROR IF C SET
4663  015716  102401                  BVS     3$                      ;ERROR IF V SET
4664  015720  001403                  BEQ     4$                      ;BRANCH IF GOOD
4665                                                                  ;ERROR! BAD NEG
4666  015722                  3$:
4667  015722  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4668  015724  000406                  .WORD   406                     ;UNIQUE ERROR NUMBER
4669  015726  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4670
```

```
4671  015730  012704  077777          4$:     MOV     #77777,R4               ;R4=77777
4672  015734  012701  170000                  MOV     #170000,R1              ;R1=170000
4673  015740  000257                          CCC                             ;CC=0000
4674  015742  020401                          CMP     R4,R1                   ;77777 - 170000 = 107777 CC= 1011
4675  015744  102003                          BVC     5$                      ;ERROR IF V CLEAR
4676  015746  103002                          BCC     5$                      ;ERROR IF C CLEAR
4677  015750  001401                          BEQ     5$                      ;ERROR IF ZERO
4678  015752  100403                          BMI     6$                      ;BRANCH IF GOOD
4679                                                                          ;ERROR! BAD CMP
4680  015754                          5$:
4681  015754  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4682  015756  000407                          .WORD   407                     ;UNIQUE ERROR NUMBER
4683  015760  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4684
4685  015762  000257                  6$:     CCC
4686  015764  005101                          COM     R1                      ;R1=7777
4687  015766  100403                          BMI     7$                      ;ERROR IF MINUS
4688  015770  001402                          BEQ     7$                      ;ERROR IF ZERO
4689  015772  103001                          BCC     7$                      ;ERROR IF CARRY
4690  015774  102003                          BVC     8$                      ;BRANCH IF GOOD
4691                                                                          ;ERROR! BAD COM
4692  015776                          7$:
4693  015776  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4694  016000  000410                          .WORD   410                     ;UNIQUE ERROR NUMBER
4695  016002  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4696
4697  016004  000277                  8$:     SCC
4698  016006  005101                          COM     R1
4699  016010  100403                          BMI     10$                     ;BRANCH IF GOOD
4700                                                                          ;ERROR! BAD COM
4701  016012                          9$:
4702  016012  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4703  016014  000411                          .WORD   411                     ;UNIQUE ERROR NUMBER
4704  016016  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4705
4706  016020                          10$:
4707
4708
4709  016020                          MSBCC:
4710                                  ;;*****************************************************************
4711                                  ;*TEST 140      TEST SUB CONDITION CODES - ****
4712                                  ;;*****************************************************************
4713  016020                          TST140:
4714  016020  005267  162760                  INC     $TESTN                  ;INCREMENT TEST NUMBER
4715  016024  012704  077775                  MOV     #77775,R4               ;R4=77775
4716  016030  000257                          CCC                             ;CC=0000
4717  016032  162704  137757                  SUB     #137757,R4              ;77775 - 137757
4718                                                                          ;TRY TO CAUSE AN ARITHMETIC OVERFLOW
4719  016036  102003                          BVC     1$                      ;ERROR IF V CLEAR
4720  016040  100002                          BPL     1$                      ;ERROR IF RESULT IS POSITIVE
4721  016042  001401                          BEQ     1$                      ;ERROR IF  7 SET
4722  016044  103403                          BCS     2$                      ;BRANCH IF GOOD
4723                                                                          ;ERROR! BAD SUBTRACT
4724  016046                          1$:
4725  016046  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4726  016050  000412                          .WORD   412                     ;UNIQUE ERROR NUMBER
```

```
4727  016052  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4728
4729  016054  012704  000005          2$:     MOV     #5,R4                   ;R4=5
4730  016060  000257                          CCC                             ;CC=0000
4731  016062  162704  000012                  SUB     #12,R4                  ;5-12=-5 AND SETS CARRY
4732  016066  103003                          BCC     3$                      ;ERROR IF CARRY CLEAR
4733  016070  102402                          BVS     3$                      ;ERROR IF OVERFLOW
4734  016072  001401                          BEQ     3$                      ;ERROR IF ZERO
4735  016074  100403                          BMI     4$                      ;BRANCH IF GOOD
4736                                                                          ;ERROR! SUBTRACT FAILED
4737  016076                          3$:
4738  016076  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4739  016100  000413                          .WORD   413                     ;UNIQUE ERROR NUMBER
4740  016102  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4741
4742  016104                          4$:
4743
4744
4745  016104                          MSBCCC:
4746                                  ;;*************************************************************
4747                                  ;*TEST 141       TEST SBC CONDITION CODES - ****
4748                                  ;;*************************************************************
4749  016104
4750  016104  005267  162674          TST141: INC     $TESTN                  ;INCREMENT TEST NUMBER
4751  016110  012704  100000                  MOV     #100000,R4              ;R4=100000
4752  016114  000257                          CCC                             ;C=0000
4753  016116  005604                          SBC     R4                      ;TRY TO SET V
4754  016120  100006                          BPL     1$                      ;ERROR IF N CLEAR
4755  016122  102405                          BVS     1$                      ;ERROR IF V SET (HAVENT SET C YET)
4756  016124  000261                          SEC                             ;CC SHOULD = 1001
4757  016126  005604                          SBC     R4                      ;TRY AGAIN TO SET V
4758  016130  102002                          BVC     1$                      ;ERROR IF V CLEAR
4759  016132  103401                          BCS     1$                      ;ERROR IF C SET
4760  016134  100003                          BPL     2$                      ;BRANCH IF GOOD
4761                                                                          ;ERROR! SBC FAILED
4762  016136                          1$:
4763  016136  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4764  016140  000414                          .WORD   414                     ;UNIQUE ERROR NUMBER
4765  016142  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4766
4767  016144  005004          2$:     CLR     R4                              ;R4=0
4768  016146  000277                  SCC
4769  016150  000241                  CLC                                     ;CC=1110
4770  016152  005604                  SBC     R4                              ;TRY TO CAUSE C FLAG FAILURE
4771  016154  103410                  BCS     3$                              ;ERROR IF C SET
4772  016156  102407                  BVS     3$                              ;ERROR IF V SET
4773  016160  001006                  BNE     3$                              ;ERROR IF  NOT ZERO
4774  016162  000261                  SEC                                     ;SET CARRY
4775  016164  005604                  SBC     R4                              ;NOW, 0 - CARRY = 177777
4776  016166  103003                  BCC     3$                              ;ERROR IF CARRY CLEAR
4777  016170  102402                  BVS     3$                              ;ERROR IF V SET
4778  016172  001401                  BEQ     3$                              ;ERROR IF ZERO
4779  016174  100403                  BMI     4$                              ;BRANCH IF GOOD
4780                                                                          ;ERROR! SBC FAILED
4781  016176                          3$:
4782  016176  104000                  ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
4783  016200  000415                        .WORD   415                     ;UNIQUE ERROR NUMBER
4784  016202  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4785
4786  016204                          4$:
4787
4788
4789  016204                          MRLCC:
4790                                  ;;*************************************************************
4791                                  ;*TEST 142      TEST ROL CONDITION CODES - ****
4792                                  ;;*************************************************************
4793  016204                          TST142:
4794  016204  005267  162574                INC     $TESTN                  ;INCREMENT TEST NUMBER
4795  016210  012704  060000                MOV     #60000,R4               ;R4= 0110000000000000
4796  016214  000257                        CCC                             ;CC=0000
4797  016216  006104                        ROL     R4                      ;R4= 1100000000000000
4798  016220  103402                        BCS     1$                      ;ERROR IF CARRY
4799  016222  102001                        BVC     1$                      ;ERROR IF V CLEAR
4800  016224  100403                        BMI     2$                      ;BRANCH IF GOOD
4801                                                                        ;ERROR! ROL  FAILED
4802  016226                          1$:
4803  016226  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4804  016230  000416                        .WORD   416                     ;UNIQUE ERROR NUMBER
4805  016232  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4806
4807  016234  006104                2$:     ROL     R4                      ;R4= 1000000000000000
4808  016236  103002                        BCC     3$                      ;ERROR IF CARRY CLEAR
4809  016240  102401                        BVS     3$                      ;ERROR IF V SET
4810  016242  100403                        BMI     4$                      ;BRANCH IF GOOD
4811                                                                        ;ERROR! BAD ROL
4812  016244                          3$:
4813  016244  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4814  016246  000417                        .WORD   417                     ;UNIQUE ERROR NUMBER
4815  016250  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4816
4817  016252  006104                4$:     ROL     R4                      ;R4 = 0000000000000001
4818  016254  102003                        BVC     5$                      ;ERROR IF V CLEAR
4819  016256  103002                        BCC     5$                      ;ERROR IF C CLEAR
4820  016260  100401                        BMI     5$                      ;ERROR IF MINUS
4821  016262  001003                        BNE     6$                      ;BRANCH IF GOOD
4822                                                                        ;ERROR! BAD ROL
4823  016264                          5$:
4824  016264  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4825  016266  000420                        .WORD   420                     ;UNIQUE ERROR NUMBER
4826  016270  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4827
4828  016272  006104                6$:     ROL     R4                      ;R4=0000000000000011
4829  016274  102402                        BVS     7$                      ;ERROR IF V SET
4830  016276  103401                        BCS     7$                      ;ERROR IF C SET
4831  016300  100003                        BPL     8$                      ;BRANCH IF GOOD
4832                                                                        ;ERROR! BAD ROL
4833  016302                          7$:
4834  016302  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4835  016304  000421                        .WORD   421                     ;UNIQUE ERROR NUMBER
4836  016306  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4837
4838  016310                          8$:
```

```
4839
4840
4841  016310                          MRRCC:
4842                                  ;;*******************************************************************
4843                                  ;*TEST 143      TEST ROR CONDITION CODES - ****
4844                                  ;;*******************************************************************
4845  016310                          TST143:
4846  016310  005267  162470                 INC     @TESTN                  ;INCREMENT TEST NUMBER
4847  016314  012704  000003                 MOV     #3,R4                   ;R4= 0000000000000011
4848  016320  000257                         CCC                             ;CC= 0000
4849  016322  006004                         ROR     R4                      ;R4= 0000000000000001
4850  016324  103002                         BCC     1$                      ;ERROR IF NO CARRY
4851  016326  102001                         BVC     1$                      ;ERROR IF V CLEAR
4852  016330  100003                         BPL     2$                      ;BRANCH IF GOOD
4853                                                                          ;ERROR! ROR  FAILED
4854  016332                          1$:
4855  016332  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4856  016334  000422                         .WORD   422                     ;UNIQUE ERROR NUMBER
4857  016336  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4858
4859  016340  006004                  2$:    ROR     R4                      ;R4= 1000000000000000
4860  016342  103002                         BCC     3$                      ;ERROR IF CARRY CLEAR
4861  016344  102401                         BVS     3$                      ;ERROR IF V SET
4862  016346  100403                         BMI     4$                      ;BRANCH IF GOOD
4863                                                                          ;ERROR! BAD ROR
4864  016350                          3$:
4865  016350  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4866  016352  000423                         .WORD   423                     ;UNIQUE ERROR NUMBER
4867  016354  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4868
4869  016356  006004                  4$:    ROR     R4                      ;R4 = 1100000000000000
4870  016360  102002                         BVC     5$                      ;ERROR IF V
4871  016362  103401                         BCS     5$                      ;ERROR IF C SET
4872  016364  100403                         BMI     6$                      ;BRANCH IF GOOD
4873                                                                          ;ERROR! BAD ROR
4874  016366                          5$:
4875  016366  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4876  016370  000424                         .WORD   424                     ;UNIQUE ERROR NUMBER
4877  016372  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4878
4879  016374  006004                  6$:    ROR     R4                      ;R4= 0110000000000000
4880  016376  102402                         BVS     7$                      ;ERROR IF V SET
4881  016400  103401                         BCS     7$                      ;ERROR IF C SET
4882  016402  100003                         BPL     8$                      ;BRANCH IF GOOD
4883                                                                          ;ERROR! BAD ROR
4884  016404                          7$:
4885  016404  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4886  016406  000425                         .WORD   425                     ;UNIQUE ERROR NUMBER
4887  016410  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4888
4889  016412                          8$:
4890
4891
4892
4893                                  ;;*******************************************************************
4894                                  ;*TEST 144      TEST C BIT WITH ROR/ROL
```

```
4895
4896                                    ;;*****************************************************************
4897                                    ;THIS TEST IS TO CHECK FOR A SLOW C BIT PATH INTERNAL TO THE J11 DATA CHIP
4898                                    ;PROBLEM IS ONLY EXHIBITED ON EARLY MASK SETS (1590 AND 1593)
4899  016412                            ;;*****************************************************************
4900  016412  005267  162366           TST144: INC     $TESTN                  ;INCREMENT TEST NUMBER
4901  016416  012701  052525                   MOV     #52525,R1               ;INIT R1 WITH DATA
4902  016422  000241                           CLC                             ;CLEAR THE C BIT
4903  016424  006001                           ROR     R1                      ;R1=025252, C BIT =1
4904  016426  006001                           ROR     R1                      ;R1=112525, C BIT =0
4905  016430  006001                           ROR     R1                      ;R1=045252, C BIT =1
4906  016432  103403                           BCS     1$                      ;BRANCH IF CARRY BIT SET
4907  016434  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4908  016436  000426                           .WORD   426                     ;UNIQUE ERROR NUMBER
4909  016440  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4910  016442  022701  045252           1$:     CMP     #45252,R1               ;IS DATA IN R1 = TO EXPECTED DATA?
4911  016446  001403                           BEQ     2$                      ;BRANCH IF YES
4912  016450  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4913  016452  000427                           .WORD   427                     ;UNIQUE ERROR NUMBER
4914  016454  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4915  016456  012701  125252           2$:     MOV     #125252,R1              ;SET UP R1
4916  016462  000241                           CLC                             ;CLEAR THE CARRY BIT
4917  016464  006101                           ROL     R1                      ;R1=052524, C BIT =1
4918  016466  006101                           ROL     R1                      ;R1=125251, C BIT =0
4919  016470  006101                           ROL     R1                      ;R1=052522, C BIT =1
4920  016472  103403                           BCS     3$                      ;BRANCH IF CARRY SET
4921  016474  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4922  016476  000430                           .WORD   430                     ;UNIQUE ERROR NUMBER
4923  016500  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4924  016502  022701  052522           3$:     CMP     #052522, R1             ;IS DATA IN R1 = TO EXPECTED DATA?
4925  016506  001403                           BEQ     4$
4926  016510  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4927  016512  000431                           .WORD   431                     ;UNIQUE ERROR NUMBER
4928  016514  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4929  016516                           4$:
4930
4931
4932  016516                           MALCC:
4933                                    ;;*****************************************************************
4934                                    ;*TEST 145      TEST ASL CONDITION CODES - ****
4935                                    ;;*****************************************************************
4936  016516                           TST145:
4937  016516  005267  162262           INC     $TESTN                  ;INCREMENT TEST NUMBER
4938  016522  012704  060000           MOV     #60000,R4               ;R4= 0110000000000000
4939  016526  000257                   CCC                             ;CC=0000
4940  016530  006304                   ASL     R4                      ;C=0 R4= 1100000000000000
4941  016532  103402                   BCS     1$                      ;ERROR IF CARRY
4942  016534  102001                   BVC     1$                      ;ERROR IF V CLEAR
4943  016536  100403                   BMI     2$                      ;BRANCH IF GOOD
4944                                                                    ;ERROR! ASL  FAILED
4945  016540                           1$:
4946  016540  104000                   ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4947  016542  000432                   .WORD   432                     ;UNIQUE ERROR NUMBER
4948  016544  001127                   .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4949
4950  016546  006304           2$:     ASL     R4                      ;C=1 R4= 1000000000000000
```

```
4951  016550  103002                    BCC     3$                  ;ERROR IF CARRY CLEAR
4952  016552  102401                    BVS     3$                  ;ERROR IF V SET
4953  016554  100403                    BMI     4$                  ;BRANCH IF GOOD
4954                                                                ;ERROR! BAD ASL
4955  016556                        3$:
4956  016556  104000                    ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
4957  016560  000433                    .WORD   433                 ;UNIQUE ERROR NUMBER
4958  016562  001127                    .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
4959
4960  016564  006304                4$: ASL     R4                  ;C=1 R4= 0000000000000000
4961  016566  102003                    BVC     5$                  ;ERROR IF V CLEAR
4962  016570  103002                    BCC     5$                  ;ERROR IF C CLEAR
4963  016572  100401                    BMI     5$                  ;ERROR IF MINUS
4964  016574  001403                    BEQ     6$                  ;BRANCH IF GOOD
4965                                                                ;ERROR! BAD ASL
4966  016576                        5$:
4967  016576  104000                    ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
4968  016600  000434                    .WORD   434                 ;UNIQUE ERROR NUMBER
4969  016602  001127                    .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
4970
4971  016604  006304                6$: ASL     R4                  ;C=0 R4= 0000000000000000
4972  016606  102402                    BVS     7$                  ;ERROR IF V SET
4973  016610  103401                    BCS     7$                  ;ERROR IF C SET
4974  016612  100003                    BPL     8$                  ;BRANCH IF GOOD
4975                                                                ;ERROR! BAD ASL
4976  016614                        7$:
4977  016614  104000                    ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
4978  016616  000435                    .WORD   435                 ;UNIQUE ERROR NUMBER
4979  016620  001127                    .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
4980
4981  016622                        8$:
4982
4983
4984  016622                    MARCC:
4985                            ;;**********************************************************************
4986                            ;*TEST 146      TEST ASR CONDITION CODES - ****
4987                            ;;**********************************************************************
4988  016622                    TST146:
4989  016622  005267  162156            INC     @TESTN              ;INCREMENT TEST NUMBER
4990  016626  012704  000341            MOV     #341,R4             ;R4= 0000000011100001
4991  016632  000257                    CCC                         ;CC=0000
4992  016634  006204                    ASR     R4                  ;R4= 0000000001110000
4993  016636  103002                    BCC     1$                  ;ERROR IF NO CARRY
4994  016640  102001                    BVC     1$                  ;ERROR IF V CLEAR
4995  016642  100003                    BPL     2$                  ;BRANCH IF GOOD
4996                                                                ;ERROR! ASR  FAILED
4997  016644                        1$:
4998  016644  104000                    ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
4999  016646  000436                    .WORD   436                 ;UNIQUE ERROR NUMBER
5000  016650  001127                    .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5001
5002  016652  052704  100001        2$: BIS     #100001,R4          ;R4= 1000000001110001
5003  016656  006204                    ASR     R4                  ;R4= 1100000000111000
5004  016660  103002                    BCC     3$                  ;ERROR IF CARRY CLEAR
5005  016662  102401                    BVS     3$                  ;ERROR IF V SET
5006  016664  100403                    BMI     4$                  ;BRANCH IF GOOD
```

```
5007
5008  016666                          3$:                                     ;ERROR! BAD ASR
5009  016666  104000                          ERROR
5010  016670  000437                          .WORD   437                     ;UNIQUE ERROR NUMBER
5011  016672  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5012
5013  016674  006204                  4$:     ASR     R4                      ;R4= 1110000000011100
5014  016676  102002                          BVC     5$                      ;ERROR IF V
5015  016700  103401                          BCS     5$                      ;ERROR IF C SET
5016  016702  100403                          BMI     6$                      ;BRANCH IF GOOD
5017                                                                          ;ERROR! BAD ASR
5018  016704                          5$:
5019  016704  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5020  016706  000440                          .WORD   440                     ;UNIQUE ERROR NUMBER
5021  016710  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5022
5023  016712  006204                  6$:     ASR     R4                      ;R4= 1111000000001110
5024  016714  102005                          BVC     7$                      ;ERROR IF V CLEAR
5025  016716  103404                          BCS     7$                      ;ERROR IF C SET
5026  016720  100003                          BPL     7$                      ;ERROR IF PLUS
5027  016722  022704  170016                  CMP     #170016,R4              ;SEE IF EXPECTED RESULT
5028  016726  001403                          BEQ     8$                      ;BRANCH IF GOOD
5029                                                                          ;ERROR! BAD ASR
5030  016730                          7$:
5031  016730  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5032  016732  000441                          .WORD   441                     ;UNIQUE ERROR NUMBER
5033  016734  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5034
5035  016736                          8$:
5036
5037
5038  016736                          MSXTCC:
5039                                  ;;**********************************************************************
5040                                  ;*TEST 147      TEST SXT CONDITION CODES / -*0-
5041                                  ;;**********************************************************************
5042  016736                          TST147:
5043  016736  005267  162042                  INC     $TESTN                  ;INCREMENT TEST NUMBER
5044  016742  012704  123456                  MOV     #123456,R4                      ;R4=123456
5045  016746  010401                          MOV     R4,R1                   ;SAVE  CONTENTS
5046  016750  000257                          CCC                             ;CC=0000
5047  016752  006704                          SXT     R4                      ;R4=0 CC=0100
5048  016754  103403                          BCS     1$                      ;ERROR IF CARRY
5049  016756  100402                          BMI     1$                      ;ERROR IF MINUS
5050  016760  102401                          BVS     1$                      ;ERROR IF OVERFLOW
5051  016762  001403                          BEQ     2$                      ;BRANCH IF GOOD
5052                                                                          ;ERROR! BAD SXT
5053  016764                          1$:
5054  016764  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5055  016766  000442                          .WORD   442                     ;UNIQUE ERROR NUMBER
5056  016770  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5057
5058  016772  010104                  2$:     MOV     R1,R4                   ;RESTORE R4
5059  016774  000277                          SCC                             ;CC=1111
5060  016776  006704                          SXT     R4                      ;R4=-1 CC=1001
5061  017000  001405                          BEQ     3$                      ;ERROR IF ZERO
5062  017002  100004                          BPL     3$                      ;ERROR IF PLUS
```

```
5063  017004  103003                  BCC     3$                      ;ERROR IF NO CARRY
5064  017006  102402                  BVS     3$                      ;ERROR IF OVERFLOW
5065  017010  005104                  COM     R4                      ;R4=0
5066  017012  001403                  BEQ     4$                      ;BRANCH IF GOOD
5067                                                                  ;ERROR! BAD SXT
5068  017014                      3$:
5069  017014  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5070  017016  000443                  .WORD   443                     ;UNIQUE ERROR NUMBER
5071  017020  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5072
5073  017022                      4$:
5074
5075
5076  017022                      MXRCC:
5077                              ;;*******************************************************************
5078                              ;*TEST 150      TEST XOR CONDITION CODES / **0-
5079                              ;;*******************************************************************
5080  017022                      TST150:
5081  017022  005267  161756          INC     $TESTN                  ;INCREMENT TEST NUMBER
5082  017026  012704  123456          MOV     #123456,R4              ;R4=123456
5083  017032  012701  052525          MOV     #52525,R1               ;R1=52525
5084  017036  000257                  CCC                             ;CC=0000
5085  017040  074104                  XOR     R1,R4                   ;*TI* R4=171173
5086  017042  102403                  BVS     1$                      ;;ERROR IF OVERFLOW
5087  017044  001402                  BEQ     1$                      ;ERROR IF ZERO
5088  017046  103401                  BCS     1$                      ;ERROR IF CARRY
5089  017050  100403                  BMI     2$                      ;BRANCH IF GOOD
5090                                                                  ;ERROR! BAD XOR
5091  017052                      1$:
5092  017052  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5093  017054  000444                  .WORD   444                     ;UNIQUE ERROR NUMBER
5094  017056  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5095
5096  017060  012701  125252      2$: MOV     #125252,R1              ;R1=125252
5097  017064  000277                  SCC                             ;CC=1111
5098  017066  074104                  XOR     R1,R4                   ;R4=054321
5099  017070  100403                  BMI     3$                      ;ERROR IF MINUS
5100  017072  001402                  BEQ     3$                      ;ERROR IF ZERO
5101  017074  103001                  BCC     3$                      ;ERROR IF CARRY CLEAR
5102  017076  102003                  BVC     4$                      ;BRANCH IF GOOD
5103                                                                  ;ERROR! BAD XOR
5104  017100                      3$:
5105  017100  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5106  017102  000445                  .WORD   445                     ;UNIQUE ERROR NUMBER
5107  017104  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5108
5109  017106  074404                  XOR     R4,R4                   ;R4=0
5110  017110  102406                  BVS     5$                      ;ERROR IF OVREFLOW
5111  017112  100405                  BMI     5$                      ;ERROR IF MINUS
5112  017114  103004                  BCC     5$                      ;ERROR IF NO CARRY
5113  017116  001003                  BNE     5$                      ;ERROR IF NOT ZERO
5114  017120  022704  000000          CMP     #0,R4                   ;SEE IF EXPECTED RESULT
5115  017124  001403                  BEQ     6$                      ;BRANCH IF GOOD
5116                                                                  ;ERROR! BAD XOR
5117  017126                      5$:
5118  017126  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
5119  017130  000446                          .WORD   446                     ;UNIQUE ERROR NUMBER
5120  017132  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5121
5122  017134                          6$:
5123
5124
5125                                  ;
5126  017134                          MSXT:
5127                                  ;;*****************************************************************
5128                                  ;*TEST 151       TEST SXT (SIGN EXTEND INSTRUCTION)
5129                                  ;;*****************************************************************
5130                                  ;AN ADDITIONAL TEST IS INCLUDED TO CHECK FOR A SLOW N BIT PATH
5131                                  ;ON A TRANSITION FROM ZERO TO ONE INTERNAL TO THE J11 DATA CHIP
5132                                  ;THE PROBLEM IS ONLY EXHIBITED ON EARLY MASK SETS (1590 OR 1593)
5133                                  ;;*****************************************************************
5134  017134                          TST151:
5135  017134  005267  161644                  INC     $TESTN                  ;INCREMENT TEST NUMBER
5136  017140  005004                          CLR     R4              ;TRASH R4
5137  017142  000257                          CCC                     ;CC=0000
5138  017144  000271                          .WORD   271             ;CC=1001
5139  017146  006704                          SXT     R4              ;*TEST INSTRUCTION
5140  017150  102405                          BVS     1$              ;BRANCH IF OVERFLOW IS NOT CLEARED
5141  017152  100004                          BPL     1$              ;BRANCH IF N BIT EFFECTED
5142  017154  001403                          BEQ     1$              ;BRANNCH IF Z BIT EFFECTED
5143  017156  103002                          BCC     1$              ;BRANCH IF C BIT EFFECTED
5144  017160  005204                          INC     R4
5145  017162  001403                          BEQ     2$              ;BRANCH IF R4 =0
5146                                                                  ;ERROR! CC SHOULD HAVE = 1101
5147  017164                          1$:
5148  017164  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5149  017166  000447                  .WORD   447                     ;UNIQUE ERROR NUMBER
5150  017170  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5151  017172  000277                  2$:     SCC
5152  017174  000250                          CLN                     ;CC=0111
5153  017176  005004                          CLR     R4
5154  017200  012714  000055                MOV     #55,(R4)        ;TRASH R4
5155  017204  006714                          SXT     (R4)            ;*TEST INSTRUCTION
5156  017206  001005                          BNE     3$              ;BRANCH IF BIT EFFECTED
5157  017210  102404                          BVS     3$              ;BRANCH IF OVERFLOW
5158  017212  103403                          BCS     3$              ;
5159  017214  100402                          BMI     3$              ;BRANCH IF N IS SET
5160  017216  005714                          TST     (R4)            ;VERIFY INSTRUCTION WORKED
5161  017220  001403                          BEQ     4$              ;BRANCH IF R4=0
5162                                                                  ;ERROR! SXT FAILED
5163  017222                          3$:
5164  017222  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5165  017224  000450                  .WORD   450                     ;UNIQUE ERROR NUMBER
5166  017226  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5167
5168                                  ;       NOW TEST FOR SLOW N BIT IN J11 DATA CHIP
5169
5170  017230  012700  177777          4$:     MOV     #-1,R0          ;R0=177777, N BIT = 1
5171  017234  005004                          CLR     R4              ;CLEAT THE N BIT
5172  017236  006700                          SXT     R0              ;****TEST INSTRUCTION***
5173                                                                  ;TEST N BIT TRANSITION 1 TO 0
5174  017240  005700                          TST     R0              ;R0 SHOULD = 0
```

```
 5175  017242  001403                        BEQ     5$              ;BRANCH IF OK
 5176  017244  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 5177  017246  000451                        .WORD   451             ;UNIQUE ERROR NUMBER
 5178  017250  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 5179  017252  005000                5$:     CLR     R0              ;CLEAR R0, N BIT = 0
 5180  017254  012704  177777              MOV     #-1,R4          ;SET N BIT
 5181  017260  006700                        SXT     R0              ;***TEST INSTRUCTION***
 5182                                                                ;TEST N BIT TRANSITION 0 TO 1
 5183  017262  022700  177777              CMP     #-1,R0          ;R0 SHOULD = 177777
 5184  017266  001403                        BEQ     6$              ;BRANCH IF OK
 5185  017270  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 5186  017272  000452                        .WORD   452             ;UNIQUE ERROR NUMBER
 5187  017274  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 5188  017276                        6$:
 5189
 5190                                ;
 5191  017276                        MXOR:
 5192                                ;;*************************************************************************
 5193                                ;*TEST 152       TEST XOR
 5194                                ;;*************************************************************************
 5195  017276                        TST152:
 5196  017276  005267  161502              INC     $TESTN                  ;INCREMENT TEST NUMBER
 5197  017302  012701  007643              MOV     #7643,R1                ;SETUP DATA
 5198  017306  012704  133333              MOV     #133333,R4              ;SETUP DATA
 5199  017312  000277                      SCC
 5200  017314  074401                      XOR     R4,R1                   ;*TEST INSTRUCTION
 5201  017316  100006                      BPL     1$                      ;BRANCH IF PLUS TO ERROR
 5202  017320  001405                      BEQ     1$                      ;ERROR IF ZERO
 5203  017322  103004                      BCC     1$                      ;ERROR IF CARRY CLEAR
 5204  017324  102403                      BVS     1$                      ;ERROR IF V SET
 5205  017326  020127  134570              CMP     R1,#134570              ;VERIFY CORRECT RESULT
 5206  017332  001403                      BEQ     2$                      ;BRANCH IF GOOD
 5207                                                                      ;ERROR! BAD XOR
 5208  017334                        1$:
 5209  017334  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 5210  017336  000453                      .WORD   453                     ;UNIQUE ERROR NUMBER
 5211  017340  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 5212  017342  010102                2$:   MOV     R1,R2
 5213  017344  000257                      CCC
 5214  017346  074402                      XOR     R4,R2                   ;*TEST INSTRUCTION
 5215  017350  100405                      BMI     3$                      ;ERROR IF MINUS
 5216  017352  102404                      BVS     3$                      ;ERROR IF OVERFLOW
 5217  017354  103403                      BCS     3$                      ;ERROR IF CARRY
 5218  017356  020227  007643              CMP     R2,#7643
 5219  017362  001403                      BEQ     4$                      ;BRANCH IF GOOD
 5220                                                                      ;ERROR! BAD XOR
 5221  017364                        3$:
 5222  017364  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 5223  017366  000454                      .WORD   454                     ;UNIQUE ERROR NUMBER
 5224  017370  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 5225  017372                        4$:
 5226
 5227                                ;
 5228  017372                        MSOB:
 5229                                ;;*************************************************************************
 5230                                ;*TEST 153       TEST SOB
```

```
5231
5232  017372                                ;;*****************************************************************
5233  017372  005267  161406                TST153: INC     $TESTN          ;INCREMENT TEST NUMBER
5234  017376  012704  000555                        MOV     #555,R4         ;SETUP TEST COUNTER
5235  017402  000277                                SCC                     ;CC=17
5236  017404  103017                        1$:     BCC     2$              ;ERROR IF CARRY CLEAR
5237  017406  102016                                BVC     2$              ;ERROR IF NO OVERFLOW
5238  017410  100015                                BPL     2$              ;ERROR IF PLUS
5239  017412  001014                                BNE     2$              ;ERROR IF ZERO
5240  017414  077405                                SOB     R4,1$           ;*TEST INSTRUCTION
5241  017416  103005                                BCC     3$              ;ERROR IF CARRY CLEAR
5242  017420  102004                                BVC     3$              ;ERROR IF NO OVERFLOW
5243  017422  100003                                BPL     3$              ;ERROR IF PLUS
5244  017424  001002                                BNE     3$              ;ERROR IF ZERO
5245  017426  000167  000020                        JMP     4$
5246                                                                        ;ERROR! CC EFFECTED DURING TEST
5247  017432                                3$:
5248  017432  104000                                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5249  017434  000455                                .WORD   455             ;UNIQUE ERROR NUMBER
5250  017436  001127                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5251  017440  000167  000006                        JMP     4$
5252                                                                        ;ERROR! CC EFFECTED AFTER TEST
5253  017444                                2$:
5254  017444  104000                                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5255  017446  000456                                .WORD   456             ;UNIQUE ERROR NUMBER
5256  017450  001127                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5257  017452  020427  000000                4$:     CMP     R4,#0           ;IS R4 CORRECT
5258  017456  001403                                BEQ     5$              ;YES GO ON
5259                                                                        ;ERROR! NO GO TO ERROR
5260  017460  104000                                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5261  017462  000457                                .WORD   457             ;UNIQUE ERROR NUMBER
5262  017464  001127                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5263  017466                                5$:
5264
5265
5266  017466                                MMARK:
5267                                                ;;*****************************************************************
5268                                                ;*TEST 154      TEST MARK INSTRUCTION
5269                                                ;;*****************************************************************
5270  017466                                TST154:
5271  017466  005267  161312                        INC     $TESTN          ;INCREMENT TEST NUMBER
5272  017472  012706  000700                        MOV     #STBOT-100,SP   ;SETUP TEST STACK = 700
5273  017476  012737  125252  000776                MOV     #125252,@#STBOT-2 ;SET UP NEW R5 VALUE ON STACK
5274  017504  012705  017526                        MOV     #1$,R5          ;PUT NEW PC IN R5
5275  017510  012746  006437                        MOV     #MARK+37,-(SP)  ;INSERT MARK 37 INSTRUCTION ONTO STACK
5276  017514  000277                                SCC
5277  017516  000116                                JMP     (SP)            ;* TEST INSTRUCTION
5278                                                                        ;MARK INSTRUCTION SHOULD HAVE GONE TO 1$
5279  017520  104000                                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5280  017522  000460                                .WORD   460             ;UNIQUE ERROR NUMBER
5281  017524  001127                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5282                                                ;
5283  017526  101002                        1$:     BHI     2$              ;ERROR IF C OR Z BIT CLEAR
5284  017530  100001                                BPL     2$              ;ERROR IF N BIT CLEAR
5285  017532  102403                                BVS     3$              ;BRANCH IF V BIT SET
5286                                                                        ;BAD CONDITION CODES ON MARK
```

```
5287  017534                          2$:
5288  017534  104000                        ERROR
5289  017536  000461                        .WORD   461             ;ALL ERRORS TO TRAP TO EMT VECTOR
5290  017540  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
5291  017542  022705  125252        3$:     CMP     #125252,R5      ;ADDRESS OF ERROR MESSAGE
5292  017546  001403                        BEQ     4$              ;VERIFY R5
5293  017550  104000                        ERROR                   ;BRANCH IF GOOD
5294  017552  000462                        .WORD   462             ;ALL ERRORS TO TRAP TO EMT VECTOR
5295  017554  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
5296                                                                ;ADDRESS OF ERROR MESSAGE
5297  017556  020627  001000        4$:     CMP     SP,#STBOT       ;VERIFY THAT STACK IS CORRECT
5298  017562  001403                        BEQ     15$             ;BRANCH IF OK
5299                                                                ;ERROR! STACK WAS NOT CORRECT AFTER MARK
5300  017564  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5301  017566  000463                        .WORD   463             ;UNIQUE ERROR NUMBER
5302  017570  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5303
5304  017572  012746  052525        15$:    MOV     #52525,-(SP)    ;SETUP EXPECTED R5
5305  017576  012746  006400              MOV     #6400,-(SP)     ;MOVE MARK 0 INSTRUCTION ON STACK
5306  017602  010605                        MOV     SP,R5           ;R5=ADDRESS OF INSTRUCTION
5307  017604  004767  000004              JSR     PC,5$           ;LEAVE 6$ ON STACK
5308  017610  000167  000012        6$:     JMP     16$             ;MARK RETURNED CORRECTLY
5309
5310  017614  000257                5$:     CCC                     ;CLEAR THE CONDITION CODES
5311  017616  000205                        RTS     R5              ;RETURN TO MARK INSTRUCTION
5312                                                                ;NEXT INSTRUCTION ON STACK IS THE RETURN
5313                                                                ;FROM THE JSR
5314                                                                ;ERROR! BAD MARK SEQUENCE
5315  017620  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5316  017622  000464                        .WORD   464             ;UNIQUE ERROR NUMBER
5317  017624  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5318
5319  017626  101402        16$:    BLOS    7$              ;IS C OR Z BIT SET?
5320  017630  100401                BMI     7$              ;IS N BIT SET?
5321  017632  102003                BVC     8$              ;IS V BIT SET?
5322                                                        ;ERROR! CONDITIONS CODES INCORRECT
5323  017634                7$:
5324  017634  104000                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5325  017636  000465                .WORD   465             ;UNIQUE ERROR NUMBER
5326  017640  001127                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5327
5328  017642  020627  001000        8$:     CMP     R6,#STBOT       ;IS THE STACK CORRECT?
5329  017646  001403                BEQ     9$              ;BRANCH IF YES
5330                                                        ;ERROR! BAD STACK CLEANUP
5331  017650  104000                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5332  017652  000466                .WORD   466             ;UNIQUE ERROR NUMBER
5333  017654  001127                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5334  017656  022705  052525        9$:     CMP     #52525,R5       ;VERIFY THAT R5 WAS LOADED PROPERLY.
5335  017662  001403                BEQ     10$             ;IF OK, GO TO NEXT TEST.
5336                                                        ;ERROR! R5 WAS NOT CORRECT AFTER MARK.
5337  017664  104000                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5338  017666  000467                .WORD   467             ;UNIQUE ERROR NUMBER
5339  017670  001127                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5340  017672                10$:
5341
5342
```

```
5343                                    ;;*****************************************************************
5344                                    ;*TEST 155      TEST CCC (CLEAR CONDITION CODES) INSTRUCTION
5345                                    ;;*****************************************************************
5346  017672                            TST155:
5347  017672  005267  161106                   INC     $TESTN                  ;INCREMENT TEST NUMBER
5348  017676  012737  030017  177776           MOV     #30017,@#177776         ;SETUP PSW
5349  017704  000257                           CCC                             ; TEST INSTRUCTION
5350  017706  022737  030000  177776           CMP     #30000,@#177776         ;DID IT CLEAR ALL CONDITION CODE BITS
5351  017714  001403                           BEQ     1$                      ;YES GO ON
5352                                                                            ;NO GO TO ERROR
5353  017716  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5354  017720  000470                          .WORD   470                     ;UNIQUE ERROR NUMBER
5355  017722  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5356  017724                            1$:
5357
5358                                    ;
5359
5360                                    ;;*****************************************************************
5361                                    ;*TEST 156      TEST CLEAR C BIT INSTRUCTION
5362                                    ;;*****************************************************************
5363  017724                            TST156:
5364  017724  005267  161054                   INC     $TESTN                  ;INCREMENT TEST NUMBER
5365  017730  012737  030017  177776           MOV     #30017,@#177776         ;SETUP PSW
5366  017736  000241                           CLC                             ; TEST INSTRUCTION
5367  017740  022737  030016  177776           CMP     #30016,@#177776         ;DID IT CLEAR CARRY BIT
5368  017746  001403                           BEQ     1$                      ;YES GO ON
5369                                                                            ;C BIT NOT CLEAR GO TO ERROR
5370  017750  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5371  017752  000471                          .WORD   471                     ;UNIQUE ERROR NUMBER
5372  017754  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5373  017756                            1$:
5374
5375                                    ;
5376  017756                            TE102:
5377                                    ;;*****************************************************************
5378                                    ;*TEST 157      TEST CLN (CLEAR N BIT) INST
5379                                    ;;*****************************************************************
5380  017756                            TST157:
5381  017756  005267  161022                   INC     $TESTN                  ;INCREMENT TEST NUMBER
5382  017762  012737  030017  177776           MOV     #30017,@#177776         ;SETUP PSW
5383  017770  000250                           CLN                             ; TEST INSTRUCTION
5384  017772  022737  030007  177776           CMP     #30007,@#177776         ;DID IT CLEAR NEGATIVE BIT
5385  020000  001403                           BEQ     1$                      ;YES GO ON
5386                                                                            ;NO GO TO ERROR
5387  020002  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5388  020004  000472                          .WORD   472                     ;UNIQUE ERROR NUMBER
5389  020006  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5390  020010                            1$:
5391
5392                                    ;
5393  020010                            TE103:
5394                                    ;;*****************************************************************
5395                                    ;*TEST 160      TEST CLV (CLEAR V BIT) INST
5396                                    ;;*****************************************************************
5397  020010                            TST160:
5398  020010  005267  160770                   INC     $TESTN                  ;INCREMENT TEST NUMBER
```

```
5399  020014  012737  030017  177776          MOV     #30017,@#177776         ;SETUP PSW
5400  020022  000242                          CLV                             ; TEST INSTRUCTION
5401  020024  022737  030015  177776          CMP     #30015,@#177776         ;DID IT CLEAR OVERFLOW BIT
5402  020032  001403                          BEQ     1$                      ;YES GO ON
5403                                                                          ;NO GO TO ERROR
5404  020034  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5405  020036  000473                          .WORD   473                     ;UNIQUE ERROR NUMBER
5406  020040  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5407  020042                              1$:
5408
5409                                        ;
5410  020042                              TE104:
5411                                      ;;**************************************************************
5412                                      ;*TEST 161      TEST CLZ (CLEAR Z BIT) INST
5413                                      ;;**************************************************************
5414  020042                              TST161:
5415  020042  005267  160736                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5416  020046  012737  030017  177776          MOV     #30017,@#177776         ;SETUP PSW
5417  020054  000244                          CLZ                             ; TEST INSTRUCTION
5418  020056  022737  030013  177776          CMP     #30013,@#177776         ;DID IT CLEAR ZERO BIT
5419  020064  001403                          BEQ     1$                      ;YES GO ON
5420                                                                          ;NO GO TO ERROR
5421  020066  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5422  020070  000474                          .WORD   474                     ;UNIQUE ERROR NUMBER
5423  020072  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5424  020074                              1$:
5425
5426                                        ;
5427  020074                              TE105:
5428                                      ;;**************************************************************
5429                                      ;*TEST 162      TEST SCC (SET CONDITION CODES) INST
5430                                      ;;**************************************************************
5431  020074                              TST162:
5432  020074  005267  160704                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5433  020100  012737  030000  177776          MOV     #30000,@#177776         ;SETUP PSW
5434  020106  000277                          SCC                             ; TEST INSTRUCTION
5435  020110  022737  030017  177776          CMP     #30017,@#177776         ;DID IT SET ALL CONDITION CODE BITS
5436  020116  001403                          BEQ     1$                      ;YES GO ON
5437                                                                          ;NO GO TO ERROR
5438  020120  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5439  020122  000475                          .WORD   475                     ;UNIQUE ERROR NUMBER
5440  020124  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5441  020126                              1$:
5442
5443                                        ;
5444  020126                              TE106:
5445                                      ;;**************************************************************
5446                                      ;*TEST 163      TEST SEC (SET C BIT) INST
5447                                      ;;**************************************************************
5448  020126                              TST163:
5449  020126  005267  160652                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5450  020132  012737  030000  177776          MOV     #30000,@#177776         ;SETUP PSW
5451  020140  000261                          SEC                             ; TEST INSTRUCTION
5452  020142  022737  030001  177776          CMP     #30001,@#177776         ;DID IT SET THE CARRY BIT
5453  020150  001403                          BEQ     1$                      ;YES GO ON
5454                                                                          ;NO GO TO ERROR
```

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5455  020152  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5456  020154  000476                          .WORD   476                     ;UNIQUE ERROR NUMBER
5457  020156  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5458  020160                              1$:
5459
5460
5461  020160                              ;
                                          TE107:
5462                                      ;;*****************************************************************
5463                                      ;*TEST 164       TEST SEN (SET N BIT) INST
5464                                      ;;*****************************************************************
5465  020160                              TST164:
5466  020160  005267  160620                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5467  020164  012737  030000  177776              MOV     #30000,@#177776         ;SETUP PSW
5468  020172  000270                              SEN                             ; TEST INSTRUCTION
5469  020174  022737  030010  177776              CMP     #30010,@#177776         ;DID IT SET THE NEGATIVE BIT
5470  020202  001403                              BEQ     1$                      ;YES GO ON
5471                                                                              ;NO GO TO ERROR
5472  020204  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5473  020206  000477                              .WORD   477                     ;UNIQUE ERROR NUMBER
5474  020210  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5475  020212                              1$:
5476
5477
5478  020212                              ;
                                          TE110:
5479                                      ;;*****************************************************************
5480                                      ;*TEST 165       TEST SEV (SET V BIT) INST
5481                                      ;;*****************************************************************
5482  020212                              TST165:
5483  020212  005267  160566                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5484  020216  012737  030000  177776              MOV     #30000,@#177776         ;SETUP PSW
5485  020224  000262                              SEV                             ; TEST INSTRUCTION
5486  020226  022737  030002  177776              CMP     #30002,@#177776         ;DID IT SET THE OVERFLOW BIT
5487  020234  001403                              BEQ     1$                      ;YES GO ON
5488                                                                              ;NO GO TO ERROR
5489  020236  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5490  020240  000500                              .WORD   500                     ;UNIQUE ERROR NUMBER
5491  020242  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5492  020244                              1$:
5493
5494
5495  020244                              ;
                                          TE111:
5496                                      ;;*****************************************************************
5497                                      ;*TEST 166       TEST SEZ (SET Z BIT) INST
5498                                      ;;*****************************************************************
5499  020244                              TST166:
5500  020244  005267  160534                      INC     $TESTN                  ;INCREMENT TEST NUMBER
5501  020250  012737  030000  177776              MOV     #30000,@#177776         ;SETUP PSW
5502  020256  000264                              SEZ                             ; TEST INSTRUCTION
5503  020260  022737  030004  177776              CMP     #30004,@#177776         ;DID IT SET THE ZERO BIT
5504  020266  001403                              BEQ     1$                      ;YES GO ON
5505                                                                              ;NO GO TO ERROR
5506  020270  104000                              ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5507  020272  000501                              .WORD   501                     ;UNIQUE ERROR NUMBER
5508  020274  001127                              .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5509  020276                              1$:
5510
```

```
                                ;
                                TE112:
                                ;;*****************************************************************
                                ;*TEST 167      TEST MULTIPLE CLEARS OF CC BITS
                                ;;*****************************************************************
                                TST167:
020276  005267  160502                INC     @TESTN                  ;INCREMENT TEST NUMBER
020302  012737  030000  177776        MOV     #30000,@#177776         ;INIT PSW
020310  000277                        SCC                             ;SETUP PSW
020312  000243                        .WORD   243                     ; TEST CLC CLV
020314  022737  030014  177776        CMP     #30014,@#177776         ;PSW CORRECT?
020322  001403                        BEQ     1$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
020324  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
020326  000502                        .WORD   502                     ;UNIQUE ERROR NUMBER
020330  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
020332  000277                1$:     SCC                             ;SETUP PSW
020334  000245                        .WORD   245                     ; TEST CLC CLZ
020336  022737  030012  177776        CMP     #30012,@#177776         ;PSW CORRECT?
020344  001403                        BEQ     2$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
020346  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
020350  000503                        .WORD   503                     ;UNIQUE ERROR NUMBER
020352  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

020354  000277                2$:     SCC                             ;SETUP PSW
020356  000246                        .WORD   246                     ; TEST CLV CLZ
020360  022737  030011  177776        CMP     #30011,@#177776         ;PSW CORRECT?
020366  001403                        BEQ     3$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
020370  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
020372  000504                        .WORD   504                     ;UNIQUE ERROR NUMBER
020374  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

020376  000277                3$:     SCC                             ;SETUP PSW
020400  000247                        .WORD   247                     ; TEST CLC CLV CLZ
020402  022737  030010  177776        CMP     #30010,@#177776         ;PSW CORRECT?
020410  001403                        BEQ     4$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
020412  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
020414  000505                        .WORD   505                     ;UNIQUE ERROR NUMBER
020416  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

020420  000277                4$:     SCC                             ;SETUP PSW
020422  000251                        .WORD   251                     ; TEST CLN CLC
020424  022737  030006  177776        CMP     #30006,@#177776         ;PSW CORRECT?
020432  001403                        BEQ     5$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
020434  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
020436  000506                        .WORD   506                     ;UNIQUE ERROR NUMBER
020440  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

020442  000277                5$:     SCC                             ;SETUP PSW
020444  000252                        .WORD   252                     ; TEST CLN CLV
020446  022737  030005  177776        CMP     #30005,@#177776         ;PSW CORRECT?
020454  001403                        BEQ     6$                      ;YES GO ON
```

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5567
5568  020456  104000                          ERROR                           ;NO GO TO ERROR
5569  020460  000507                          .WORD   507                     ;ALL ERRORS TO TRAP TO EMT VECTOR
5570  020462  001127                          .WORD   CPUERR                  ;UNIQUE ERROR NUMBER
5571                                                                          ;ADDRESS OF ERROR MESSAGE
5572  020464  000277                  6$:     SCC                             ;SETUP PSW
5573  020466  000253                          .WORD   253                     ; TEST CLN CLC CLV
5574  020470  022737  030004  177776          CMP     #30004,@#177776         ;PSW CORRECT?
5575  020476  001403                          BEQ     7$                      ;YES GO ON
5576                                                                          ;NO GO TO ERROR
5577  020500  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5578  020502  000510                          .WORD   510                     ;UNIQUE ERROR NUMBER
5579  020504  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5580
5581  020506  000277                  7$:     SCC                             ;SETUP PSW
5582  020510  000254                          .WORD   254                     ; TEST CLN CLZ
5583  020512  022737  030003  177776          CMP     #30003,@#177776         ;PSW CORRECT?
5584  020520  001403                          BEQ     8$                      ;YES GO ON
5585                                                                          ;NO GO TO ERROR
5586  020522  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5587  020524  000511                          .WORD   511                     ;UNIQUE ERROR NUMBER
5588  020526  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5589
5590  020530  000277                  8$:     SCC                             ;SETUP PSW
5591  020532  000255                          .WORD   255                     ; TEST CLN CLC CLZ
5592  020534  022737  030002  177776          CMP     #30002,@#177776         ;PSW CORRECT?
5593  020542  001403                          BEQ     9$                      ;YES GO ON
5594                                                                          ;NO GO TO ERROR
5595  020544  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5596  020546  000512                          .WORD   512                     ;UNIQUE ERROR NUMBER
5597  020550  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5598
5599  020552  000277                  9$:     SCC                             ;SETUP PSW
5600  020554  000256                          .WORD   256                     ; TEST CLN CLV CLZ
5601  020556  022737  030001  177776          CMP     #30001,@#177776         ;SETUP PSW
5602  020564  001403                          BEQ     10$                     ;YES GO ON
5603                                                                          ;NO GO TO ERROR
5604  020566  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5605  020570  000513                          .WORD   513                     ;UNIQUE ERROR NUMBER
5606  020572  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5607
5608  020574                          10$:
5609
5610                                          ;
5611  020574                          TE113:
5612                                          ;;*****************************************************************
5613                                          ;*TEST 170       TEST MULTIPLE SETS OF CC BITS
5614                                          ;;*****************************************************************
5615  020574                          TST170:
5616  020574  005267  160204                  INC     $TESTN                  ;INCREMENT TEST NUMBER
5617  020600  012737  030000  177776          MOV     #30000,@#177776         ;INIT PSW
5618  020606  000263                          .WORD   263                     ; TEST SEC SEV
5619  020610  022737  030003  177776          CMP     #30003,@#177776         ;PSW CORRECT?
5620  020616  001403                          BEQ     1$                      ;YES GO ON
5621                                                                          ;NO GO TO ERROR
5622  020620  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
```

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5623  020622  000514                          .WORD   514                     ;UNIQUE ERROR NUMBER
5624  020624  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5625
5626  020626  000257                  1$:     CCC                             ;SETUP PSW
5627  020630  000265                          .WORD   265                     ; TEST SEC SEZ
5628  020632  022737  030005  177776          CMP     #30005,@#177776         ;PSW CORRECT?
5629  020640  001403                          BEQ     2$                      ;YES GO ON
5630                                                                          ;NO GO TO ERROR
5631  020642  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5632  020644  000515                          .WORD   515                     ;UNIQUE ERROR NUMBER
5633  020646  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5634
5635  020650  000257                  2$:     CCC                             ;SETUP PSW
5636  020652  000266                          .WORD   266                     ; TEST SEV SEZ
5637  020654  022737  030006  177776          CMP     #30006,@#177776         ;PSW CORRECT?
5638  020662  001403                          BEQ     3$                      ;YES GO ON
5639                                                                          ;NO GO TO ERROR
5640  020664  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5641  020666  000516                          .WORD   516                     ;UNIQUE ERROR NUMBER
5642  020670  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5643
5644  020672  000257                  3$:     CCC                             ;SETUP PSW
5645  020674  000267                          .WORD   267                     ; TEST SEC SEV SEZ
5646  020676  022737  030007  177776          CMP     #30007,@#177776         ;PSW CORRECT?
5647  020704  001403                          BEQ     4$                      ;YES GO ON
5648                                                                          ;NO GO TO ERROR
5649  020706  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5650  020710  000517                          .WORD   517                     ;UNIQUE ERROR NUMBER
5651  020712  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5652
5653  020714  000257                  4$:     CCC                             ;SETUP PSW
5654  020716  000271                          .WORD   271                     ; TEST SEN SEC
5655  020720  022737  030011  177776          CMP     #30011,@#177776         ;PSW CORRECT?
5656  020726  001403                          BEQ     5$                      ;YES GO ON
5657                                                                          ;NO GO TO ERROR
5658  020730  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5659  020732  000520                          .WORD   520                     ;UNIQUE ERROR NUMBER
5660  020734  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5661
5662  020736  000257                  5$:     CCC                             ;SETUP PSW
5663  020740  000272                          .WORD   272                     ; TEST SEN SEV
5664  020742  022737  030012  177776          CMP     #30012,@#177776         ;PSW CORRECT?
5665  020750  001403                          BEQ     6$                      ;YES GO ON
5666                                                                          ;NO GO TO ERROR
5667  020752  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5668  020754  000521                          .WORD   521                     ;UNIQUE ERROR NUMBER
5669  020756  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5670
5671  020760  000257                  6$:     CCC                             ;SETUP PSW
5672  020762  000273                          .WORD   273                     ; TEST SEN SEC SEV
5673  020764  022737  030013  177776          CMP     #30013,@#177776         ;PSW CORRECT?
5674  020772  001403                          BEQ     7$                      ;YES GO ON
5675                                                                          ;NO GO TO ERROR
5676  020774  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5677  020776  000522                          .WORD   522                     ;UNIQUE ERROR NUMBER
5678  021000  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

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5679
5680  021002  000257                    7$:   CCC                       ;SETUP PSW
5681  021004  000274                          .WORD   274                 ; TEST SEN SEZ
5682  021006  022737  030014  177776          CMP     @#30014,@#177776    ;PSW CORRECT?
5683  021014  001403                          BEQ     8$                  ;YES GO ON
5684                                                                      ;NO GO TO ERROR
5685  021016  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5686  021020  000523                          .WORD   523                 ;UNIQUE ERROR NUMBER
5687  021022  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5688
5689  021024  000257                    8$:   CCC                       ;SETUP PSW
5690  021026  000275                          .WORD   275                 ; TEST SEN SEC SEZ
5691  021030  022737  030015  177776          CMP     @#30015,@#177776    ;PSW CORRECT?
5692  021036  001403                          BEQ     9$                  ;YES GO ON
5693                                                                      ;NO GO TO ERROR
5694  021040  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5695  021042  000524                          .WORD   524                 ;UNIQUE ERROR NUMBER
5696  021044  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5697
5698  021046  000257                    9$:   CCC                       ;SETUP PSW
5699  021050  000276                          .WORD   276                 ; TEST SEN SEV SEZ
5700  021052  022737  030016  177776          CMP     @#30016,@#177776    ;PSW CORRECT?
5701  021060  001403                          BEQ     10$                 ;YES GO ON
5702                                                                      ;NO GO TO ERROR
5703  021062  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5704  021064  000525                          .WORD   525                 ;UNIQUE ERROR NUMBER
5705  021066  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5706
5707  021070                          10$:
5708                                          ;
5709
5710  021070                          TE113A:
5711                                  ;;**********************************************************************
5712                                  ;*TEST 171      TEST SIGNED AND CONDITIONAL BRANCHES
5713                                  ;;**********************************************************************
5714  021070                          TST171:
5715  021070  005267  157710                  INC     #TESTN              ;INCREMENT TEST NUMBER
5716  021074  000257                          CCC                         ;CLEAR ALL CC BITS IN PSW
5717  021076  002003                          BGE     1$                  ;BGE SHOULD BRANCH
5718                                                                      ;ERROR! DIDN'T BRANCH
5719  021100  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5720  021102  000526                          .WORD   526                 ;UNIQUE ERROR NUMBER
5721  021104  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5722
5723  021106  003003                  1$:     BGT     2$                  ;BGT SHOULD BRANCH
5724                                                                      ;ERROR! DIDN'T BRANCH
5725  021110  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5726  021112  000527                          .WORD   527                 ;UNIQUE ERROR NUMBER
5727  021114  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
5728
5729  021116  003401                  2$:     BLE     3$                  ;BLE SHOULDN'T BRANCH
5730  021120  000403                          BR      4$                  ;BRANCH TO NEXT TEST
5731                                                                      ;ERROR; BLE SHOULD NOT HAVE BRANCHED
5732  021122                          3$:
5733  021122  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
5734  021124  000530                          .WORD   530                 ;UNIQUE ERROR NUMBER
```

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5735  021126  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
5736
5737  021130  002401              4$:       BLT     5$                      ;BLT SHOULD NOT BRANCH
5738  021132  000403                        BR      6$                      ;BRANCH TO NEXT TEST
5739                                                                        ;ERROR; BLT SHOULD NOT HAVE BRANCHED
5740  021134                      5$:
5741  021134  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5742  021136  000531                        .WORD   531                     ;UNIQUE ERROR NUMBER
5743  021140  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5744
5745  021142  000264              6$:       SEZ                             ;SET THE Z BIT IN PSW
5746  021144  003403                        BLE     7$                      ;BLE SHOULD BRANCH
5747                                                                        ;ERROR; BLE DIDN'T BRANCH
5748  021146  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5749  021150  000532                        .WORD   532                     ;UNIQUE ERROR NUMBER
5750  021152  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5751
5752  021154  003001              7$:       BGT     8$                      ;BGT SHOULD NOT BRANCH
5753  021156  000403                        BR      9$                      ;BRANCH TO NEXT TEST
5754                                                                        ;ERROR; BGT SHOULD NOT HAVE BRANCHED
5755  021160                      8$:
5756  021160  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5757  021162  000533                        .WORD   533                     ;UNIQUE ERROR NUMBER
5758  021164  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5759
5760  021166  000257              9$:       CCC                             ;CLEAR ALL CC BITS IN PSW
5761  021170  000270                        SEN                             ;SET N BIT IN PSW
5762  021172  002403                        BLT     10$                     ;SHOULD BRANCH TO NEXT TEST
5763                                                                        ;ERROR; BLT SHOULD HAVE BRANCHED
5764  021174  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5765  021176  000534                        .WORD   534                     ;UNIQUE ERROR NUMBER
5766  021200  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5767
5768  021202  003403              10$:      BLE     11$                     ;SHOULD BRANCH TO NEXT TEST
5769                                                                        ;ERROR; BLE SHOULD HAVE BRANCHED
5770  021204  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5771  021206  000535                        .WORD   535                     ;UNIQUE ERROR NUMBER
5772  021210  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5773
5774  021212  002001              11$:      BGE     12$                     ;BGE SHOULD NOT BRANCH
5775  021214  000403                        BR      13$                     ;BRANCH TO NEXT TEST
5776                                                                        ;ERROR; BGE SHOULD NOT HAVE BRANCHED
5777  021216                      12$:
5778  021216  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5779  021220  000536                        .WORD   536                     ;UNIQUE ERROR NUMBER
5780  021222  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5781
5782  021224  003001              13$:      BGT     14$                     ;BGT SHOULD NOT BRANCH
5783  021226  000403                        BR      15$                     ;BRANCH TO NEXT TEST
5784                                                                        ;ERROR; BGT SHOULD NOT HAVE BRANCHED
5785  021230                      14$:
5786  021230  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5787  021232  000537                        .WORD   537                     ;UNIQUE ERROR NUMBER
5788  021234  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5789
5790  021236  000257              15$:      CCC                             ;CLEAR ALL CC BITS
```

```
5791  021240  000262                    SEV                     ;SET V BIT IN PSW
5792  021242  003403                    BLE     16$             ;BLE SHOULD BRANCH
5793                                                            ;ERROR; BLE DIDN'T BRANCH
5794  021244  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5795  021246  000540                    .WORD   540             ;UNIQUE ERROR NUMBER
5796  021250  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5797
5798  021252  002403            16$:    BLT     17$             ;BLT SHOULD BRANCH
5799                                                            ;ERROR; BLT DIDN'T BRANCH
5800  021254  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5801  021256  000541                    .WORD   541             ;UNIQUE ERROR NUMBER
5802  021260  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5803
5804  021262  002001            17$:    BGE     18$             ;BGE SHOULDN'T BRANCH
5805  021264  000403                    BR      19$             ;BRANCH TO NEXT TEST
5806                                                            ;ERROR; BGE SHOULD NOT HAVE BRANCHED
5807  021266                    18$:
5808  021266  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5809  021270  000542                    .WORD   542             ;UNIQUE ERROR NUMBER
5810  021272  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5811
5812  021274  003001            19$:    BGT     20$             ;BGT SHOULD NOT BRANCH
5813  021276  000403                    BR      21$             ;BRANCH TO NEXT TEST
5814                                                            ;ERROR; BGT SHOULD NOT HAVE BRANCHED
5815  021300                    20$:
5816  021300  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5817  021302  000543                    .WORD   543             ;UNIQUE ERROR NUMBER
5818  021304  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5819
5820  021306  000257            21$:    CCC                     ;CLEAR ALL CC BITS
5821  021310  000272                    .WORD   272             ;SET N AND V BITS IN PSW
5822  021312  002003                    BGE     22$             ;BGE SHOULD BRANCH
5823                                                            ;ERROR; BGE DIDN'T BRANCH
5824  021314  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5825  021316  000544                    .WORD   544             ;UNIQUE ERROR NUMBER
5826  021320  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5827
5828  021322  003003            22$:    BGT     23$             ;BGT SHOULD BRANCH
5829                                                            ;ERROR; BGT DIDN'T BRANCH
5830  021324  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5831  021326  000545                    .WORD   545             ;UNIQUE ERROR NUMBER
5832  021330  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5833
5834  021332  003401            23$:    BLE     24$             ;BLE SHOULDN'T BRANCH
5835  021334  000403                    BR      25$             ;BRANCH TO NEXT TEST
5836                                                            ;ERROR; BLE SHOULD NOT HAVE BRANCHED
5837  021336                    24$:
5838  021336  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5839  021340  000546                    .WORD   546             ;UNIQUE ERROR NUMBER
5840  021342  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5841
5842  021344  002401            25$:    BLT     26$             ;BLT SHOULD NOT BRANCH
5843  021346  000403                    BR      27$             ;BRANCH TO NEXT TEST
5844                                                            ;ERROR; BLT SHOULD NOT HAVE BRANCHED
5845  021350                    26$:
5846  021350  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
5847  021352  000547                          .WORD   547                     ;UNIQUE ERROR NUMBER
5848  021354  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5849
5850  021356                          27$:
5851
5852  021356                          TE114:
5853                                  ;;*************************************************************
5854                                  ;*TEST 172       TEST NOP INST
5855                                  ;;*************************************************************
5856  021356                          TST172:
5857  021356  005267  157422                  INC     $TESTN                  ;INCREMENT TEST NUMBER
5858  021362  012737  030000  177776          MOV     #30000,@#177776         ;INIT PSW
5859  021370  012700  000001                  MOV     #1,R0                   ;INIT R0
5860  021374  012701  000002                  MOV     #2,R1                   ;INIT R1
5861  021400  012702  000003                  MOV     #3,R2                   ;INIT R2
5862  021404  012703  000004                  MOV     #4,R3                   ;INIT R3
5863  021410  012704  000005                  MOV     #5,R4                   ;INIT R4
5864  021414  012705  000006                  MOV     #6,R5                   ;INIT R5
5865  021420  010637  001030                  MOV     R6,@#SLOC00             ;SAVE SP
5866  021424  012737  030017  001034          MOV     #30017,@#EXPDAT         ;SETUP PSW
5867  021432  000277                          SCC                             ;SET ALL CONDITION CODE BITS
5868  021434  000240                          NOP                             ; TEST INSTRUCTION
5869  021436  000240                          NOP                             ; TEST INSTRUCTION
5870  021440  000240                          NOP                             ; TEST INSTRUCTION
5871  021442  004767  000056                  JSR     PC,T114                 ;CHECK PSW, AND GPR'S
5872  021446  020637  001030                  CMP     R6,@#SLOC00             ;CHECK SP
5873  021452  001403                          BEQ     1$                      ;OK GO ON
5874                                                                  ;ERROR; BLT SHOULD NOT HAVE BRANCHED
5875  021454  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5876  021456  000550                          .WORD   550                     ;UNIQUE ERROR NUMBER
5877  021460  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5878
5879  021462  012737  030000  001034  1$:     MOV     #30000,@#EXPDAT         ;SETUP PSW
5880  021470  000257                          CCC                             ;CLEAR ALL CONDITION CODE BITS
5881  021472  000260                          .WORD   260                     ; TEST FOR NOP OPERATION
5882  021474  000260                          .WORD   260                     ; TEST FOR NOP OPERATION
5883  021476  000260                          .WORD   260                     ; TEST FOR NOP OPERATION
5884  021500  004767  000020                  JSR     PC,T114                 ;CHECK PSW, AND GPR'S
5885  021504  020637  001030                  CMP     R6,@#SLOC00             ;CHECK SP
5886  021510  001403                          BEQ     2$                      ;OK GO ON
5887                                                                  ;ERROR; BLT SHOULD NOT HAVE BRANCHED
5888  021512  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5889  021514  000551                          .WORD   551                     ;UNIQUE ERROR NUMBER
5890  021516  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5891
5892  021520                          2$:
5893
5894  021520  000167  000140                  JMP     FINNOP
5895
5896  021524  023737  001034  177776  T114:   CMP     @#EXPDAT,@#177776       ;CHECK PSW
5897  021532  001407                          BEQ     TA114                   ;OK GO ON
5898  021534  010067  156640                  MOV     R0,400                  ;SAVE R0
5899                                                                  ;ERROR; BLT SHOULD NOT HAVE BRANCHED
5900  021540  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5901  021542  000552                          .WORD   552                     ;UNIQUE ERROR NUMBER
5902  021544  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
5903
5904  021546  016700  156626          MOV     400,R0          ;RESTORE R0
5905  021552  022700  000001  TA114:  CMP     #1,R0           ;CHECK R0
5906  021556  001403                  BEQ     TB114           ;OK GO ON
5907                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5908  021560  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5909  021562  000553                  .WORD   553             ;UNIQUE ERROR NUMBER
5910  021564  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5911
5912  021566  022701  000002  TB114:  CMP     #2,R1           ;CHECK R1
5913  021572  001403                  BEQ     TC114           ;OK GO ON
5914                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5915  021574  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5916  021576  000554                  .WORD   554             ;UNIQUE ERROR NUMBER
5917  021600  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5918
5919  021602  022702  000003  TC114:  CMP     #3,R2           ;CHECK R2
5920  021606  001403                  BEQ     TD114           ;OK GO ON
5921                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5922  021610  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5923  021612  000555                  .WORD   555             ;UNIQUE ERROR NUMBER
5924  021614  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5925
5926  021616  022703  000004  TD114:  CMP     #4,R3           ;CHECK R3
5927  021622  001403                  BEQ     TF114           ;OK GO ON
5928                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5929  021624  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5930  021626  000556                  .WORD   556             ;UNIQUE ERROR NUMBER
5931  021630  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5932
5933  021632  022704  000005  TF114:  CMP     #5,R4           ;CHECK R4
5934  021636  001403                  BEQ     TG114           ;OK GO ON
5935                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5936  021640  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5937  021642  000557                  .WORD   557             ;UNIQUE ERROR NUMBER
5938  021644  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5939
5940  021646  022705  000006  TG114:  CMP     #6,R5           ;CHECK R5
5941  021652  001403                  BEQ     TH114           ;OK GO ON
5942                                                  ;ERROR: BLT SHOULD NOT HAVE BRANCHED
5943  021654  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5944  021656  000560                  .WORD   560             ;UNIQUE ERROR NUMBER
5945  021660  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5946
5947  021662  000207          TH114:  RTS     PC              ;RETURN
5948                          ;
5949  021664                  FINNOP:
5950                          ;;*****************************************************************
5951                          ;*TEST 173       TEST ATERNATE REGISTER SET
5952                          ;;*****************************************************************
5953  021664                  TST173:
5954  021664  005267  157114          INC     @TESTN          ;INCREMENT TEST NUMBER
5955  021670  005000                  CLR     R0              ;------CLEAR------
5956  021672  005001                  CLR     R1              ;-----PRIMARY----
5957  021674  005002                  CLR     R2              ;-----GENERAL-----
5958  021676  005003                  CLR     R3              ;-----PURPOSE-----
```

```
5959  021700  005004                        CLR     R4              ;-----REGISTER----
5960  021702  005005                        CLR     R5              ;-------SET-------
5961  021704  012767  004000  156064        MOV     #4000,PS        ;SELECT ALTERNATE REGISTER SET
5962  021712  032767  004000  156056        BIT     #BIT11,PS       ;TEST TO SEE THAT BIT IS SET IN PS
5963  021720  001003                        BNE     1$              ;IF IT'S SET GO TESTS REGISTERS
5964                                                                ;ERROR! ALTERNATE REGISTER SELECT
5965  021722  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5966  021724  000561                        .WORD   561             ;UNIQUE ERROR NUMBER
5967  021726  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5968                                                                ;BIT IN PS IS NOT SET
5969  021730  012700  177777        1$:     MOV     #177777,R0      ;WRITE ALL ONES TO ALTERNATE REG SET
5970  021734  010001                        MOV     R0,R1           ;
5971  021736  010102                        MOV     R1,R2           ;
5972  021740  010203                        MOV     R2,R3           ;
5973  021742  010304                        MOV     R3,R4           ;
5974  021744  010405                        MOV     R4,R5           ;
5975  021746  042767  004000  156022        BIC     #BIT11,PS       ;CLEAR BIT 11 IN PS
5976  021754  032767  004000  156014        BIT     #BIT11,PS       ;IS BIT 11 = 0?
5977  021762  001403                        BEQ     2$              ;IF IT'S NOT ZERO
5978                                                                ;ERROR! BIT 11 DID NOT CLEAR
5979  021764  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5980  021766  000562                        .WORD   562             ;UNIQUE ERROR NUMBER
5981  021770  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5982  021772  005700        2$:     TST     R0                      ;MAKE SURE THAT WE REALLY
5983  021774  001403                        BEQ     3$              ;WERE TALKING TO ALTERNATE REGISTERS.
5984                                                                ;ERROR!
5985  021776  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5986  022000  000563                        .WORD   563             ;UNIQUE ERROR NUMBER
5987  022002  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5988  022004  005701        3$:     TST     R1                      ;
5989  022006  001403                        BEQ     4$
5990                                                                ;ERROR!
5991  022010  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5992  022012  000564                        .WORD   564             ;UNIQUE ERROR NUMBER
5993  022014  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5994  022016  005702        4$:     TST     R2                      ;
5995  022020  001403                        BEQ     5$              ;
5996                                                                ;ERROR!
5997  022022  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5998  022024  000565                        .WORD   565             ;UNIQUE ERROR NUMBER
5999  022026  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6000  022030  005703        5$:     TST     R3                      ;
6001  022032  001403                        BEQ     6$              ;
6002                                                                ;
6003  022034  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6004  022036  000566                        .WORD   566             ;UNIQUE ERROR NUMBER
6005  022040  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6006  022042  005704        6$:     TST     R4                      ;
6007  022044  001403                        BEQ     7$              ;
6008                                                                ;
6009  022046  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6010  022050  000567                        .WORD   567             ;UNIQUE ERROR NUMBER
6011  022052  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6012  022054  005705        7$:     TST     R5                      ;
6013  022056  001403                        BEQ     8$              ;
6014                                                                ;ERROR!
```

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6015  022060  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6016  022062  000570                        .WORD   570             ;UNIQUE ERROR NUMBER
6017  022064  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6018  022066  012767  004000  155702  8$:   MOV     #BIT11,PS       ;ENABLE ALTERNATE REGISTER SET
6019  022074  005000                        CLR     R0              ;-----CLEAR-----
6020  022076  005001                        CLR     R1              ;---ALTERNATE---
6021  022100  005002                        CLR     R2              ;----REGISTER---
6022  022102  005003                        CLR     R3              ;------SET-----
6023  022104  005004                        CLR     R4              ;
6024  022106  005005                        CLR     R5              ;
6025  022110  042767  004000  155660        BIC     #BIT11,PS       ;BACK TO PRIMARY GPRS
6026  022116  012700  177777                MOV     #177777,R0      ;ENSURE THAT WRITES TO PRIMARY GPRS
6027  022122  010001                        MOV     R0,R1           ;DO NOT EFFECT ALTERNATE GPRS
6028  022124  010102                        MOV     R1,R2           ;
6029  022126  010203                        MOV     R2,R3           ;
6030  022130  010304                        MOV     R3,R4           ;
6031  022132  010405                        MOV     R4,R5           ;
6032  022134  052767  004000  155634        BIS     #BIT11,PS       ;RETURN TO ALTERNATE REGISTERS
6033  022142  005700                        TST     R0              ;SHOULD BE ALL 0'S
6034  022144  001403                        BEQ     9$              ;
6035                                                                ;ERROR!
6036  022146  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6037  022150  000571                        .WORD   571             ;UNIQUE ERROR NUMBER
6038  022152  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6039  022154  005701                9$:     TST     R1              ;
6040  022156  001403                        BEQ     10$             ;
6041                                                                ;
6042  022160  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6043  022162  000572                        .WORD   572             ;UNIQUE ERROR NUMBER
6044  022164  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6045  022166  005702                10$:    TST     R2              ;
6046  022170  001403                        BEQ     11$             ;
6047                                                                ;
6048  022172  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6049  022174  000573                        .WORD   573             ;UNIQUE ERROR NUMBER
6050  022176  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6051  022200  005703                11$:    TST     R3              ;
6052  022202  001403                        BEQ     12$             ;
6053                                                                ;
6054  022204  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6055  022206  000574                        .WORD   574             ;UNIQUE ERROR NUMBER
6056  022210  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6057  022212  005704                12$:    TST     R4              ;
6058  022214  001403                        BEQ     13$             ;
6059                                                                ;
6060  022216  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6061  022220  000575                        .WORD   575             ;UNIQUE ERROR NUMBER
6062  022222  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6063  022224  005705                13$:    TST     R5              ;
6064  022226  001403                        BEQ     14$             ;
6065  022230  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6066  022232  000576                        .WORD   576             ;UNIQUE ERROR NUMBER
6067  022234  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6068  022236                        14$:
6069
6070
```

```
6071  022236                          ALROTS:
6072                                  ;;*****************************************************************
6073                                  ;*TEST 174      ALTERNATE REGISTER SET R0 BIT TESTS
6074                                  ;;*****************************************************************
6075  022236                          TST174:
6076  022236  005267  156542                INC     $TESTN                  ;INCREMENT TEST NUMBER
6077  022242  012700  177777                MOV     #177777,R0              ;R0=177777
6078  022246  020027  177777                CMP     R0,#177777              ;DOES R0=177777
6079  022252  001403                        BEQ     1$                      ;YES GO ON
6080                                                                        ;NO GO TO ERROR
6081  022254  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6082  022256  000577                        .WORD   577                     ;UNIQUE ERROR NUMBER
6083  022260  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6084  022262  005000                1$:     CLR     R0                      ;R0=0
6085  022264  020027  000000                CMP     R0,#0                   ;DOES R0=0
6086  022270  001403                        BEQ     2$                      ;YES GO ON
6087                                                                        ;NO GO TO ERROR
6088  022272  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6089  022274  000600                        .WORD   600                     ;UNIQUE ERROR NUMBER
6090  022276  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6091  022300  012700  125252        2$:     MOV     #125252,R0              ;R0=125252
6092  022304  020027  125252                CMP     R0,#125252              ;DOES R0=125252
6093  022310  001403                        BEQ     3$                      ;YES GO ON
6094                                                                        ;NO GO TO ERROR
6095  022312  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6096  022314  000601                        .WORD   601                     ;UNIQUE ERROR NUMBER
6097  022316  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6098  022320  012700  052525        3$:     MOV     #52525,R0               ;R0=52525
6099  022324  020027  052525                CMP     R0,#52525               ;DOES R0=52525
6100  022330  001403                        BEQ     4$                      ;YES GO ON
6101                                                                        ;NO GO TO ERROR
6102  022332  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6103  022334  000602                        .WORD   602                     ;UNIQUE ERROR NUMBER
6104  022336  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6105  022340                          4$:
6106
6107
6108  022340                          ;
6109                                  ALR1TS:
6110                                  ;;*****************************************************************
6111                                  ;*TEST 175      ALTERNATE REGISTER SET R1 BIT TESTS
6112  022340                          ;;*****************************************************************
6113  022340  005267  156440          TST175:
6114  022344  012701  177777                INC     $TESTN                  ;INCREMENT TEST NUMBER
6115  022350  020127  177777                MOV     #177777,R1              ;R1=177777
6116  022354  001403                        CMP     R1,#177777              ;DOES R1=177777
6117                                        BEQ     1$                      ;YES GO ON
6118  022356  104000                                                        ;NO GO TO ERROR
6119  022360  000603                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6120  022362  001127                        .WORD   603                     ;UNIQUE ERROR NUMBER
6121  022364  005001                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6122  022366  020127  000000        1$:     CLR     R1                      ;R1=0
6123  022372  001403                        CMP     R1,#0                   ;DOES R1=0
6124                                        BEQ     2$                      ;YES GO ON
6125  022374  104000                                                        ;NO GO TO ERROR
6126  022376  000604                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                            .WORD   604                     ;UNIQUE ERROR NUMBER
```

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 6127  022400  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6128  022402  012701  125252        2$:     MOV     #125252,R1             ;R1=125252
 6129  022406  020127  125252                CMP     R1,#125252             ;DOES R1=125252
 6130  022412  001403                        BEQ     3$                     ;YES GO ON
 6131                                                                       ;NO GO TO ERROR
 6132  022414  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6133  022416  000605                        .WORD   605                    ;UNIQUE ERROR NUMBER
 6134  022420  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6135  022422  012701  052525        3$:     MOV     #52525,R1              ;R1=52525
 6136  022426  020127  052525                CMP     R1,#52525              ;DOES R1=52525
 6137  022432  001403                        BEQ     4$                     ;YES GO ON
 6138                                                                       ;NO GO TO ERROR
 6139  022434  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6140  022436  000606                        .WORD   606                    ;UNIQUE ERROR NUMBER
 6141  022440  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6142  022442                        4$:
 6143
 6144                                        ;
 6145  022442                        ALR2TS:
 6146                                        ;;*************************************************************************
 6147                                        ;*TEST 176      ALTERNATE REGISTER SET R2 BIT TESTS
 6148                                        ;;*************************************************************************
 6149  022442                        TST176:
 6150  022442  005267  156336                INC     $TESTN                 ;INCREMENT TEST NUMBER
 6151  022446  012702  177777                MOV     #177777,R2             ;R2=177777
 6152  022452  020227  177777                CMP     R2,#177777             ;DOES R2=177777
 6153  022456  001403                        BEQ     1$                     ;YES GO ON
 6154                                                                       ;NO GO TO ERROR
 6155  022460  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6156  022462  000607                        .WORD   607                    ;UNIQUE ERROR NUMBER
 6157  022464  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6158  022466  005002                1$:     CLR     R2                     ;R2=0
 6159  022470  020227  000000                CMP     R2,#0                  ;DOES R2=0
 6160  022474  001403                        BEQ     2$                     ;YES GO ON
 6161                                                                       ;NO GO TO ERROR
 6162  022476  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6163  022500  000610                        .WORD   610                    ;UNIQUE ERROR NUMBER
 6164  022502  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6165  022504  012702  125252        2$:     MOV     #125252,R2             ;R2=125252
 6166  022510  020227  125252                CMP     R2,#125252             ;DOES R2=125252
 6167  022514  001403                        BEQ     3$                     ;YES GO ON
 6168                                                                       ;NO GO TO ERROR
 6169  022516  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6170  022520  000611                        .WORD   611                    ;UNIQUE ERROR NUMBER
 6171  022522  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6172  022524  012702  052525        3$:     MOV     #52525,R2              ;R2=52525
 6173  022530  020227  052525                CMP     R2,#52525              ;DOES R2=52525
 6174  022534  001403                        BEQ     4$                     ;YES GO ON
 6175                                                                       ;NO GO TO ERROR
 6176  022536  104000                        ERROR                          ;ALL ERRORS TO TRAP TO EMT VECTOR
 6177  022540  000612                        .WORD   612                    ;UNIQUE ERROR NUMBER
 6178  022542  001127                        .WORD   CPUERR                 ;ADDRESS OF ERROR MESSAGE
 6179  022544                        4$:
 6180
 6181                                        ;
 6182  022544                        ALR3TS:
```

```
6183
6184
6185
6186  022544
6187  022544  005267  156234          ;;*********************************************************************
6188  022550  012703  177777          ;*TEST 177      ALTERNATE REGISTER SET R3 BIT TESTS
6189  022554  020327  177777          ;;*********************************************************************
6190  022560  001403                  TST177:
6191                                          INC     $TESTN                  ;INCREMENT TEST NUMBER
6192  022562  104000                        MOV     #177777,R3              ;R3=177777
6193  022564  000613                        CMP     R3,#177777              ;DOES R3=177777
6194  022566  001127                        BEQ     1$                      ;YES GO ON
6195  022570  005003                                                        ;NO GO TO ERROR
6196  022572  020327  000000        1$:     ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6197  022576  001403                        .WORD   613                     ;UNIQUE ERROR NUMBER
6198                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6199  022600  104000                        CLR     R3                      ;R3=0
6200  022602  000614                        CMP     R3,#0                   ;DOES R3=0
6201  022604  001127                        BEQ     2$                      ;YES GO ON
6202  022606  012703  125252                                                ;NO GO TO ERROR
6203  022612  020327  125252        2$:     ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6204  022616  001403                        .WORD   614                     ;UNIQUE ERROR NUMBER
6205                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6206  022620  104000                        MOV     #125252,R3              ;R3=125252
6207  022622  000615                        CMP     R3,#125252              ;DOES R3=125252
6208  022624  001127                        BEQ     3$                      ;YES GO ON
6209  022626  012703  052525                                                ;NO GO TO ERROR
6210  022632  020327  052525        3$:     ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6211  022636  001403                        .WORD   615                     ;UNIQUE ERROR NUMBER
6212                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6213  022640  104000                        MOV     #52525,R3               ;R3=52525
6214  022642  000616                        CMP     R3,#52525               ;DOES R3=52525
6215  022644  001127                        BEQ     4$                      ;YES GO ON
6216  022646                                                                ;NO GO TO ERROR
6217                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6218                                        .WORD   616                     ;UNIQUE ERROR NUMBER
6219  022646                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6220                                  4$:
6221
6222                                  ;
6223  022646                          ALR4TS:
6224  022646  005267  156132          ;;*********************************************************************
6225  022652  012704  177777          ;*TEST 200      ALTERNATE REGISTER SET R4 BIT TESTS
6226  022656  020427  177777          ;;*********************************************************************
6227  022662  001403                  TST200:
6228                                          INC     $TESTN                  ;INCREMENT TEST NUMBER
6229  022664  104000                        MOV     #177777,R4              ;R4=177777
6230  022666  000617                        CMP     R4,#177777              ;DOES R4=177777
6231  022670  001127                        BEQ     1$                      ;YES GO ON
6232  022672  005004                                                        ;NO GO TO ERROR
6233  022674  020427  000000        1$:     ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6234  022700  001403                        .WORD   617                     ;UNIQUE ERROR NUMBER
6235                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6236  022702  104000                        CLR     R4                      ;R4=0
6237  022704  000620                        CMP     R4,#0                   ;DOES R4=0
6238  022706  001127                        BEQ     2$                      ;YES GO ON
                                                                            ;NO GO TO ERROR
                                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                          .WORD   620                     ;UNIQUE ERROR NUMBER
                                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
                                2$:     MOV     #125252,R4              ;R4=125252
                                        CMP     R4,#125252              ;DOES R4=125252
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   621                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                3$:     MOV     #52525,R4               ;R4=52525
                                        CMP     R4,#52525               ;DOES R4=52525
                                        BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   622                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                4$:

                                ;
                                ALR5TS:
                                ;;*****************************************************************
                                ;*TEST 201      ALTERNATE REGISTER SET R5 BIT TESTS
                                ;;*****************************************************************
                                TST201:
                                        INC     @TESTN                  ;INCREMENT TEST NUMBER
                                        MOV     #177777,R5              ;R5=177777
                                        CMP     R5,#177777              ;DOES R5=177777
                                        BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   623                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                1$:     CLR     R5                      ;R5=0
                                        CMP     R5,#0                   ;DOES R5=0
                                        BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   624                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                2$:     MOV     #125252,R5              ;R5=125252
                                        CMP     R5,#125252              ;DOES R5=125252
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   625                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                3$:     MOV     #52525,R5               ;R5=52525
                                        CMP     R5,#52525               ;DOES R5=52525
                                        BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   626                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                4$:     BIC     #BIT11,PS               ;RETURN TO PRIMARY GEN PURPOSE REGS

                                ;
                                TE115:
                                ;;*****************************************************************
```

```
6295
6296                                    ;*TEST 202      TEST MFPS (MOVE FROM PROCCESSOR STATUS) INST
6297  023060                            ;*****************************************************************
6298  023060  005267  155720           TST202: INC     #TESTN                  ;INCREMENT TEST NUMBER
6299  023064  005004                           CLR     R4                      ;SETUP DESTINATION R4
6300
6301  023066  012701  023330                   MOV     #TE115A,R1              ;SETUP POINTERS TO TABLES
6302  023072  012702  023340                   MOV     #TE115B,R2              ;
6303  023076  012703  023346                   MOV     #TE115C,R3              ;
6304  023102  012137  177776           1$:     MOV     (R1)+,@#177776          ;SETUP PSW
6305  023106  106704                           MFPS    R4                      ; TEST INSTRUCTION
6306  023110  023722  177776                   CMP     @#177776,(R2)+          ;CHECK PSW
6307  023114  001403                           BEQ     2$                      ;OK GO ON
6308                                                                            ;NO GO TO ERROR
6309  023116  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6310  023120  000627                           .WORD   627                     ;UNIQUE ERROR NUMBER
6311  023122  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6312
6313  023124  020423                   2$:     CMP     R4,(R3)+                ;CHECK R4
6314  023126  001403                           BEQ     3$                      ;OK GO ON
6315                                                                            ;NO GO TO ERROR
6316  023130  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6317  023132  000630                           .WORD   630                     ;UNIQUE ERROR NUMBER
6318  023134  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6319
6320  023136  021127  177777           3$:     CMP     (R1),@#177777           ;ARE WE DONE
6321  023142  001357                           BNE     1$                      ;NO GO TO 1$
6322
6323
6324  023144  012701  023330                   MOV     #TE115A,R1              ;SETUP POINTERS TO TABLES
6325  023150  012702  023340                   MOV     #TE115B,R2              ;
6326  023154  012703  023346                   MOV     #TE115C,R3              ;
6327  023160  010605                           MOV     R6,R5                   ;SAVE STACK IN R5
6328  023162  011137  177776           101$:   MOV     (R1),@#177776           ;SETUP PSW
6329  023166  106706                           MFPS    R6                      ; TEST INSTRUCTION
6330  023170  023712  177776                   CMP     @#177776,(R2)           ;CHECK PSW
6331  023174  001403                           BEQ     102$                    ;OK GO ON
6332                                                                            ;NO GO TO ERROR
6333  023176  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6334  023200  000631                           .WORD   631                     ;UNIQUE ERROR NUMBER
6335  023202  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6336
6337  023204  020613                   102$:   CMP     R6,(R3)                 ;CHECK R6
6338  023206  001403                           BEQ     103$                    ;OK GO ON
6339                                                                            ;NO GO TO ERROR
6340  023210  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6341  023212  000632                           .WORD   632                     ;UNIQUE ERROR NUMBER
6342  023214  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6343
6344  023216  010506                   103$:   MOV     R5,R6                   ;RESTORE STACK
6345
6346
6347  023220  012701  023330                   MOV     #TE115A,R1              ;SETUP POINTERS TO TABLES
6348  023224  012702  023340                   MOV     #TE115B,R2              ;
6349  023230  012703  023354                   MOV     #TE115D,R3              ;
6350  023234  005037  001034                   CLR     @#EXPDAT                ;INIT EXPECTED DATA HOLDER.
```

```
6351  023240  012704  001034          4$:     MOV     #EXPDAT,R4              ;SETUP POINTER TO TEST LOCATION
6352  023244  012137  177776                  MOV     (R1)+,@#177776          ;SETUP PSW
6353  023250  106724                         MFPS    (R4)+                   ; TEST INSTRUCTION
6354  023252  023722  177776                  CMP     @#177776,(R2)+          ;CHECK PSW
6355  023256  001403                         BEQ     5$                      ;OK GO ON
6356                                                                          ;NO GO TO ERROR
6357  023260  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6358  023262  000633                         .WORD   633                     ;UNIQUE ERROR NUMBER
6359  023264  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6360
6361  023266  020427  001035          5$:     CMP     R4,#EXPDAT+1            ;CHECK R4
6362  023272  001403                         BEQ     6$                      ;OK GO ON
6363                                                                          ;NO GO TO ERROR
6364  023274  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6365  023276  000634                         .WORD   634                     ;UNIQUE ERROR NUMBER
6366  023300  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6367
6368  023302  023723  001034          6$:     CMP     @#EXPDAT,(R3)+          ;CHECK TEST LOCATION
6369  023306  001403                         BEQ     7$                      ;OK GO ON
6370                                                                          ;NO GO TO ERROR
6371  023310  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6372  023312  000635                         .WORD   635                     ;UNIQUE ERROR NUMBER
6373  023314  001127                         .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6374  023316  021127  177777          7$:     CMP     (R1),#177777            ;ARE WE DONE
6375  023322  001346                         BNE     4$                      ;NO GO TO 4$
6376
6377  023324  000167  000032                JMP     TE115F
6378
6379                                          ;
6380                                          ;
6381  023330  030207                TE115A:   .WORD   30207
6382  023332  030000                          .WORD   30000
6383  023334  030057                          .WORD   30057
6384  023336  177777                          .WORD   177777
6385  023340  030211                TE115B:   .WORD   30211
6386  023342  030004                          .WORD   30004
6387  023344  030041                          .WORD   30041
6388  023346  177607                TE115C:   .WORD   177607
6389  023350  000000                          .WORD   0
6390  023352  000057                          .WORD   57
6391  023354  000207                TE115D:   .WORD   207
6392  023356  000000                          .WORD   0
6393  023360  000057                          .WORD   57
6394  023362  000240                TE115F:   NOP
6395                                          ;
6396  023364                        TE116:
6397                                          ;;*****************************************************************
6398                                          ;*TEST 203      TEST MTPS (MOVE TO PROCESSOR STATUS) INST
6399                                          ;;*****************************************************************
6400  023364                        TST203:
6401  023364  005267  155414                 INC     $TESTN                  ;INCREMENT TEST NUMBER
6402
6403  023370  012737  030000  177776          MOV     #30000,@#177776         ;SET PSW TO KERNEL MODE
6404  023376  012701  023722                  MOV     #TE116D,R1              ;SETUP POINTERS TO TABLES
6405  023402  012702  023700                  MOV     #TE116B,R2              ;
6406  023406  010103                         MOV     R1,R3                   ;
```

```
6407  023410  004767  000142                    JSR     PC,T116                 ; TEST INSTRUCTION AND CHECK PSW
6408                                                                            ;AND SOURCE OPERAND
6409
6410
6411  023414  012737  140000  177776            MOV     #140000,@#177776        ;SET PSW TO USER MODE
6412  023422  012706  000600                    MOV     #600,R6                 ;SETUP USER STACK
6413  023426  012701  023722                    MOV     #TE116D,R1              ;SETUP POINTERS TO TABLES
6414  023432  012702  023712                    MOV     #TE116C,R2              ;
6415  023436  010103                            MOV     R1,R3                   ;
6416  023440  004767  000112                    JSR     PC,T116                 ; TEST INSTRUCTION AND CHECK PSW
6417                                                                            ;AND SOURCE OPERAND
6418
6419
6420  023444  012737  140000  177776            MOV     #140000,@#177776        ;SET PSW TO USER MODE AND CLEAR CC BITS
6421  023452  012701  023674                    MOV     #TE116A,R1              ;SETUP POINTERS TO TABLES
6422  023456  012702  023712                    MOV     #TE116C,R2              ;
6423  023462  012703  023722                    MOV     #TE116D,R3              ;
6424  023466  010104                            MOV     R1,R4                   ;SAVE A COPY OF R1 INTO R4
6425  023470  004767  000124                    JSR     PC,TA116                ; TEST INSTRUCTION AND CHECK PSW
6426                                                                            ;AND SOURCE OPERAND
6427
6428
6429  023474  012737  030000  177776            MOV     #30000,@#177776         ;SET PSW TO KERNEL MODE
6430  023502  012701  023674                    MOV     #TE116A,R1              ;SETUP POINTERS TO TABLES
6431  023506  012702  023700                    MOV     #TE116B,R2              ;
6432  023512  012703  023722                    MOV     #TE116D,R3              ;
6433  023516  010104                            MOV     R1,R4                   ;SAVE A COPY OF R1 INTO R4
6434  023520  004767  000074                    JSR     PC,TA116                ; TEST INSTRUCTION AND CHECK PSW
6435                                                                            ;AND SOURCE OPERAND
6436
6437  023524  005037  177776                    CLR     @#177776                ;SET PSW TO KERNEL MODE
6438  023530  106427  177412                    MTPS    #177412                 ;TEST INSTRUCTION
6439  023534  022737  000012  177776            CMP     #12,@#177776            ;IS PSW CORRECT
6440  023542  001403                            BEQ     100$                    ;YES GO ON
6441                                                                            ;NO GO TO ERROR
6442  023544  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6443  023546  000636                            .WORD   636                     ;UNIQUE ERROR NUMBER
6444  023550  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6445  023552                            100$:
6446
6447  023552  000167  000154                    JMP     FIN116
6448
6449  023556  012105                    T116:   MOV     (R1)+,R5                ;MOVE TEST DATA TO R5
6450  023560  106405                            MTPS    R5                      ; TEST INSTRUCTION
6451  023562  023722  177776                    CMP     @#177776,(R2)+          ;IS PSW CORRECT
6452  023566  001403                            BEQ     1$                      ;YES GO ON
6453                                                                            ;NO GO TO ERROR
6454  023570  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6455  023572  000637                            .WORD   637                     ;UNIQUE ERROR NUMBER
6456  023574  001127                            .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6457
6458  023576  022305                    1$:     CMP     (R3)+,R5                ;IS R5 CORRECT
6459  023600  001403                            BEQ     2$                      ;YES GO ON
6460                                                                            ;NO GO TO ERROR
6461  023602  104000                            ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6462  023604  000640                            .WORD   640                     ;UNIQUE ERROR NUMBER
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```
6463  023606  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6464
6465  023610  021227  177777        2$:     CMP     (R2),#177777            ;ARE WE DONE
6466  023614  001360                        BNE     T116                    ;NO GO TO T116
6467  023616  000207                        RTS     PC                      ;RETURN
6468                                ;
6469  023620  106421                TA116:  MTPS    (R1)+                   ; TEST INSTRUCTION
6470  023622  023722  177776              CMP     #^O177776,(R2)+         ;IS PSW CORRECT
6471  023626  001403                        BEQ     1$                      ;YES GO ON
6472                                                                        ;NO GO TO ERROR
6473  023630  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6474  023632  000641                        .WORD   641                     ;UNIQUE ERROR NUMBER
6475  023634  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6476
6477  023636  122423                1$:     CMPB    (R4)+,(R3)+             ;CHECK TEST LOCATION
6478  023640  001403                        BEQ     2$                      ;OK GO ON
6479                                                                        ;NO GO TO ERROR
6480  023642  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6481  023644  000642                        .WORD   642                     ;UNIQUE ERROR NUMBER
6482  023646  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6483
6484  023650  020104                2$:     CMP     R1,R4                   ;IS SOURCE OPERAND CORRECT
6485  023652  001403                        BEQ     3$                      ;YES GO ON
6486                                                                        ;NO GO TO ERROR
6487  023654  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6488  023656  000643                        .WORD   643                     ;UNIQUE ERROR NUMBER
6489  023660  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6490
6491  023662  005203                3$:     INC     R3                      ;POINT TO NEXT WORD
6492  023664  021227  177777              CMP     (R2),#177777            ;ARE WE DONE
6493  023670  001353                        BNE     TA116                   ;NO GO TO TA116
6494  023672  000207                        RTS     PC                      ;RETURN
6495                                ;
6496  023674     377                TE116A: .BYTE   377
6497  023675     000                        .BYTE   0
6498  023676     252                        .BYTE   252
6499  023677     125                        .BYTE   125
6500  023700  030357                TE116B: .WORD   30357
6501  023702  030000                        .WORD   30000
6502  023704  030252                        .WORD   30252
6503  023706  030105                        .WORD   30105
6504  023710  177777                        .WORD   177777
6505  023712  140017                TE116C: .WORD   140017
6506  023714  140000                        .WORD   140000
6507  023716  140012                        .WORD   140012
6508  023720  140005                        .WORD   140005
6509  023722  177777                TE116D: .WORD   177777
6510  023724  177400                        .WORD   177400
6511  023726  177652                        .WORD   177652
6512  023730  177525                        .WORD   177525
6513
6514  023732                        FIN116:
6515
6516  023732                        TE117:
6517                                ;;**************************************************************
6518                                ;*TEST 204       TEST MFPT (MOVE FROM PROCESSOR TYPE)
```

```
                                ;;*****************************************************************
023732                          TST204:
023732  005267  155046                  INC     $TESTN                  ;INCREMENT TEST NUMBER
023736  013746  000010                  MOV     @#10,-(SP)              ;SAVE VECTOR
023742  012737  024070  000010          MOV     #TE117A,@#10            ;SETUP VECTOR TO HANDLE POSSIBLE ILLEGAL INST TR
023750  012700  177777                  MOV     #177777,R0              ;INIT R0
023754  012737  030000  177776          MOV     #30000,@#177776         ;SETUP PSW
023762  000007                          .WORD   7                       ; TEST INSTRUCTION
023764  022737  030000  177776          CMP     #30000,@#177776         ;IS PSW CORRECT
023772  001403                          BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
023774  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
023776  000644                          .WORD   644                     ;UNIQUE ERROR NUMBER
024000  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
024002  020027  000005          1$:     CMP     R0,#5                   ;IS R0 CORRECT
024006  001403                          BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
024010  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
024012  000645                          .WORD   645                     ;UNIQUE ERROR NUMBER
024014  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

024016  012700  177777          2$:     MOV     #177777,R0              ;INIT R0
024022  000277                          SCC                             ;SET ALL CC BITS
024024  000007                          .WORD   7                       ; TEST INSTRUCTION
024026  022737  030017  177776          CMP     #30017,@#177776         ;IS PSW CORRECT
024034  001403                          BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
024036  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
024040  000646                          .WORD   646                     ;UNIQUE ERROR NUMBER
024042  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

024044  020027  000005          3$:     CMP     R0,#5                   ;IS R0 CORRECT
024050  001403                          BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
024052  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
024054  000647                          .WORD   647                     ;UNIQUE ERROR NUMBER
024056  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

024060  012637  000010          4$:     MOV     (SP)+,@#10              ;RESTORE VECTOR

024064  000167  000006                  JMP     FIN117
                                        ;
                                                                        ;ERROR! GO TO ERROR IF TRAP TAKES PLACE
024070                          TE117A:
024070  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
024072  000650                          .WORD   650                     ;UNIQUE ERROR NUMBER
024074  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

                                        ;
024076                          FIN117:
                                        ;
024076                          TE120:
                                ;;*****************************************************************
                                ;*TEST 205       TEST HALT (NOT KERNEL MODE)
                                ;;*****************************************************************
024076                          TST205:
```

```
6575  024076  005267  154702                  INC     $TESTN                  ;INCREMENT TEST NUMBER
6576  024102  005037  177766                  CLR     @#177766                ;INIT CPU ERROR REG
6577  024106  005037  177776                  CLR     @#177776                ;INIT PSW-SET KERNEL MODE
6578  024112  013746  000004                  MOV     @#4,-(SP)               ;SAVE VECTOR
6579  024116  013746  000006                  MOV     @#6,-(SP)               ;SAVE VECTOR
6580  024122  012737  024162  000004          MOV     #TE120A,@#4             ;SET UP VECTOR TO HANDLE ILLEGAL HALT
6581  024130  005037  000006                  CLR     @#6                     ;SET UP VECTOR TO COME BACK IN KERNEL MODE
6582  024134  012767  140000  153634          MOV     #140000,PS              ;SET IN USER MODE
6583  024142  012706  000600                  MOV     #600,R6                 ;INITIALIZE THE USER STACK POINTER
6584  024146  000000                          HALT                            ; TEST INSTRUCTION
6585                                                                          ;ERROR! IF NOTHING HAPPENED GO TO ERROR
6586  024150                          PROCNT:
6587  024150  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6588  024152  000651                          .WORD   651                     ;UNIQUE ERROR NUMBER
6589  024154  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6590
6591  024156  000167  000064                  JMP     FIN120                  ;
6592                                  ;
6593                                  ;
6594  024162  022737  030000  177776  TE120A: CMP     #30000,@#177776         ;IS PSW CORRECT/PREVIOUS MODE = USER?
6595  024170  001403                          BEQ     1$                      ;YES GO ON
6596                                                                          ;NO, GO TO ERROR
6597  024172  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6598  024174  000652                          .WORD   652                     ;UNIQUE ERROR NUMBER
6599  024176  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6600
6601  024200  022737  000200  177766  1$:     CMP     #200,@#177766           ; TEST CPU ERROR REGISTER
6602  024206  001403                          BEQ     2$                      ;YES GO ON
6603                                                                          ;NO,GO TO ERROR
6604  024210  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6605  024212  000653                          .WORD   653                     ;UNIQUE ERROR NUMBER
6606  024214  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6607
6608  024216  022627  024150          2$:     CMP     (SP)+,#PROCNT           ;DOES STACK CONTAIN CORRECT PC
6609  024222  001403                          BEQ     3$                      ;YES GO ON
6610                                                                          ;NO GO TO ERROR
6611  024224  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6612  024226  000654                          .WORD   654                     ;UNIQUE ERROR NUMBER
6613  024230  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6614  024232  022627  140000          3$:     CMP     (SP)+,#140000           ;DOES STACK CONTAIN CORRECT PSW
6615  024236  001403                          BEQ     FIN120                  ;YES GO ON
6616                                                                          ;NO GO TO ERROR
6617  024240  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6618  024242  000655                          .WORD   655                     ;UNIQUE ERROR NUMBER
6619  024244  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6620
6621  024246  005037  177766          FIN120: CLR     @#CPEREG                ;CLEAR CPU ERROR REGISTER
6622  024252  012637  000006                  MOV     (SP)+,@#6               ;RESTORE VECTOR
6623  024256  012637  000004                  MOV     (SP)+,@#4               ;RESTORE VECTOR
6624
6625                                  ;
6626  024262                          TE121:
6627                                  ;;**********************************************************************
6628                                  ;*TEST 206       TEST RESET
6629                                  ;;**********************************************************************
6630  024262                          TST206:
```

```
6631  024262  005267  154516                    INC     $TESTN          ;INCREMENT TEST NUMBER
6632  024266  122767  000001  154524           CMPB    @APTENV,$ENV    ;ARE WE IN APT MODE?
6633  024274  001002                           BNE     1$              ;IF NOT: DO THIS TEST
6634  024276  000167  000426                   JMP     FIN121          ;ELSE SKIP THIS TEST BECAUSE RESETS
6635                                                                    ;SCREW UP THE APT MONITOR.
6636  024302  012737  030340  177776  1$:      MOV     #30340,@#177776 ;SETUP PSW TO KERNEL MODE
6637  024310  012737  160000  177572           MOV     #160000,@#177572 ;SETUP MMR0
6638  024316  012737  000077  172516           MOV     #77,@#172516    ;SETUP MMR3
6639  024324  005037  177772                   CLR     @#177772        ;CLEAR PIRQ
6640  024330  023727  177772  000000           CMP     @#177772,#0     ;IS PIRQ CORRECT
6641  024336  001403                           BEQ     C121A           ;YES GO ON
6642                                                                    ;NO GO TO ERROR
6643  024340  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6644  024342  000656                           .WORD   656             ;UNIQUE ERROR NUMBER
6645  024344  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6646
6647  024346  012737  025000  177772  C121A:   MOV     #25000,@#177772 ;MOVE AN ALTERNATING PATTERN TO PIRQ
6648  024354  022737  025252  177772           CMP     #25252,@#177772 ;IS PIRQ CORRECT
6649  024362  001403                           BEQ     C121B           ;YES GO ON
6650                                                                    ;NO GO TO ERROR
6651  024364  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6652  024366  000657                           .WORD   657             ;UNIQUE ERROR NUMBER
6653  024370  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6654
6655  024372  012737  077000  177772  C121B:   MOV     #77000,@#177772 ;SETUP PIRQ
6656  024400  022737  077314  177772           CMP     #77314,@#177772 ;IS PIRQ CORRECT
6657  024406  001403                           BEQ     C121C           ;YES GO ON
6658                                                                    ;NO GO TO ERROR
6659  024410  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6660  024412  000660                           .WORD   660             ;UNIQUE ERROR NUMBER
6661  024414  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6662
6663  024416  000277          C121C:   SCC                             ;SET ALL CC BITS
6664  024420  000005                   RESET                           ; TEST INSTRUCTION
6665  024422  022737  030357  177776           CMP     #30357,@#177776 ;IS PSW CORRECT
6666  024430  001403                           BEQ     1$              ;YES GO ON
6667                                                                    ;NO GO TO ERROR
6668  024432  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6669  024434  000661                           .WORD   661             ;UNIQUE ERROR NUMBER
6670  024436  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6671
6672  024440  013701  177572          1$:      MOV     @#SR0,R1        ;SAVE SR0 IN R1.
6673  024444  042701  000176                   BIC     #176,R1         ;STRIP OFF UNDEFINED BITS 1-6 FROM MMR0
6674  024450  022701  000000                   CMP     #0,R1           ;IS MMR0 CORRECT
6675  024454  001403                           BEQ     2$              ;YES GO ON
6676                                                                    ;NO GO TO ERROR
6677  024456  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6678  024460  000662                           .WORD   662             ;UNIQUE ERROR NUMBER
6679  024462  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6680
6681  024464  022737  000000  172516  2$:      CMP     #0,@#172516     ;IS MMR3 CORRECT
6682  024472  001403                           BEQ     3$              ;YES GO ON
6683                                                                    ;NO GO TO ERROR
6684  024474  104000                           ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6685  024476  000663                           .WORD   663             ;UNIQUE ERROR NUMBER
6686  024500  001127                           .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
```

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6687
6688  024502  022737  000000  177772  3$:   CMP     @#0,@#177772      ;IS PIRQ CORRECT
6689  024510  001403                        BEQ     4$                ;YES GO ON
6690                                                                  ;NO GO TO ERROR
6691  024512  104000                        ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6692  024514  000664                        .WORD   664               ;UNIQUE ERROR NUMBER
6693  024516  001127                        .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6694
6695
6696  024520  013702  000004          4$:   MOV     @#4,R2            ;SAVE LOC 4 IN R2
6697  024524  013703  000006                MOV     @#6,R3            ;SAVE LOC 6 IN R3
6698  024530  012737  024706  000004        MOV     #8$,@#4           ;SETUP VECTORS IN CASE AN ERROR CAUSES
6699                                                                  ;A HALT TO OCCUR IN USER MODE.
6700  024536  012737  000340  000006        MOV     #340,@#6          ;THIS SETS KERNEL MODE, AND PREVENTS PRIQ
6701                                                                  ;INTERRUPTS FROM TRASHING THE STACK IF A
6702                                                                  ;USER MODE HALT OCCURS.
6703  024544  012737  140340  177776        MOV     #140340,@#177776  ;SETUP PSW TO USER MODE
6704  024552  012737  160000  177572        MOV     #160000,@#177572  ;SETUP MMR0
6705  024560  012737  000077  172516        MOV     #77,@#172516      ;SETUP MMR3
6706  024566  012737  077000  177772        MOV     #77000,@#177772   ;SETUP PIRQ
6707  024574  000277                        SCC                       ;SET ALL CC BITS
6708  024576  000005                        RESET                     ; TEST INSTRUCTION
6709  024600  022737  140357  177776        CMP     @#140357,@#177776 ;IS PSW CORRECT
6710  024606  001404                        BEQ     5$                ;YES GO ON
6711  024610  000000                        HALT                      ;USER MODE HALT; WILL TRAP TO LOC 4
6712                                                                  ;NO GO TO ERROR
6713  024612  104000                        ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6714  024614  000665                        .WORD   665               ;UNIQUE ERROR NUMBER
6715  024616  001127                        .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6716
6717  024620  013701  177572          5$:   MOV     @#177572,R1       ;SAVE MMR0 IN R1
6718  024624  042701  000176                BIC     #176,R1           ;CLEAR BITS 1-6 FROM MMR0
6719  024630  022701  160000                CMP     #160000,R1        ;IS MMR0 CORRECT
6720  024634  001404                        BEQ     6$                ;YES GO ON
6721  024636  000000                        HALT                      ;USER MODE HALT; WILL TRAP TO LOC 4
6722                                                                  ;NO GO TO ERROR
6723  024640  104000                        ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6724  024642  000666                        .WORD   666               ;UNIQUE ERROR NUMBER
6725  024644  001127                        .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6726
6727  024646  022737  000077  172516  6$:   CMP     @#77,@#172516     ;IS MMR3 CORRECT
6728  024654  001404                        BEQ     7$                ;YES GO ON
6729  024656  000000                        HALT                      ;USER MODE HALT; WILL TRAP TO LOC 4
6730                                                                  ;NO GO TO ERROR
6731  024660  104000                        ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6732  024662  000667                        .WORD   667               ;UNIQUE ERROR NUMBER
6733  024664  001127                        .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6734
6735  024666  022737  077314  177772  7$:   CMP     @#77314,@#177772  ;IS PIRQ CORRECT
6736  024674  001405                        BEQ     9$                ;YES GO ON
6737  024676  000000                        HALT                      ;USER MODE HALT; WILL TRAP TO LOC 4
6738                                                                  ;NO GO TO ERROR
6739  024700  104000                        ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6740  024702  000670                        .WORD   670               ;UNIQUE ERROR NUMBER
6741  024704  001127                        .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6742
```

```
6743  024706  000002                  8$:     RTI                             ;USER MODE HALT OCCURRED; GO TO ERROR.
6744
6745  024710  005037  177772          9$:     CLR     @#177772                ;CLEAR PIRQ
6746  024714  005037  177776                  CLR     @#177776                ;CLEAR PSW
6747  024720  010237  000004                  MOV     R2,@#4                  ;RESTORE VECTORS TO PREVIOUS STATE
6748  024724  010337  000006                  MOV     R3,@#6                  ;
6749  024730                          FIN121:
6750
6751                                  ;
6752  024730                          TE122:
6753                                  ;;*************************************************************************
6754                                  ;*TEST 207       TEST SPL (SET PRIORITY LEVEL)
6755                                  ;;*************************************************************************
6756  024730                          TST207:
6757  024730  005267  154050                  INC     $TESTN                  ;INCREMENT TEST NUMBER
6758
6759  024734  012705  000010                  MOV     #8.,R5                  ;INIT COUNTER
6760  024740  012701  025174                  MOV     #T1228,R1               ;SETUP POINTER TO DATA
6761  024744  012737  030000  177776  1$:     MOV     #30000,@#177776         ;INIT PSW
6762  024752  004767  000064                  JSR     PC,T122A                ; TEST INSTRUCTION
6763  024756  022137  177776                  CMP     (R1)+,@#177776          ;IS PSW CORRECT
6764  024762  001403                          BEQ     2$                      ;YES GO ON
6765                                                                          ;NO GO TO ERROR
6766  024764  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6767  024766  000671                          .WORD   671                     ;UNIQUE ERROR NUMBER
6768  024770  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6769
6770  024772  077514                  2$:     SOB     R5,1$                   ;REPEAT UNTIL ALL CASES ARE TESTED
6771
6772
6773  024774  012705  000010                  MOV     #8.,R5                  ;INIT COUNTER
6774  025000  012737  140000  177776  3$:     MOV     #140000,@#177776        ;SETUP PSW TO USER MODE
6775  025006  012706  000600                  MOV     #600,R6                 ;SETUP USER STACK
6776  025012  004767  000024                  JSR     PC,T122A                ; TEST INSTRUCTION
6777  025016  022737  140017  177776          CMP     #140017,@#177776        ;IS PSW CORRECT
6778  025024  001403                          BEQ     4$                      ;YES GO ON
6779                                                                          ;NO GO TO ERROR
6780  025026  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6781  025030  000672                          .WORD   672                     ;UNIQUE ERROR NUMBER
6782  025032  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6783
6784  025034  077517                  4$:     SOB     R5,3$                   ;REPEAT UNTIL ALL CASES ARE TESTED
6785
6786
6787  025036  000167  000152                  JMP     FIN122
6788
6789  025042  020527  000010          T122A:  CMP     R5,#8.                  ;FIND OUT WHAT COUNTER IS
6790  025046  001003                          BNE     1$                      ;IF NOT PRIORITY 0 GO TO 1$
6791  025050  000277                          SCC                             ;SET ALL CC BITS
6792  025052  000230                          SPL     0                       ;SET PRIORITY TO 0
6793  025054  000446                          BR      8$                      ;RETURN
6794  025056  020527  000007          1$:     CMP     R5,#7                   ;FIND OUT WHAT COUNTER IS
6795  025062  001003                          BNE     2$                      ;IF NOT PRIORITY 1 GO TO 2$
6796  025064  000277                          SCC                             ;SET ALL CC BITS
6797  025066  000231                          SPL     1                       ;SET PRIORITY TO 1
6798  025070  000440                          BR      8$                      ;RETURN
```

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6799  025072  020527  000006          2$:     CMP     R5,#6           ;FIND OUT WHAT COUNTER IS
6800  025076  001003                          BNE     3$              ;IF NOT PRIORITY 2 GO TO 3$
6801  025100  000277                          SCC                     ;SET ALL CC BITS
6802  025102  000232                          SPL     2               ;SET PRIORITY TO 2
6803  025104  000432                          BR      8$              ;RETURN
6804  025106  020527  000005          3$:     CMP     R5,#5           ;FIND OUT WHAT COUNTER IS
6805  025112  001003                          BNE     4$              ;IF NOT PRIORITY 3 GO TO 4$
6806  025114  000277                          SCC                     ;SET ALL CC BITS
6807  025116  000233                          SPL     3               ;SET PRIORITY TO 3
6808  025120  000424                          BR      8$              ;RETURN
6809  025122  020527  000004          4$:     CMP     R5,#4           ;FIND OUT WHAT COUNTER IS
6810  025126  001003                          BNE     5$              ;IF NOT PRIORITY 4 GO TO 5$
6811  025130  000277                          SCC                     ;SET ALL CC BITS
6812  025132  000234                          SPL     4               ;SET PRIORITY TO 4
6813  025134  000416                          BR      8$              ;RETURN
6814  025136  020527  000003          5$:     CMP     R5,#3           ;FIND OUT WHAT COUNTER IS
6815  025142  001003                          BNE     6$              ;IF NOT PRIORITY 5 GO TO 6$
6816  025144  000277                          SCC                     ;SET ALL CC BITS
6817  025146  000235                          SPL     5               ;SET PRIORITY TO 5
6818  025150  000410                          BR      8$              ;RETURN
6819  025152  020527  000002          6$:     CMP     R5,#2           ;FIND OUT WHAT COUNTER IS
6820  025156  001003                          BNE     7$              ;IF NOT PRIORITY 6 GO TO 7$
6821  025160  000277                          SCC                     ;SET ALL CC BITS
6822  025162  000236                          SPL     6               ;SET PRIORITY TO 6
6823  025164  000402                          BR      8$              ;RETURN
6824  025166  000277                  7$:     SCC                     ;SET ALL CC BITS
6825  025170  000237                          SPL     7               ;SET PRIORITY TO 7
6826  025172  000207                  8$:     RTS     PC              ;RETURN
6827                                  ;
6828  025174  030017                  T1228:  .WORD   30017
6829  025176  030057                          .WORD   30057
6830  025200  030117                          .WORD   30117
6831  025202  030157                          .WORD   30157
6832  025204  030217                          .WORD   30217
6833  025206  030257                          .WORD   30257
6834  025210  030317                          .WORD   30317
6835  025212  030357                          .WORD   30357
6836  025214                          FIN122:
6837                                  ;
6838  025214                          TE123:
6839                                  ;;*****************************************************************
6840                                  ;*TEST 210       TEST TSTSET INSTRUCTION (MULTI PROCESSING INST)
6841                                  ;;*****************************************************************
6842  025214                          TST210:
6843  025214  005267  153564                  INC     $TESTN                  ;INCREMENT TEST NUMBER
6844  025220  005037  177776                  CLR     @#177776                ;INIT PSW
6845  025224  012703  000012                  MOV     #10.,R3                 ;INIT COUNTER
6846  025230  012701  000400                  MOV     #400,R1                 ;SETUP DESTINATION
6847  025234  012700  025426                  MOV     #T123A,R0               ;SETUP SOURCE
6848  025240  012021                  100$:   MOV     (R0)+,(R1)+             ;RELOCATE TABLES
6849  025242  077302                          SOB     R3,100$                 ;ARE WE DONE
6850  025244  013746  000010                  MOV     @#10,-(SP)              ;SAVE VECTOR
6851  025250  012737  025452  000010          MOV     #T123D,@#10             ;SETUP NEW VECTOR
6852  025256  005000                          CLR     R0                      ;INIT R0
6853  025260  012701  000400                  MOV     #400,R1                 ;SETUP POINTERS TO TABLES
6854  025264  012702  000410                  MOV     #410,R2                 ;
```

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6855  025270  012703  000416                MOV     #416,R3                 ;
6856  025274  010104                        MOV     R1,R4                   ;
6857  025276  012737  030000  177776  1$:   MOV     #30000,@#177776         ;SETUP PSW
6858  025304  000262                        SEV                             ;SET V BIT
6859  025306  007221                        .WORD   7221                    ; TEST INSTRUCTION
6860  025310  022237  177776                CMP     (R2)+,@#177776          ;IS PSW CORRECT
6861  025314  001403                        BEQ     2$                      ;YES GO ON
6862                                                                        ;NO GO TO ERROR
6863  025316  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6864  025320  000673                        .WORD   673                     ;UNIQUE ERROR NUMBER
6865  025322  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6866
6867  025324  020013                2$:     CMP     R0,(R3)                 ;IS R0 CORRECT
6868  025326  001403                        BEQ     3$                      ;YES GO ON
6869                                                                        ;NO GO TO ERROR
6870  025330  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6871  025332  000674                        .WORD   674                     ;UNIQUE ERROR NUMBER
6872  025334  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6873
6874  025336  005204                3$:     INC     R4                      ;SETUP EXPECTED DATA
6875  025340  005204                        INC     R4                      ;
6876  025342  020401                        CMP     R4,R1                   ;IS R1 CORRECT
6877  025344  001403                        BEQ     4$                      ;YES GO ON
6878                                                                        ;NO GO TO ERROR
6879  025346  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6880  025350  000675                        .WORD   675                     ;UNIQUE ERROR NUMBER
6881  025352  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6882
6883  025354  052713  000001          4$:   BIS     #1,(R3)                 ;SETUP EXPECTED DATA
6884  025360  022341                        CMP     (R3)+,-(R1)             ;IS TEST LOCATION CORRECT
6885  025362  001403                        BEQ     5$                      ;YES GO ON
6886                                                                        ;NO GO TO ERROR
6887  025364  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6888  025366  000676                        .WORD   676                     ;UNIQUE ERROR NUMBER
6889  025370  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6890
6891  025372  005201                5$:     INC     R1                      ;POINT TO NEXT TEST LOCATION
6892  025374  005201                        INC     R1                      ;
6893  025376  021127  177777                CMP     (R1),#177777            ;ARE WE DONE
6894  025402  001335                        BNE     1$                      ;NO GO TO 1$
6895  025404  012737  025460  000010        MOV     #T123E,@#10             ;SETUP NEW VECTOR
6896  025412  007201                        .WORD   7201                    ; TEST INSTRUCTION ILLEGAL MODE
6897                                                                        ;ERROR! GO TO ERROR IF DIDN'T TRAP
6898  025414  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6899  025416  000677                        .WORD   677                     ;UNIQUE ERROR NUMBER
6900  025420  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6901
6902  025422  000167  000036                JMP     T123F
6903                                ;
6904                                ;
6905  025426  167604                T123A:  .WORD   167604
6906  025430  000000                        .WORD   0
6907  025432  000001                        .WORD   1
6908  025434  177777                        .WORD   177777
6909  025436  030010                T123B:  .WORD   30010
6910  025440  030004                        .WORD   30004
```

```
6911  025442  030001                      .WORD   30001
6912  025444  167604                T123C:.WORD   167604
6913  025446  000000                      .WORD   0
6914  025450  000001                      .WORD   1
6915
6916  025452                        T123D:                          ;ERROR! GO TO ERROR IF TRAPPED
6917  025452  104000                      ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6918  025454  000700                      .WORD   700               ;UNIQUE ERROR NUMBER
6919  025456  001127                      .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6920
6921  025460  005726                T123E:TST     (SP)+             ;CLEAN UP STACK
6922  025462  005726                      TST     (SP)+             ;
6923  025464  012637  000010        T123F:MOV     (SP)+,@#10        ;RESTORE VECTOR
6924
6925                                ;
6926  025470                        TE124:
6927                                ;;*****************************************************************
6928                                ;*TEST 211       TEST WRTLCK (WRITE LOCK MULTI PROCESSING INST)
6929                                ;;*****************************************************************
6930  025470                        TST211:
6931  025470  005267  153310              INC     $TESTN            ;INCREMENT TEST NUMBER
6932  025474  005037  177776              CLR     @#177776          ;INIT PSW
6933  025500  012703  000012              MOV     #10.,R3           ;INIT COUNTER
6934  025504  012701  000400              MOV     #400,R1           ;SETUP DESTINATION
6935  025510  012700  025714              MOV     #T124A,R0         ;SETUP SOURCE
6936  025514  012021                100$: MOV     (R0)+,(R1)+       ;RELOCATE TABLES
6937  025516  077302                      SOB     R3,100$           ;ARE WE DONE
6938  025520  013746  000010              MOV     @#10,-(SP)        ;SAVE VECTOR
6939  025524  012737  025740  000010      MOV     #T124D,@#10       ;SETUP NEW VECTOR
6940  025532  012701  000400              MOV     #400,R1           ;SETUP POINTERS TO TABLES
6941  025536  012702  000410              MOV     #410,R2           ;
6942  025542  012703  000416              MOV     #416,R3           ;
6943  025546  010204                      MOV     R2,R4             ;
6944  025550  012737  030000  177776  1$: MOV     #30000,@#177776   ;SETUP PSW
6945  025556  011100                      MOV     (R1),R0           ;SETUP R0
6946  025560  020327  000416              CMP     R3,#416           ;IS THIS THE FIRST TEST CASE
6947  025564  001401                      BEQ     2$                ;YES GO TO 2$
6948  025566  000402                      BR      3$                ;NO GO TO 3$
6949  025570  000261                2$:   SEC                       ;SET C BIT
6950  025572  000401                      BR      4$                ;
6951  025574  000241                3$:   CLC                       ;CLEAR C BIT
6952  025576  000262                4$:   SEV                       ;SET V BIT
6953  025600  007322                      .WORD   7322              ; TEST INSTRUCTION
6954  025602  022337  177776              CMP     (R3)+,@#177776    ;IS PSW CORRECT
6955  025606  001403                      BEQ     5$                ;YES GO ON
6956                                                                ;ERROR! NO GO TO ERROR
6957  025610  104000                      ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6958  025612  000701                      .WORD   701               ;UNIQUE ERROR NUMBER
6959  025614  001127                      .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
6960
6961  025616  021100                5$:   CMP     (R1),R0           ;IS R0 CORRECT
6962  025620  001403                      BEQ     6$                ;YES GO ON
6963                                                                ;NO GO TO ERROR
6964  025622  104000                      ERROR                     ;ALL ERRORS TO TRAP TO EMT VECTOR
6965  025624  000702                      .WORD   702               ;UNIQUE ERROR NUMBER
6966  025626  001127                      .WORD   CPUERR            ;ADDRESS OF ERROR MESSAGE
```

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6967
6968  025630  005204                  6$:     INC     R4              ;SETUP EXPECTED DATA
6969  025632  005204                          INC     R4              ;
6970  025634  020204                          CMP     R2,R4           ;IS R2 CORRECT
6971  025636  001403                          BEQ     7$              ;YES GO ON
6972                                                                  ;NO GO TO ERROR
6973  025640  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6974  025642  000703                          .WORD   703             ;UNIQUE ERROR NUMBER
6975  025644  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6976
6977  025646  022142                  7$:     CMP     (R1)+,-(R2)     ;IS TEST LOCATION CORRECT
6978  025650  001403                          BEQ     8$              ;YES GO ON
6979                                                                  ;NO GO TO ERROR
6980  025652  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6981  025654  000704                          .WORD   704             ;UNIQUE ERROR NUMBER
6982  025656  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6983
6984  025660  005202                  8$:     INC     R2              ;POINT TO NEXT TEST LOCATION
6985  025662  005202                          INC     R2              ;
6986  025664  021127  177777                  CMP     (R1),#177777    ;ARE WE DONE
6987  025670  001327                          BNE     1$              ;NO GO TO 1$
6988  025672  012737  025746  000010          MOV     #T124E,@#10     ;SETUP NEW VECTOR
6989  025700  007302                          .WORD   7302            ; TEST INSTRUCTION ILLEGAL MODE
6990                                                                  ;GO TO ERROR IF DIDN'T TRAP
6991  025702  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
6992  025704  000705                          .WORD   705             ;UNIQUE ERROR NUMBER
6993  025706  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
6994
6995  025710  000167  000036                  JMP     T124F
6996
6997                                          ;
6998  025714  167604                  T124A:  .WORD   167604
6999  025716  000000                          .WORD   0
7000  025720  000001                          .WORD   1
7001  025722  177777                          .WORD   177777
7002  025724  177777                  T124B:  .WORD   177777
7003  025726  177777                          .WORD   177777
7004  025730  177777                          .WORD   177777
7005  025732  030011                  T124C:  .WORD   30011
7006  025734  030004                          .WORD   30004
7007  025736  030000                          .WORD   30000
7008
7009  025740                          T124D:                          ;GO TO ERROR IF TRAPPED
7010  025740  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7011  025742  000706                          .WORD   706             ;UNIQUE ERROR NUMBER
7012  025744  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7013  025746  005726                  T124E:  TST     (SP)+           ;CLEAN UP STACK
7014  025750  005726                          TST     (SP)+           ;
7015  025752  012637  000010          T124F:  MOV     (SP)+,@#10      ;RESTORE VECTOR
7016
7017                                          ;
7018  025756                          TE125:
7019                                  ;;*******************************************************************
7020                                  ;*TEST 212       TEST MUL (MULTIPLY INST)
7021                                  ;;*******************************************************************
7022  025756                          TST212:
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7023  025756  005267  153022            INC     @TESTN                  ;INCREMENT TEST NUMBER
7024  025762  005037  177776            CLR     @#177776                ;INIT PS
7025  025766  012701  026266            MOV     #TE125A,R1              ;SETUP POINTERS TO TABLES
7026
7027  025772  010137  001034      1$:   MOV     R1,@#EXPDAT             ;
7028  025776  062737  000002  001034    ADD     #2,@#EXPDAT             ;POINT TO SOURCE
7029  026004  012703  122222            MOV     #122222,R3              ;INIT R3 TO A KNOWN STATE
7030  026010  011102                    MOV     (R1),R2         ;INIT DESTINATION REG
7031  026012  000277                    SCC                             ;SET ALL CC BITS
7032  026014  070261  000002            MUL     2(R1),R2                ; TEST INSTRUCTION
7033  026020  026137  000004  177776    CMP     4(R1),@#177776          ;IS PS CORRECT
7034  026026  001403                    BEQ     2$                      ;YES GO ON
7035                                                                    ;NO GO TO ERROR
7036  026030  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7037  026032  000707                    .WORD   707                     ;UNIQUE ERROR NUMBER
7038  026034  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7039
7040  026036  026103  000006      2$:   CMP     6(R1),R3                ;IS R3 CORRECT
7041  026042  001403                    BEQ     3$                      ;YES GO ON
7042                                                                    ;NO GO TO ERROR
7043  026044  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7044  026046  000710                    .WORD   710                     ;UNIQUE ERROR NUMBER
7045  026050  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7046
7047  026052  026102  000010      3$:   CMP     10(R1),R2               ;IS R2 CORRECT
7048  026056  001403                    BEQ     4$                      ;YES GO ON
7049                                                                    ;NO GO TO ERROR
7050  026060  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7051  026062  000711                    .WORD   711                     ;UNIQUE ERROR NUMBER
7052  026064  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7053
7054  026066  026177  000002  152740  4$:   CMP     2(R1),@EXPDAT           ;IS SOURCE LOCATION OK
7055  026074  001403                    BEQ     5$                      ;YES GO ON
7056                                                                    ;NO GO TO ERROR
7057  026076  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7058  026100  000712                    .WORD   712                     ;UNIQUE ERROR NUMBER
7059  026102  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7060
7061  026104  062701  000012      5$:   ADD     #12,R1                  ;GO TO NEXT TEST
7062  026110  020127  026514            CMP     R1,#FIN125              ;ARE WE FINISHED
7063  026114  001326                    BNE     1$                      ;NO GO TO 1$
7064
7065                                    ;
7066                                    ;SECOND PART
7067                                    ;USING ODD REGISTER
7068                                    ;
7069  026116  012701  026266      6$:   MOV     #TE125A,R1              ;SETUP POINTERS TO TABLES
7070  026122                      7$:
7071
7072  026122  010102                    MOV     R1,R2                   ;
7073  026124  012706  001000            MOV     #STBOT,R6               ;INIT R6 TO A KNOWN STATE
7074  026130  012704  000004            MOV     #4,R4                   ;SETUP R4 VALUE
7075  026134  011105                    MOV     (R1),R5         ;INIT DESTINATION REG
7076  026136  000277                    SCC                             ;SET ALL CC BITS
7077  026140  070561  000002            MUL     2(R1),R5                ; TEST INSTRUCTION
7078  026144  026137  000004  177776    CMP     4(R1),@#177776          ;IS PS CORRECT
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7079  026152  001403                  BEQ     8$              ;YES GO ON
7080                                                          ;NO GO TO ERROR
7081  026154  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7082  026156  000713                  .WORD   713             ;UNIQUE ERROR NUMBER
7083  026160  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7084
7085  026162  026105  000006    8$:   CMP     6(R1),R5        ;IS R5 CORRECT
7086  026166  001403                  BEQ     9$              ;YES GO ON
7087                                                          ;NO GO TO ERROR
7088  026170  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7089  026172  000714                  .WORD   714             ;UNIQUE ERROR NUMBER
7090  026174  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7091
7092  026176  020627  001000    9$:   CMP     R6,#STBOT       ;IS R6 CORRECT
7093  026202  001405                  BEQ     10$             ;YES GO ON
7094  026204  012706  001000          MOV     #STBOT,R6       ;RESTORE SP
7095                                                          ;NO GO TO ERROR
7096  026210  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7097  026212  000715                  .WORD   715             ;UNIQUE ERROR NUMBER
7098  026214  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7099
7100  026216  005722            10$:  TST     (R2)+           ;POINT TO SOURCE OPERAND
7101  026220  021261  000002          CMP     (R2),2(R1)      ;IS SOURCE LOCATION OK
7102  026224  001403                  BEQ     11$             ;YES GO ON
7103                                                          ;NO GO TO ERROR
7104  026226  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7105  026230  000716                  .WORD   716             ;UNIQUE ERROR NUMBER
7106  026232  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7107
7108  026234  020427  000004    11$:  CMP     R4,#4           ;IS R4 CORRECT
7109  026240  001403                  BEQ     12$             ;YES GO ON
7110                                                          ;NO GO TO ERROR
7111  026242  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7112  026244  000717                  .WORD   717             ;UNIQUE ERROR NUMBER
7113  026246  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7114
7115  026250  062701  000012    12$:  ADD     #12,R1          ;
7116  026254  020127  026514          CMP     R1,#FIN125      ;ARE WE FINISHED
7117  026260  001320                  BNE     7$              ;NO GO TO 7$
7118
7119
7120  026262  000167  000226          JMP     FIN125
7121
7122                                  ;
7123  026266  177777            TE125A: .WORD   177777          ;MULTIPLICAND
7124  026270  177777                  .WORD   177777          ;MULTIPLIER
7125  026272  000000                  .WORD   0
7126  026274  000001                  .WORD   1
7127  026276  000000                  .WORD   0
7128
7129  026300  006772                  .WORD   6772            ;MULTIPLICAND
7130  026302  100000                  .WORD   100000          ;MULTIPLIER
7131  026304  000011                  .WORD   11
7132  026306  000000                  .WORD   0
7133  026310  174403                  .WORD   174403
7134
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 7135  026312  177777                    .WORD   177777          ;MULTIPLICAND
 7136  026314  077777                    .WORD   77777           ;MULTIPLIER
 7137  026316  000010                    .WORD   10
 7138  026320  100001                    .WORD   100001
 7139  026322  177777                    .WORD   177777
 7140
 7141  026324  077777                    .WORD   77777           ;MULTIPLICAND
 7142  026326  000456                    .WORD   456             ;MULTIPLIER
 7143  026330  000001                    .WORD   1
 7144  026332  177322                    .WORD   177322
 7145  026334  000226                    .WORD   226
 7146
 7147  026336  173210                    .WORD   173210          ;MULTIPLICAND
 7148  026340  000000                    .WORD   0               ;MULTIPLIER
 7149  026342  000004                    .WORD   4
 7150  026344  000000                    .WORD   0
 7151  026346  000000                    .WORD   0
 7152
 7153  026350  000000                    .WORD   0               ;MULTIPLICAND
 7154  026352  003251                    .WORD   3251            ;MULTIPLIER
 7155  026354  000004                    .WORD   4
 7156  026356  000000                    .WORD   0
 7157  026360  000000                    .WORD   0
 7158
 7159  026362  000000                    .WORD   0               ;MULTIPLICAND
 7160  026364  000000                    .WORD   0               ;MULTIPLIER
 7161  026366  000004                    .WORD   4
 7162  026370  000000                    .WORD   0
 7163  026372  000000                    .WORD   0
 7164
 7165  026374  100000                    .WORD   100000          ;MULTIPLICAND
 7166  026376  000001                    .WORD   1               ;MULTIPLIER
 7167  026400  000010                    .WORD   10
 7168  026402  100000                    .WORD   100000
 7169  026404  177777                    .WORD   177777
 7170
 7171  026406  077777                    .WORD   77777           ;MULTIPLICAND
 7172  026410  000001                    .WORD   1               ;MULTIPLIER
 7173  026412  000000                    .WORD   0
 7174  026414  077777                    .WORD   77777
 7175  026416  000000                    .WORD   0
 7176
 7177  026420  000010                    .WORD   10              ;MULTIPLICAND
 7178  026422  010000                    .WORD   10000           ;MULTIPLIER
 7179  026424  000001                    .WORD   1
 7180  026426  100000                    .WORD   100000
 7181  026430  000000                    .WORD   0
 7182
 7183  026432  001452                    .WORD   1452            ;MULTIPLICAND
 7184  026434  034527                    .WORD   34527           ;MULTIPLIER
 7185  026436  000001                    .WORD   1
 7186  026440  066506                    .WORD   66506
 7187  026442  000265                    .WORD   265
 7188
 7189  026444  000007                    .WORD   7               ;MULTIPLICAND
 7190  026446  000400                    .WORD   400             ;MULTIPLIER
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 7191  026450  000000                        .WORD   0
 7192  026452  003400                        .WORD   3400
 7193  026454  000000                        .WORD   0
 7194
 7195  026456  000002                        .WORD   2                       ;MULTIPLICAND
 7196  026460  100000                        .WORD   100000                  ;MULTIPLIER
 7197  026462  000011                        .WORD   11
 7198  026464  000000                        .WORD   0
 7199  026466  177777                        .WORD   177777
 7200
 7201  026470  100000                        .WORD   100000                  ;MULTIPLICAND
 7202  026472  077777                        .WORD   77777                   ;MULTIPLIER
 7203  026474  000011                        .WORD   11
 7204  026476  100000                        .WORD   100000
 7205  026500  140000                        .WORD   140000
 7206
 7207  026502  000001                        .WORD   1                       ;MULTIPLICAND
 7208  026504  177777                        .WORD   177777                  ;MULTIPLIER
 7209  026506  000010                        .WORD   10
 7210  026510  177777                        .WORD   177777
 7211  026512  177777                        .WORD   177777
 7212  026514                        FIN125:
 7213                                ;
 7214  026514                        TE126:
 7215                                ;;*************************************************************************
 7216                                ;*TEST 213      TEST DIV (DIVIDE INST)
 7217                                ;;*************************************************************************
 7218  026514                        TST213:
 7219  026514  005267  152264               INC     $TESTN                  ;INCREMENT TEST NUMBER
 7220  026520  005037  177776               CLR     @#177776                ;INIT PSW
 7221  026524  005006                       CLR     R6                      ;INIT SP
 7222  026526  013705  000000               MOV     @#0,R5                  ;SAVE VECTORS
 7223  026532  013701  000002               MOV     @#2,R1                  ;
 7224  026536  012737  000137  000000       MOV     #137,@#0                ;SETUP NEW VECTORS
 7225  026544  012737  026572  000002       MOV     #TE126A,@#2             ;
 7226  026552  000277                       SCC                             ;SET ALL CC BITS
 7227  026554  071627  000002               DIV     #2,R6                   ; TEST INSTRUCTION
 7228  026560  012706  001000       A126:   MOV     #STBOT,R6               ;RESTORE SP BEFORE GOING TO ERROR
 7229                                                                        ;IF R7 ISN'T CORRECT GO TO ERROR
 7230  026564  104000                       ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 7231  026566  000720                       .WORD   720                     ;UNIQUE ERROR NUMBER
 7232  026570  001127                       .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 7233
 7234  026572  022737  000000  177776 TE126A: CMP     #0,@#177776             ;IS PS CORRECT
 7235  026600  001405                       BEQ     1$                      ;YES GO ON
 7236  026602  012706  001000               MOV     #STBOT,R6               ;RESTORE SP BEFORE GOING TO ERROR
 7237                                                                        ;NO GO TO ERROR
 7238  026606  104000                       ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 7239  026610  000721                       .WORD   721                     ;UNIQUE ERROR NUMBER
 7240  026612  001127                       .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 7241
 7242  026614  012704  026560       1$:     MOV     #A126,R4                ;SETUP EXPECTED DATA
 7243  026620  006204                       ASR     R4                      ;
 7244  026622  020406                       CMP     R4,R6                   ;IS R6 CORRECT
 7245  026624  001405                       BEQ     2$                      ;YES GO ON
 7246  026626  012706  001000               MOV     #STBOT,R6               ;RESTORE SP BEFORE GOING TO ERROR
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7247
7248  026632  104000                        ERROR                   ;NO GO TO ERROR
7249  026634  000722                        .WORD   722             ;ALL ERRORS TO TRAP TO EMT VECTOR
7250  026636  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
7251                                                                ;ADDRESS OF ERROR MESSAGE
7252  026640  010537  000000          2$:   MOV     R5,@#0          ;RESTORE VECTORS
7253  026644  010137  000002                MOV     R1,@#2          ;
7254  026650  012706  001000                MOV     #STBOT,R6       ;INIT SP
7255  026654  012702  000006                MOV     #6,R2           ;INIT GPR 2
7256  026660  012703  000047                MOV     #47,R3          ;INIT GPR 3
7257  026664  000277                        SCC                     ;SET ALL CC BITS
7258  026666  071302                        DIV     R2,R3           ; TEST INSTRUCTION
7259  026670  022737  000002  177776        CMP     #2,@#177776     ;IS PS CORRECT
7260  026676  001403                        BEQ     3$              ;YES GO ON
7261                                                                ;NO GO TO ERROR
7262  026700  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7263  026702  000723                        .WORD   723             ;UNIQUE ERROR NUMBER
7264  026704  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7265
7266  026706  022702  000006          3$:   CMP     #6,R2           ;IS R2 CORRECT
7267  026712  001403                        BEQ     4$              ;YES GO ON
7268                                                                ;NO GO TO ERROR
7269  026714  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7270  026716  000724                        .WORD   724             ;UNIQUE ERROR NUMBER
7271  026720  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7272
7273  026722  022703  000047          4$:   CMP     #47,R3          ;IS R3 CORRECT
7274  026726  001403                        BEQ     5$              ;YES GO ON
7275                                                                ;NO GO TO ERROR
7276  026730  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7277  026732  000725                        .WORD   725             ;UNIQUE ERROR NUMBER
7278  026734  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7279
7280  026736  005004          5$:   CLR     R4                      ;INIT R4
7281  026740  012705  000004                MOV     #4,R5           ;INIT R5
7282  026744  000277                        SCC                     ;SET ALL CC BITS
7283  026746  071427  000000                DIV     #0,R4           ; TEST INSTRUCTION
7284  026752  022737  000007  177776        CMP     #7,@#177776     ;IS PS CORRECT
7285  026760  001403                        BEQ     6$              ;YES GO ON
7286                                                                ;NO GO TO ERROR
7287  026762  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7288  026764  000726                        .WORD   726             ;UNIQUE ERROR NUMBER
7289  026766  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7290
7291  026770  022704  000000          6$:   CMP     #0,R4           ;IS R4 CORRECT
7292  026774  001403                        BEQ     7$              ;YES GO ON
7293                                                                ;NO GO TO ERROR
7294  026776  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7295  027000  000727                        .WORD   727             ;UNIQUE ERROR NUMBER
7296  027002  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7297
7298  027004  022705  000004          7$:   CMP     #4,R5           ;IS R5 CORRECT
7299  027010  001403                        BEQ     8$              ;YES GO ON
7300                                                                ;NO GO TO ERROR
7301  027012  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7302  027014  000730                        .WORD   730             ;UNIQUE ERROR NUMBER
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7303  027016  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7304
7305  027020  012700  000004          8$:     MOV     #4,R0           ;INIT R0
7306  027024  012705  000010                  MOV     #10,R5          ;INIT R5
7307  027030  005004                          CLR     R4              ;INIT R4
7308  027032  000277                          SCC                     ;SET ALL CC BITS
7309  027034  071400                          DIV     R0,R4           ; TEST INSTRUCTION
7310  027036  022737  000000  177776          CMP     #0,@#177776     ;IS PS CORRECT
7311  027044  001407                          BEQ     9$              ;YES GO ON
7312  027046  010067  151326                  MOV     R0,400          ;SAVE R0
7313                                                                  ;NO GO TO ERROR
7314  027052  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7315  027054  000731                          .WORD   731             ;UNIQUE ERROR NUMBER
7316  027056  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7317
7318  027060  016700  151314                  MOV     400,R0          ;RESTORE R0
7319  027064  022700  000004          9$:     CMP     #4,R0           ;IS R0 CORRECT
7320  027070  001403                          BEQ     10$             ;YES GO ON
7321                                                                  ;NO GO TO ERROR
7322  027072  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7323  027074  000732                          .WORD   732             ;UNIQUE ERROR NUMBER
7324  027076  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7325
7326  027100  022704  000002          10$:    CMP     #2,R4           ;IS R4 CORRECT
7327  027104  001403                          BEQ     11$             ;YES GO ON
7328                                                                  ;NO GO TO ERROR
7329  027106  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7330  027110  000733                          .WORD   733             ;UNIQUE ERROR NUMBER
7331  027112  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7332
7333  027114  022705  000000          11$:    CMP     #0,R5           ;IS R5 CORRECT
7334  027120  001403                          BEQ     12$             ;YES GO ON
7335                                                                  ;NO GO TO ERROR
7336  027122  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7337  027124  000734                          .WORD   734             ;UNIQUE ERROR NUMBER
7338  027126  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7339
7340  027130  012705  000010          12$:    MOV     #10,R5          ;INIT R5
7341  027134  005004                          CLR     R4              ;INIT R4
7342  027136  000277                          SCC                     ;SET ALL CC BITS
7343  027140  071427  000003                  DIV     #3,R4           ; TEST INSTRUCTION
7344  027144  022737  000000  177776          CMP     #0,@#177776     ;IS PS CORRECT
7345  027152  001403                          BEQ     13$             ;YES GO ON
7346                                                                  ;NO GO TO ERROR
7347  027154  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7348  027156  000735                          .WORD   735             ;UNIQUE ERROR NUMBER
7349  027160  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7350
7351  027162  022704  000002          13$:    CMP     #2,R4           ;IS R4 CORRECT
7352  027166  001403                          BEQ     14$             ;YES GO ON
7353                                                                  ;NO GO TO ERROR
7354  027170  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7355  027172  000736                          .WORD   736             ;UNIQUE ERROR NUMBER
7356  027174  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7357
7358  027176  022705  000002          14$:    CMP     #2,R5           ;IS R5 CORRECT
```

```
7359  027202  001403                        BEQ     15$             ;YES GO ON
7360                                                                  ;NO GO TO ERROR
7361  027204  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7362  027206  000737                        .WORD   737             ;UNIQUE ERROR NUMBER
7363  027210  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7364
7365                                  ;
7366                                  ;
7367                                  ;
7368  027212  012701  027366          15$:  MOV     #TE126B,R1        ;SETUP POINTERS TO TABLES
7369
7370  027216  010137  001034          16$:  MOV     R1,@#EXPDAT       ;SAVE A COPY OF R1
7371  027222  011104                        MOV     (R1),R4           ;INIT R4
7372  027224  016103  000004                MOV     4(R1),R3          ;SAVE SOURCE
7373  027230  016105  000002                MOV     2(R1),R5          ;INIT R5
7374  027234  000277                        SCC                       ;SET ALL CC BITS
7375  027236  071461  000004                DIV     4(R1),R4          ; TEST INSTRUCTION
7376  027242  026137  000006  177777        CMP     6(R1),@#177776    ;IS PS CORRECT
7377  027250  001403                        BEQ     17$             ;YES GO ON
7378                                                                  ;NO GO TO ERROR
7379  027252  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7380  027254  000740                        .WORD   740             ;UNIQUE ERROR NUMBER
7381  027256  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7382
7383  027260  026105  000010          17$:  CMP     10(R1),R5         ;IS R5 CORRECT
7384  027264  001403                        BEQ     18$             ;YES GO ON
7385                                                                  ;NO GO TO ERROR
7386  027266  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7387  027270  000741                        .WORD   741             ;UNIQUE ERROR NUMBER
7388  027272  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7389
7390  027274  026104  000012          18$:  CMP     12(R1),R4         ;IS R4 CORRECT
7391  027300  001403                        BEQ     19$             ;YES GO ON
7392                                                                  ;NO GO TO ERROR
7393  027302  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7394  027304  000742                        .WORD   742             ;UNIQUE ERROR NUMBER
7395  027306  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7396
7397  027310  023701  001034          19$:  CMP     @#EXPDAT,R1       ;IS R1 CORRECT
7398  027314  001405                        BEQ     20$             ;YES GO ON
7399                                                                  ;NO GO TO ERROR
7400  027316  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7401  027320  000743                        .WORD   743             ;UNIQUE ERROR NUMBER
7402  027322  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7403
7404  027324  013701  001034                MOV     @#EXPDAT,R1       ;RESTORE CORRECT VALUE
7405  027330  026103  000004          20$:  CMP     4(R1),R3          ;IS SOURCE CORRECT
7406  027334  001405                        BEQ     21$             ;YES GO ON
7407                                                                  ;NO GO TO ERROR
7408  027336  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7409  027340  000744                        .WORD   744             ;UNIQUE ERROR NUMBER
7410  027342  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7411
7412  027344  010361  000004                MOV     R3,4(R1)                ;TRY TO RESTORE CODE
7413  027350  062701  000014          21$:  ADD     #14,R1            ;POINT TO NEXT LOCATION
7414  027354  021127  000333                CMP     (R1),#333         ;ARE WE DONE
```

```
7415  027360  001316                          BNE     16$                     ;NO GO TO 16$
7416
7417
7418  027362  000167  000316                  JMP     FIN126
7419                                  ;
7420                                  ;
7421  027366  177777                 TE1268: .WORD   177777  ;DIVIDEND
7422  027370  177777                         .WORD   177777  ;INIT R5
7423  027372  177777                         .WORD   177777  ;DIVISOR
7424  027374  000000                         .WORD   0       ;PSW
7425  027376  000000                         .WORD   0       ;R5 RESULT
7426  027400  000001                         .WORD   1       ;R4 RESULT
7427
7428  027402  000000                         .WORD   0       ;DIVIDEND
7429  027404  177777                         .WORD   177777  ;INIT R5
7430  027406  177777                         .WORD   177777  ;DIVISOR
7431  027410  000012                         .WORD   12      ;PSW
7432  027412  177777                         .WORD   177777  ;R5 RESULT
7433  027414  000000                         .WORD   0       ;R4 RESULT
7434
7435  027416  177777                         .WORD   177777  ;DIVIDEND
7436  027420  000000                         .WORD   0       ;INIT R5
7437  027422  177777                         .WORD   177777  ;DIVISOR
7438  027424  000002                         .WORD   2       ;PSW
7439  027426  000000                         .WORD   0       ;R5 RESULT
7440  027430  177777                         .WORD   177777  ;R4 RESULT
7441
7442  027432  000000                         .WORD   0       ;DIVIDEND
7443  027434  007642                         .WORD   7642    ;INIT R5
7444  027436  007643                         .WORD   7643    ;DIVISOR
7445  027440  000004                         .WORD   4       ;PSW
7446  027442  007642                         .WORD   7642    ;R5 RESULT
7447  027444  000000                         .WORD   0       ;R4 RESULT
7448
7449  027446  000000                         .WORD   0       ;DIVIDEND
7450  027450  000137                         .WORD   137     ;INIT R5
7451  027452  177543                         .WORD   177543  ;DIVISOR
7452  027454  000004                         .WORD   4       ;PSW
7453  027456  000137                         .WORD   137     ;R5 RESULT
7454  027460  000000                         .WORD   0       ;R4 RESULT
7455
7456  027462  000000                         .WORD   0       ;DIVIDEND
7457  027464  007643                         .WORD   7643    ;INIT R5
7458  027466  007643                         .WORD   7643    ;DIVISOR
7459  027470  000000                         .WORD   0       ;PSW
7460  027472  000000                         .WORD   0       ;R5 RESULT
7461  027474  000001                         .WORD   1       ;R4 RESULT
7462
7463  027476  100000                         .WORD   100000  ;DIVIDEND
7464  027500  004376                         .WORD   4376    ;INIT R5
7465  027502  010021                         .WORD   10021   ;DIVISOR
7466  027504  000012                         .WORD   12      ;PSW
7467  027506  004376                         .WORD   4376    ;R5 RESULT
7468  027510  100000                         .WORD   100000  ;R4 RESULT
7469
7470  027512  177700                         .WORD   177700  ;DIVIDEND
```

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 7471  027514  170033                    .WORD   170033  ;INIT R5
 7472  027516  010021                    .WORD   10021   ;DIVISOR
 7473  027520  000010                    .WORD   10      ;PSW
 7474  027522  171307                    .WORD   171307  ;R5 RESULT
 7475  027524  176024                    .WORD   176024  ;R4 RESULT
 7476
 7477  027526  177700                    .WORD   177700  ;DIVIDEND
 7478  027530  170033                    .WORD   170033  ;INIT R5
 7479  027532  167757                    .WORD   167757  ;DIVISOR
 7480  027534  000000                    .WORD   0       ;PSW
 7481  027536  171307                    .WORD   171307  ;R5 RESULT
 7482  027540  001754                    .WORD   1754    ;R4 RESULT
 7483
 7484  027542  000000                    .WORD   0       ;DIVIDEND
 7485  027544  177777                    .WORD   177777  ;INIT R5
 7486  027546  000001                    .WORD   1       ;DIVISOR
 7487  027550  000002                    .WORD   2       ;PSW
 7488  027552  177777                    .WORD   177777  ;R5 RESULT
 7489  027554  000000                    .WORD   0       ;R4 RESULT
 7490
 7491  027556  177777                    .WORD   177777  ;DIVIDEND
 7492  027560  045716                    .WORD   45716   ;INIT R5
 7493  027562  000001                    .WORD   1       ;DIVISOR
 7494  027564  000012                    .WORD   12      ;PSW
 7495  027566  045716                    .WORD   45716   ;R5 RESULT
 7496  027570  177777                    .WORD   177777  ;R4 RESULT
 7497
 7498  027572  000000                    .WORD   0       ;DIVIDEND
 7499  027574  000002                    .WORD   2       ;INIT R5
 7500  027576  177770                    .WORD   177770  ;DIVISOR
 7501  027600  000004                    .WORD   4       ;PSW
 7502  027602  000002                    .WORD   2       ;R5 RESULT
 7503  027604  000000                    .WORD   0       ;R4 RESULT
 7504
 7505  027606  177777                    .WORD   177777  ;DIVIDEND
 7506  027610  177776                    .WORD   177776  ;INIT R5
 7507  027612  000010                    .WORD   10      ;DIVISOR
 7508  027614  000004                    .WORD   4       ;PSW
 7509  027616  177776                    .WORD   177776  ;R5 RESULT
 7510  027620  000000                    .WORD   0       ;R4 RESULT
 7511
 7512  027622  000001                    .WORD   1       ;DIVIDEND
 7513  027624  177777                    .WORD   177777  ;INIT R5
 7514  027626  000001                    .WORD   1       ;DIVISOR
 7515  027630  000002                    .WORD   2       ;PSW
 7516  027632  177777                    .WORD   177777  ;R5 RESULT
 7517  027634  000001                    .WORD   1       ;R4 RESULT
 7518
 7519  027636  000001                    .WORD   1       ;DIVIDEND
 7520  027640  000000                    .WORD   0       ;INIT R5
 7521  027642  000002                    .WORD   2       ;DIVISOR
 7522  027644  000002                    .WORD   2       ;PSW
 7523  027646  000000                    .WORD   0       ;R5 RESULT
 7524  027650  000001                    .WORD   1       ;R4 RESULT
 7525
 7526  027652  000001                    .WORD   1       ;DIVIDEND
```

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7527  027654  000000                          .WORD   0       ;INIT R5
7528  027656  000003                          .WORD   3       ;DIVISOR
7529  027660  000000                          .WORD   0       ;PSW
7530  027662  000001                          .WORD   1       ;R5 RESULT
7531  027664  052525                          .WORD   52525   ;R4 RESULT
7532
7533  027666  000023                          .WORD   23      ;DIVIDEND
7534  027670  016054                          .WORD   16054   ;INIT R5
7535  027672  016537                          .WORD   16337   ;DIVISOR
7536  027674  000000                          .WORD   0       ;PSW
7537  027676  010222                          .WORD   10222   ;R5 RESULT
7538  027700  000246                          .WORD   246     ;R4 RESULT
7539
7540  027702  000333                          .WORD   333
7541  027704                          FIN126:
7542                                  ;
7543  027704                          TE127:
7544                                  ;;*****************************************************************
7545                                  ; TEST 214      TEST ASH (ARITHMETIC SHIFT)
7546                                  ;;*****************************************************************
7547  027704                          TST214:
7548  027704  005267  151074                INC     $TESTN                  ;INCREMENT TEST NUMBER
7549  027710  005037  177776                CLR     @#177776                ;INIT PSW
7550  027714  012702  000001                MOV     #1,R2                   ;SETUP OPERAND
7551  027720  000277                        SCC                             ;SET ALL CC BITS
7552  027722  072202                        ASH     R2,R2                   ; TEST INSTRUCTION
7553  027724  022737  000000  177776        CMP     #0,@#177776             ;IS PS CORRECT
7554  027732  001403                        BEQ     1$                      ;YES GO ON
7555                                                                        ;NO GO TO ERROR
7556  027734  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7557  027736  000745                        .WORD   745                     ;UNIQUE ERROR NUMBER
7558  027740  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7559
7560  027742  020227  000002          1$:   CMP     R2,#2                   ;IS R2 CORRECT
7561  027746  001403                        BEQ     2$                      ;YES GO ON
7562                                                                        ;NO GO TO ERROR
7563  027750  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7564  027752  000746                        .WORD   746                     ;UNIQUE ERROR NUMBER
7565  027754  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7566
7567  027756  012702  100000          2$:   MOV     #100000,R2              ;SETUP R2
7568  027762  012703  000001                MOV     #1,R3                   ;SETUP R3
7569  027766  000257                        CCC                             ;CLEAR ALL CC BITS
7570  027770  072203                        ASH     R3,R2                   ; TEST INSTRUCTION
7571  027772  022737  000007  177776        CMP     #7,@#177776             ;IS PS CORRECT
7572  030000  001403                        BEQ     3$                      ;YES GO ON
7573                                                                        ;NO GO TO ERROR
7574  030002  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7575  030004  000747                        .WORD   747                     ;UNIQUE ERROR NUMBER
7576  030006  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7577
7578  030010  020327  000001          3$:   CMP     R3,#1                   ;IS R3 CORRECT
7579  030014  001403                        BEQ     4$                      ;YES GO ON
7580                                                                        ;NO GO TO ERROR
7581  030016  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7582  030020  000750                        .WORD   750                     ;UNIQUE ERROR NUMBER
```

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7583  030022  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7584
7585  030024  020227  000000        4$:       CMP     R2,#0                   ;IS R2 CORRECT
7586  030030  001403                          BEQ     5$                      ;YES GO ON
7587                                                                          ;NO GO TO ERROR
7588  030032  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7589  030034  000751                          .WORD   751                     ;UNIQUE ERROR NUMBER
7590  030036  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7591
7592  030040  012701  030154        5$:       MOV     #TE127A,R1              ;SETUP POINTERS TO TABLES
7593
7594  030044  010103                  6$:     MOV     R1,R3                   ;
7595  030046  016102  000002                  MOV     2(R1),R2                ;SETUP R2
7596  030052  000277                          SCC                             ;SET ALL CC BITS
7597  030054  072211                          ASH     (R1),R2                 ; TEST INSTRUCTION
7598  030056  026137  000004  177776          CMP     4(R1),#177776           ;IS PS CORRECT
7599  030064  001403                          BEQ     7$                      ;YES GO ON
7600                                                                          ;NO GO TO ERROR
7601  030066  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7602  030070  000752                          .WORD   752                     ;UNIQUE ERROR NUMBER
7603  030072  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7604
7605  030074  026102  000006        7$:       CMP     6(R1),R2                ;IS R2 CORRECT
7606  030100  001403                          BEQ     8$                      ;YES GO ON
7607                                                                          ;NO GO TO ERROR
7608  030102  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7609  030104  000753                          .WORD   753                     ;UNIQUE ERROR NUMBER
7610  030106  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7611
7612  030110  020301                  8$:     CMP     R3,R1                   ;IS R1 CORRECT
7613  030112  001404                          BEQ     9$                      ;YES GO ON
7614                                                                          ;NO GO TO ERROR
7615  030114  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7616  030116  000754                          .WORD   754                     ;UNIQUE ERROR NUMBER
7617  030120  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7618  030122  010301                          MOV     R3,R1                   ;RESTORE R1
7619
7620  030124  021311                  9$:     CMP     (R3),(R1)               ;IS SOURCE CORRECT
7621  030126  001403                          BEQ     10$                     ;YES GO ON
7622                                                                          ;NO GO TO ERROR
7623  030130  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7624  030132  000755                          .WORD   755                     ;UNIQUE ERROR NUMBER
7625  030134  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7626                                                                          ;SOURCE LOOKS INCORRECT
7627  030136  062701  000010        10$:      ADD     #10,R1                  ;INCREMENT POINTER
7628  030142  020127  030414                  CMP     R1,#FIN127              ;ARE WE DONE
7629  030146  001336                          BNE     6$                      ;NO GO TO 6$
7630
7631
7632  030150  000167  000240                  JMP     FIN127
7633
7634                                  ;
7635  030154  177761                  ;TE127A: .WORD   177761          ;SOURCE
7636  030156  077777                          .WORD   77777           ;DEST
7637  030160  000005                          .WORD   5
7638  030162  000000                          .WORD   0
```

```
7639
7640  030164  177700                    .WORD   177700          ;SOURCE
7641  030166  017777                    .WORD   17777           ;DEST
7642  030170  000000                    .WORD   0
7643  030172  017777                    .WORD   17777
7644
7645  030174  177700                    .WORD   177700          ;SOURCE
7646  030176  100000                    .WORD   100000          ;DEST
7647  030200  000010                    .WORD   10
7648  030202  100000                    .WORD   100000
7649
7650  030204  177777                    .WORD   177777          ;SOURCE
7651  030206  100000                    .WORD   100000          ;DEST
7652  030210  000010                    .WORD   10
7653  030212  140000                    .WORD   140000
7654
7655  030214  177737                    .WORD   177737          ;SOURCE
7656  030216  177777                    .WORD   177777          ;DEST
7657  030220  000011                    .WORD   11
7658  030222  177777                    .WORD   177777
7659
7660  030224  177706                    .WORD   177706          ;SOURCE
7661  030226  102000                    .WORD   102000          ;DEST
7662  030230  000007                    .WORD   7
7663  030232  000000                    .WORD   0
7664
7665  030234  177710                    .WORD   177710          ;SOURCE
7666  030236  017777                    .WORD   17777           ;DEST
7667  030240  000013                    .WORD   13
7668  030242  177400                    .WORD   177400
7669
7670  030244  177713                    .WORD   177713          ;SOURCE
7671  030246  000012                    .WORD   12              ;DEST
7672  030250  000000                    .WORD   0
7673  030252  050000                    .WORD   50000
7674
7675  030254  177707                    .WORD   177707          ;SOURCE
7676  030256  170001                    .WORD   170001          ;DEST
7677  030260  000002                    .WORD   2
7678  030262  000200                    .WORD   200
7679
7680  030264  177717                    .WORD   177717          ;SOURCE
7681  030266  000001                    .WORD   1               ;DEST
7682  030270  000012                    .WORD   12
7683  030272  100000                    .WORD   100000
7684
7685  030274  177740                    .WORD   177740          ;SOURCE
7686  030276  017777                    .WORD   17777           ;DEST
7687  030300  000004                    .WORD   4
7688  030302  000000                    .WORD   0
7689
7690  030304  177771                    .WORD   177771          ;SOURCE
7691  030306  150000                    .WORD   150000          ;DEST
7692  030310  000010                    .WORD   10
7693  030312  177640                    .WORD   177640
7694
```

```
7695  030314  177742                          .WORD   177742          ;SOURCE
7696  030316  100000                          .WORD   100000          ;DEST
7697  030320  000011                          .WORD   11
7698  030322  177777                          .WORD   177777
7699
7700  030324  177764                          .WORD   177764          ;SOURCE
7701  030326  100000                          .WORD   100000          ;DEST
7702  030330  000010                          .WORD   10
7703  030332  177770                          .WORD   177770
7704
7705  030334  177750                          .WORD   177750          ;SOURCE
7706  030336  052525                          .WORD   52525           ;DEST
7707  030340  000004                          .WORD   4
7708  030342  000000                          .WORD   0
7709
7710  030344  177760                          .WORD   177760          ;SOURCE
7711  030346  100000                          .WORD   100000          ;DEST
7712  030350  000011                          .WORD   11
7713  030352  177777                          .WORD   177777
7714
7715  030354  177770                          .WORD   177770          ;SOURCE
7716  030356  100000                          .WORD   100000          ;DEST
7717  030360  000010                          .WORD   10
7718  030362  177600                          .WORD   177600
7719
7720  030364  177712                          .WORD   177712          ;SOURCE
7721  030366  004367                          .WORD   4367            ;DEST
7722  030370  000013                          .WORD   13
7723  030372  156000                          .WORD   156000
7724
7725  030374  177764                          .WORD   177764          ;SOURCE
7726  030376  017777                          .WORD   17777           ;DEST
7727  030400  000001                          .WORD   1
7728  030402  000001                          .WORD   1
7729
7730  030404  177701                          .WORD   177701          ;SOURCE
7731  030406  110000                          .WORD   110000          ;DEST
7732  030410  000003                          .WORD   3
7733  030412  020000                          .WORD   20000
7734
7735  030414                          FIN127:
7736                                  ;
7737  030414                          TE130:
7738                                  ;;*************************************************************
7739                                  ;*TEST 215       TEST ASHC (ARITHMETIC SHIFT COMBINED)
7740                                  ;;*************************************************************
7741  030414                          TST215:
7742  030414  005267  150364                 INC     @TESTN                  ;INCREMENT TEST NUMBER
7743  030420  005037  177776                 CLR     @#177776                ;INIT PSW
7744  030424  012701  000023                 MOV     #23,R1                  ;SETUP R1
7745  030430  012705  052525                 MOV     #52525,R5               ;SETUP R5
7746  030434  005004                         CLR     R4                      ;SETUP R4
7747  030436  000277                         SCC                             ;SET ALL CC BITS
7748  030440  073401                         ASHC    R1,R4                   ; TEST INSTRUCTION
7749  030442  023727  177776  000012         CMP     @#177776,#12            ;IS PS CORRECT
7750  030450  001403                         BEQ     1$                      ;YES GO ON
```

```
7751
7752  030452  104000                        ERROR                   ;NO GO TO ERROR
7753  030454  000756                        .WORD   756             ;ALL ERRORS TO TRAP TO EMT VECTOR
7754  030456  001127                        .WORD   CPUERR          ;UNIQUE ERROR NUMBER
7755                                                                ;ADDRESS OF ERROR MESSAGE
7756  030460  020127  000023        1$:     CMP     R1,#23          ;IS R1 CORRECT
7757  030464  001403                        BEQ     2$              ;YES GO ON
7758                                                                ;NO GO TO ERROR
7759  030466  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7760  030470  000757                        .WORD   757             ;UNIQUE ERROR NUMBER
7761  030472  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7762
7763  030474  020427  125250        2$:     CMP     R4,#125250      ;IS R4 CORRECT
7764  030500  001403                        BEQ     3$              ;YES GO ON
7765                                                                ;NO GO TO ERROR
7766  030502  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7767  030504  000760                        .WORD   760             ;UNIQUE ERROR NUMBER
7768  030506  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7769
7770  030510  020527  000000        3$:     CMP     R5,#0           ;IS R5 CORRECT
7771  030514  001403                        BEQ     4$              ;YES GO ON
7772                                                                ;NO GO TO ERROR
7773  030516  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7774  030520  000761                        .WORD   761             ;UNIQUE ERROR NUMBER
7775  030522  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7776
7777  030524  012703  052525        4$:     MOV     #52525,R3       ;SETUP R3
7778  030530  005002                        CLR     R2              ;SETUP R2
7779  030532  012704  164731                MOV     #164731,R4      ;SETUP R4
7780  030536  000277                        SCC                     ;SET ALL CC BITS
7781  030540  073727  000023                ASHC    #23,R3          ; TEST INSTRUCTION
7782  030544  023727  177776  000012        CMP     @#177776,#12    ;IS PS CORRECT
7783  030552  001403                        BEQ     5$              ;YES GO ON
7784                                                                ;NO GO TO ERROR
7785  030554  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7786  030556  000762                        .WORD   762             ;UNIQUE ERROR NUMBER
7787  030560  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7788
7789  030562  020227  000000        5$:     CMP     R2,#0           ;IS R2 CORRECT
7790  030566  001403                        BEQ     6$              ;YES GO ON
7791                                                                ;NO GO TO ERROR
7792  030570  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7793  030572  000763                        .WORD   763             ;UNIQUE ERROR NUMBER
7794  030574  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7795
7796  030576  020327  000000        6$:     CMP     R3,#0           ;IS R3 CORRECT
7797  030602  001403                        BEQ     7$              ;YES GO ON
7798                                                                ;NO GO TO ERROR
7799  030604  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
7800  030606  000764                        .WORD   764             ;UNIQUE ERROR NUMBER
7801  030610  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
7802
7803  030612  020427  164731        7$:     CMP     R4,#164731      ;IS R4 CORRECT
7804  030616  001403                        BEQ     8$              ;YES GO ON
7805                                                                ;NO GO TO ERROR
7806  030620  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
```

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7807  030622  000765                        .WORD   765                     ;UNIQUE ERROR NUMBER
7808  030624  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7809                                                                        ;
7810                                                                        ;
7811  030626  012701  030762          8$:   MOV     #TE130A,R1              ;SETUP POINTERS TO TABLES
7812
7813  030632  010104                  9$:   MOV     R1,R4                   ;SAVE A COPY OF R1
7814  030634  016102  000002                MOV     2(R1),R2                ;SETUP R2
7815  030640  016103  000004                MOV     4(R1),R3                ;SETUP R3
7816  030644  000277                        SCC                             ;SET ALL CC BITS
7817  030646  073211                        ASHC    (R1),R2         ; TEST INSTRUCTION
7818  030650  023761  177776  000006        CMP     @#177776,6(R1)          ;IS PS CORRECT
7819  030656  001403                        BEQ     10$                     ;YES GO ON
7820                                                                        ;NO GO TO ERROR
7821  030660  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7822  030662  000766                        .WORD   766                     ;UNIQUE ERROR NUMBER
7823  030664  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7824
7825  030666  026102  000010          10$:  CMP     10(R1),R2               ;IS R2 CORRECT
7826  030672  001403                        BEQ     11$                     ;YES GO ON
7827                                                                        ;NO GO TO ERROR
7828  030674  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7829  030676  000767                        .WORD   767                     ;UNIQUE ERROR NUMBER
7830  030700  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7831
7832  030702  026103  000012          11$:  CMP     12(R1),R3               ;IS R3 CORRECT
7833  030706  001403                        BEQ     12$                     ;YES GO ON
7834                                                                        ;NO GO TO ERROR
7835  030710  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7836  030712  000770                        .WORD   770                     ;UNIQUE ERROR NUMBER
7837  030714  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7838
7839  030716  020401                  12$:  CMP     R4,R1                   ;IS R1 CORRECT
7840  030720  001404                        BEQ     13$                     ;YES GO ON
7841                                                                        ;NO GO TO ERROR
7842  030722  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7843  030724  000771                        .WORD   771                     ;UNIQUE ERROR NUMBER
7844  030726  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7845  030730  010401                        MOV     R4,R1
7846
7847  030732  021114                  13$:  CMP     (R1),(R4)               ;IS SOURCE CORRECT
7848  030734  001403                        BEQ     14$                     ;YES GO ON
7849                                                                        ;NO GO TO ERROR
7850  030736  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
7851  030740  000772                        .WORD   772                     ;UNIQUE ERROR NUMBER
7852  030742  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
7853                                                                        ;POSSIBLE SOURCE CODE CORRUPTION
7854  030744  062701  000014          14$:  ADD     #14,R1                  ;GO TO NEXT TEST
7855  030750  020127  031372                CMP     R1,#FIN130              ;ARE WE DONE
7856  030754  001326                        BNE     9$                      ;NO GO TO 9$
7857
7858
7859  030756  000167  000410                JMP     FIN130
7860                                        ;
7861                                        ;
7862  030762  177700          TE130A: .WORD   177700          ;SOURCE
```

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7863  030764  100125                  .WORD   100125          ;DESTINATION WORD 1
7864  030766  177777                  .WORD   177777          ;DESTINATION WORD 2
7865  030770  000010                  .WORD   10              ;TEST PSW
7866  030772  100125                  .WORD   100125          ;RESULT WORD 1
7867  030774  177777                  .WORD   177777          ;RESULT WORD 2
7868
7869  030776  177777                  .WORD   177777          ;SOURCE
7870  031000  000001                  .WORD   1               ;DESTINATION WORD 1
7871  031002  000000                  .WORD   0               ;DESTINATION WORD 2
7872  031004  000000                  .WORD   0               ;TEST PSW
7873  031006  000000                  .WORD   0               ;RESULT WORD 1
7874  031010  100000                  .WORD   100000          ;RESULT WORD 2
7875
7876  031012  177701                  .WORD   177701          ;SOURCE
7877  031014  047777                  .WORD   47777           ;DESTINATION WORD 1
7878  031016  100000                  .WORD   100000          ;DESTINATION WORD 2
7879  031020  000012                  .WORD   12              ;TEST PSW
7880  031022  117777                  .WORD   117777          ;RESULT WORD 1
7881  031024  000000                  .WORD   0               ;RESULT WORD 2
7882
7883  031026  177706                  .WORD   177706          ;SOURCE
7884  031030  004256                  .WORD   4256            ;DESTINATION WORD 1
7885  031032  177700                  .WORD   177700          ;DESTINATION WORD 2
7886  031034  000002                  .WORD   2               ;TEST PSW
7887  031036  025677                  .WORD   25677           ;RESULT WORD 1
7888  031040  170000                  .WORD   170000          ;RESULT WORD 2
7889
7890  031042  177711                  .WORD   177711          ;SOURCE
7891  031044  065700                  .WORD   65700           ;DESTINATION WORD 1
7892  031046  000012                  .WORD   12              ;DESTINATION WORD 2
7893  031050  000013                  .WORD   13              ;TEST PSW
7894  031052  100000                  .WORD   100000          ;RESULT WORD 1
7895  031054  012000                  .WORD   12000           ;RESULT WORD 2
7896
7897  031056  177737                  .WORD   177737          ;SOURCE
7898  031060  000000                  .WORD   0               ;DESTINATION WORD 1
7899  031062  000001                  .WORD   1               ;DESTINATION WORD 2
7900  031064  000004                  .WORD   4               ;TEST PSW
7901  031066  000000                  .WORD   0               ;RESULT WORD 1
7902  031070  000000                  .WORD   0               ;RESULT WORD 2
7903
7904  031072  177736                  .WORD   177736          ;SOURCE
7905  031074  000000                  .WORD   0               ;DESTINATION WORD 1
7906  031076  000001                  .WORD   1               ;DESTINATION WORD 2
7907  031100  000000                  .WORD   0               ;TEST PSW
7908  031102  040000                  .WORD   40000           ;RESULT WORD 1
7909  031104  000000                  .WORD   0               ;RESULT WORD 2
7910
7911  031106  177740                  .WORD   177740          ;SOURCE
7912  031110  100000                  .WORD   100000          ;DESTINATION WORD 1
7913  031112  000000                  .WORD   0               ;DESTINATION WORD 2
7914  031114  000011                  .WORD   11              ;TEST PSW
7915  031116  177777                  .WORD   177777          ;RESULT WORD 1
7916  031120  177777                  .WORD   177777          ;RESULT WORD 2
7917
7918  031122  177725                  .WORD   177725          ;SOURCE
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7919  031124  177777          .WORD   177777          ;DESTINATION WORD 1
7920  031126  174000          .WORD   174000          ;DESTINATION WORD 2
7921  031130  000007          .WORD   7               ;TEST PSW
7922  031132  000000          .WORD   0               ;RESULT WORD 1
7923  031134  000000          .WORD   0               ;RESULT WORD 2
7924
7925  031136  177724          .WORD   177724          ;SOURCE
7926  031140  177777          .WORD   177777          ;DESTINATION WORD 1
7927  031142  174000          .WORD   174000          ;DESTINATION WORD 2
7928  031144  000011          .WORD   11              ;TEST PSW
7929  031146  100000          .WORD   100000          ;RESULT WORD 1
7930  031150  000000          .WORD   0               ;RESULT WORD 2
7931
7932  031152  177733          .WORD   177733          ;SOURCE
7933  031154  177777          .WORD   177777          ;DESTINATION WORD 1
7934  031156  157023          .WORD   157023          ;DESTINATION WORD 2
7935  031160  000012          .WORD   12              ;TEST PSW
7936  031162  114000          .WORD   114000          ;RESULT WORD 1
7937  031164  000000          .WORD   0               ;RESULT WORD 2
7938
7939  031166  177727          .WORD   177727          ;SOURCE
7940  031170  000000          .WORD   0               ;DESTINATION WORD 1
7941  031172  177777          .WORD   177777          ;DESTINATION WORD 2
7942  031174  000013          .WORD   13              ;TEST PSW
7943  031176  177600          .WORD   177600          ;RESULT WORD 1
7944  031200  000000          .WORD   0               ;RESULT WORD 2
7945
7946  031202  177717          .WORD   177717          ;SOURCE
7947  031204  177777          .WORD   177777          ;DESTINATION WORD 1
7948  031206  000001          .WORD   1               ;DESTINATION WORD 2
7949  031210  000011          .WORD   11              ;TEST PSW
7950  031212  100000          .WORD   100000          ;RESULT WORD 1
7951  031214  100000          .WORD   100000          ;RESULT WORD 2
7952
7953  031216  177741          .WORD   177741          ;SOURCE
7954  031220  100000          .WORD   100000          ;DESTINATION WORD 1
7955  031222  000000          .WORD   0               ;DESTINATION WORD 2
7956  031224  000010          .WORD   10              ;TEST PSW
7957  031226  177777          .WORD   177777          ;RESULT WORD 1
7958  031230  177777          .WORD   177777          ;RESULT WORD 2
7959
7960  031232  177742          .WORD   177742          ;SOURCE
7961  031234  037777          .WORD   37777           ;DESTINATION WORD 1
7962  031236  177777          .WORD   177777          ;DESTINATION WORD 2
7963  031240  000005          .WORD   5               ;TEST PSW
7964  031242  000000          .WORD   0               ;RESULT WORD 1
7965  031244  000000          .WORD   0               ;RESULT WORD 2
7966
7967  031246  177742          .WORD   177742          ;SOURCE
7968  031250  077777          .WORD   77777           ;DESTINATION WORD 1
7969  031252  177777          .WORD   177777          ;DESTINATION WORD 2
7970  031254  000001          .WORD   1               ;TEST PSW
7971  031256  000000          .WORD   0               ;RESULT WORD 1
7972  031260  000001          .WORD   1               ;RESULT WORD 2
7973
7974  031262  177711          .WORD   177711          ;SOURCE
```

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 7975  031264  065600                    .WORD   65600           ;DESTINATION WORD 1
 7976  031266  000012                    .WORD   12              ;DESTINATION WORD 2
 7977  031270  000003                    .WORD   3               ;TEST PSW
 7978  031272  000000                    .WORD   0               ;RESULT WORD 1
 7979  031274  012000                    .WORD   12000           ;RESULT WORD 2
 7980
 7981  031276  177740                    .WORD   177740          ;SOURCE
 7982  031300  077777                    .WORD   77777           ;DESTINATION WORD 1
 7983  031302  177777                    .WORD   177777          ;DESTINATION WORD 2
 7984  03_304  000004                    .WORD   4               ;TEST PSW
 7935  031306  000000                    .WORD   0               ;RESULT WORD 1
 7986  031310  000000                    .WORD   0               ;RESULT WORD 2
 7987
 7988  031312  177737                    .WORD   177737          ;SOURCE
 7989  031314  177777                    .WORD   177777          ;DESTINATION WORD 1
 7990  031316  177774                    .WORD   177774          ;DESTINATION WORD 2
 7991  031320  000011                    .WORD   11              ;TEST PSW
 7992  031322  177777                    .WORD   177777          ;RESULT WORD 1
 7993  031324  177777                    .WORD   177777          ;RESULT WORD 2
 7994
 7995  031326  177747                    .WORD   177747          ;SOURCE
 7996  031330  100000                    .WORD   100000          ;DESTINATION WORD 1
 7997  031332  174000                    .WORD   174000          ;DESTINATION WORD 2
 7998  031334  000010                    .WORD   10              ;TEST PSW
 7999  031336  177777                    .WORD   177777          ;RESULT WORD 1
 8000  031340  177700                    .WORD   177700          ;RESULT WORD 2
 8001
 8002  031342  177753                    .WORD   177753          ;SOURCE
 8003  031344  006324                    .WORD   6324            ;DESTINATION WORD 1
 8004  031346  071002                    .WORD   71002           ;DESTINATION WORD 2
 8005  031350  000001                    .WORD   1               ;TEST PSW
 8006  031352  000000                    .WORD   0               ;RESULT WORD 1
 8007  031354  000146                    .WORD   146             ;RESULT WORD 2
 8008
 8009  031356  177765                    .WORD   177765          ;SOURCE
 8010  031360  102351                    .WORD   102351          ;DESTINATION WORD 1
 8011  031362  177231                    .WORD   177231          ;DESTINATION WORD 2
 8012  031364  000011                    .WORD   11              ;TEST PSW
 8013  031366  177760                    .WORD   177760          ;RESULT WORD 1
 8014  031370  116477                    .WORD   116477          ;RESULT WORD 2
 8015  031372                    FIN130:
 8016  031372                    MSPAU:
 8017                            ;;*****************************************************************
 8018                            ;*TEST 216      TEST THAT AUTO DEC/INC OPERATIONS USING SP ARE ON WORD BOUNDRYS
 8019                            ;;*****************************************************************
 8020  031372                    TST216:
 8021  031372  005267  147406            INC     #TESTN                  ;INCREMENT TEST NUMBER
 8022  031376  005006                    CLR     R6                      ;CLEAR SP
 8023  031400  112667  147434            MOVB    (R6)+,COUNT             ;TRY AUTOINC ON R6
 8024  031404  022706  000002            CMP     #2,R6                   ;VERIFY AUTO INC BY 2
 8025  031410  001403                    BEQ     SPAU1                   ;BRANCH IF GOOD
 8026                                                                    ;BAD AUTO-INC
 8027  031412  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 8028  031414  000773                    .WORD   773             ;UNIQUE ERROR NUMBER
 8029  031416  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 8030  031420  005006            SPAU1:  CLR     R6              ;CLEAR R6
```

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8031   031422  112667  147412                  MOVB    (R6)+,COUNT
8032   031426  112667  147406                  MOVB    (R6)+,COUNT             ;DOUBLE BYTE AUTO-INC
8033   031432  022706  000004                  CMP     #4,R6                   ;VERIFY RESULT
8034   031436  001403                          BEQ     SPAU2                   ;BRANCH IF GOOD
8035                                                                           ;BAD DOUBLE AUTO-INC
8036   031440  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8037   031442  000774                          .WORD   774                     ;UNIQUE ERROR NUMBER
8038   031444  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8039   031446  012706  001000          SPAU2:  MOV     #STBOT,R6               ;LOAD R6
8040   031452  114667  147362                  MOVB    -(R6),COUNT             ; TEST AUTO-DEC
8041   031456  022706  000776                  CMP     #776,R6                 ;VERIFY RESULT
8042   031462  001403                          BEQ     SPAU3                   ;BRANCH IF GOOD
8043   031464  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8044   031466  000775                          .WORD   775                     ;UNIQUE ERROR NUMBER
8045   031470  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8046   031472  012706  001000          SPAU3:  MOV     #STBOT,R6               ;LOAD R6
8047   031476  114667  147336                  MOVB    -(R6),COUNT             ; TEST AUTO-DEC
8048   031502  114667  147332                  MOVB    -(R6),COUNT             ; TEST AUTO-DEC
8049   031506  022706  000774                  CMP     #774,R6                 ;VERIFY RESULT
8050   031512  001403                          BEQ     SPAU4                   ;BRANCH IF GOOD
8051   031514  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8052   031516  000776                          .WORD   776                     ;UNIQUE ERROR NUMBER
8053   031520  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8054   031522  005006                SPAU4:    CLR     R6                      ; TEST AUTO-INC ON SOP
8055   031524  105726                          TSTB    (R6)+                   ; TEST AUTO-INC
8056   031526  020627  000002                  CMP     R6,#2
8057   031532  001403                          BEQ     SPAU5                   ;BRANCH IF GOOD
8058   031534  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8059   031536  000777                          .WORD   777                     ;UNIQUE ERROR NUMBER
8060   031540  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8061   031542  012706  001000          SPAU5:  MOV     #STBOT,R6               ;LOAD R6
8062   031546  105746                          TSTB    -(R6)                   ; TEST AUTO-DEC
8063   031550  022706  000776                  CMP     #776,R6                 ;VERIFY RESULT
8064   031554  001403                          BEQ     SPAU6                   ;BRANCH IF GOOD
8065   031556  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8066   031560  001000                          .WORD   1000                    ;UNIQUE ERROR NUMBER
8067   031562  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8068   031564  012706  001000          SPAU6:  MOV     #STBOT,R6
8069
8070                                           ;
8071   031570                          MTRY:
8072                                           ;;*************************************************************************
8073                                           ;*TEST 217       VERIFY YELLOW ZONE TRAP ON AUTO DEC OF R6
8074                                           ;;*************************************************************************
8075   031570                          TST217:
8076   031570  005267  147210                  INC     #TESTN                  ;INCREMENT TEST NUMBER
8077   031574  005067  146166                  CLR     CPEREG          ;INIT CPU ERROR REGISTER
8078   031600  012706  000150                  MOV     #150,R6         ;LOAD R6 WITH A VALUE THAT WILL
8079                                                                   ;CAUSE A YELLOW STACK TRAP(IE. <400)
8080   031604  016767  146174  147216          MOV     4,SLOC00        ;SAVE VECTOR
8081   031612  012767  031654  146164          MOV     #MTRYA,4        ;SETUP THE STACK OVERFLOW TRAP POINTER
8082   031620  016701  146322                  MOV     146,R1          ;SAVE VECTOR
8083   031624  016702  146314                  MOV     144,R2          ;SAVE VECTOR
8084   031630  016703  146306                  MOV     142,R3          ;SAVE VECTOR
8085   031634  005067  146306                  CLR     146             ;JUST AS A PRECAUTION
8086   031640  005046                          CLR     -(R6)           ;CAUSE A STACK OVERFLOW TRAP
```

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8087  031642  012706  001000              MOV     #STBOT,R6       ;RESTORE R6 FOR ERROR CALL
8088                                                              ;OVERFLOW TRAP FAILED
8089  031646  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8090  031650  001001                      .WORD   1001                    ;UNIQUE ERROR NUMBER
8091  031652  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8092  031654                      MTRYA:
8093  031654  022767  000010  146104      CMP     #BIT03,CPEREG   ;WAS CPU ERROR REG SET PROPERLY?
8094  031662  001003                      BNE     1$              ;GO TO ERROR IF NOT
8095  031664  020627  000142              CMP     R6,#142         ;VERIFY CORRECT DECRIMENT OF R6
8096  031670  001403                      BEQ     MTRYB           ;BRANCH IF GOOD
8097                                                              ;ERROR! R6 IMPROPERLY DECRIMENTED
8098                                                              ;OR CPU ERROR REGISTER NOT CORRECT
8099  031672                      1$:
8100  031672  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8101  031674  001002                      .WORD   1002                    ;UNIQUE ERROR NUMBER
8102  031676  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8103  031700                      MTRYB:
8104  031700  005067  146062              CLR     CPEREG          ;CLEAR THE CPU ERROR REGISTER
8105  031704  016767  147120  146072      MOV     SLOC00,4        ;RESTORE VECTOR
8106  031712  010167  146230              MOV     R1,146          ;RESTORE VECTORS
8107  031716  010267  146222              MOV     R2,144          ;       "
8108  031722  010367  146214              MOV     R3,142          ;       "
8109  031726  012706  001000              MOV     #STBOT,R6
8110
8111
8112                                      ;
8113  031732                      MTRYM:
8114                                      ;;*********************************************************************
8115                                      ;*TEST 220       TEST STACK OVERFLOW TRAPS IN VARIOUS MODES
8116                                      ;;*********************************************************************
8117  031732                      TST220:
8118  031732  005267  147046              INC     $TESTN                  ;INCREMENT TEST NUMBER
8119  031736  005067  146024              CLR     CPEREG          ;CLEAR CPU ERROR REGISTER
8120  031742  012706  000400              MOV     #400,R6         ;SETUP OVERFLOW R6 DATA
8121  031746  016767  146032  147054      MOV     4,SLOC00        ;SAVE VECTOR
8122  031754  012767  032002  146022      MOV     #TRYMA,4
8123  031762  005067  146410              CLR     376             ;JUST AS A PRECAUTION
8124  031766  005046                      CLR     -(R6)           ;CAUSE OVERFLOW TRAP
8125  031770  012706  001000              MOV     #STBOT,R6       ;RESTORE R6 FOR ERROR CALL
8126                                                              ;NO OVERFLOW TRAP
8127  031774  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8128  031776  001003                      .WORD   1003                    ;UNIQUE ERROR NUMBER
8129  032000  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8130  032002                      TRYMA:
8131  032002  005067  145760              CLR     CPEREG          ;CLEAR CPU ERROR REGISTER
8132  032006  012705  001000              MOV     #1000,R5        ;SETUP R5 DATA
8133  032012  012706  000400              MOV     #400,R6         ;SETUP OVERFLOW R6 DATA
8134  032016  012767  032040  145760      MOV     #TRYMB,4
8135  032024  064645                      ADD     -(R6),-(R5)     ;CAUSE OVERFLOW TRAP
8136  032026  012706  001000              MOV     #STBOT,R6       ;RESTORE R6 FOR ERROR CALL
8137                                                              ;NO OVERFLOW TRAP
8138  032032  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8139  032034  001004                      .WORD   1004                    ;UNIQUE ERROR NUMBER
8140  032036  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8141  032040                      TRYMB:
8142  032040  005067  145722              CLR     CPEREG          ;CLEAR CPU ERROR REGISTER
```

```
 8143  032044  012706  000150          MOV     #150,R6                 ;SETUP OVERFLOW R6 DATA
 8144  032050  012767  032072  145726  MOV     #TRYMC,4
 8145  032056  044546                  BIC     -(R5),-(R6)             ;CAUSE OVERFLOW TRAP
 8146  032060  012706  001000          MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
 8147                                                                  ;NO OVERFLOW TRAP
 8148  032064  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 8149  032066  001005                  .WORD   1005                    ;UNIQUE ERROR NUMBER
 8150  032070  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 8151  032072  005067  145670  TRYMC:  CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8152  032076  016767  146726  145700  MOV     SLOC00,4                ;RESTORE VECTOR
 8153  032104  012706  001000          MOV     #STBOT,R6
 8154
 8155
 8156                                  ;
 8157  032110                          MILLO:
 8158                                  ;;*************************************************************
 8159                                  ;*TEST 221       TEST STACK OVERFLOW ON ILLEGAL INST TRAP
 8160                                  ;;*************************************************************
 8161  032110                          TST221:
 8162  032110  005267  146670          INC     $TESTN                  ;INCREMENT TEST NUMBER
 8163  032114  005067  145646          CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8164  032120  012706  000400          MOV     #400,R6                 ;SETUP FOR OVERFLOW TRAP
 8165  032124  016767  145660  146676  MOV     10,SLOC00               ;SAVE VECTOR
 8166  032132  012767  032160  145650  MOV     #MILLOA,10              ;SETUP ILLEGAL TRAP VECTOR
 8167  032140  016767  145640  146664  MOV     4,SLOC01                ;SAVE VECTOR
 8168  032146  012767  032172  145630  MOV     #MILLOB,4               ;SETUP OVERFLOW TRAP VECTOR
 8169  032154  000077                  77                              ;UNUSED INSTRUCTION TRAP
 8170  032156  000240                  NOP
 8171  032160  012706  001000  MILLOA: MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
 8172                                                                  ;UNUSED INSTRUCTION TRAP
 8173  032164  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 8174  032166  001006                  .WORD   1006                    ;UNIQUE ERROR NUMBER
 8175  032170  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 8176  032172                          MILLOB:
 8177  032172  016767  146634  145604  MOV     SLOCC1,4                ;RESTORE VECTOR
 8178  032200  016767  146624  145602  MOV     SLOC00,10               ;RESTORE VECTOR
 8179  032206  005067  145554          CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8180  032212  012706  001000          MOV     #STBOT,R6               ;RESTORE R6
 8181
 8182
 8183
 8184                                  ;
 8185  032216                          MIOTO:
 8186                                  ;;*************************************************************
 8187                                  ;*TEST 222       TEST STACK OVERFLOW ON IOT TRAP
 8188                                  ;;*************************************************************
 8189  032216                          TST222:
 8190  032216  005267  146562          INC     $TESTN                  ;INCREMENT TEST NUMBER
 8191  032222  005067  145540          CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8192  032226  012706  000400          MOV     #400,R6                         ;SETUP STACK FOR OVERFLOW
 8193  032232  016767  145562  146570  MOV     20,SLOC00                       ;SAVE OLD IOT VECTOR
 8194  032240  012767  032266  145552  MOV     #IOTOA,20               ;SETUP ERROR ACTION ON IOT
 8195  032246  016767  145532  146556  MOV     4,SLOC01                        ;SAVE VECTOR
 8196  032254  012767  032300  145522  MOV     #IOTOB,4                ;SETUP CORRECT TRAP VECTOR FOR
 8197                                                                  ;OVERFLOW
 8198  032262  000004                  IOT                             ; TEST INSTRUCTION
```

```
 8199  032264  000240                      NOP
 8200  032266  012706  001000      IOTOA:  MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
 8201                                                                      ;FAILURE OF STACK OVERFLOW
 8202  032272  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 8203  032274  001007                      .WORD   1007            ;UNIQUE ERROR NUMBER
 8204  032276  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 8205  032300                      IOTOB:
 8206  032300  005067  145462              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8207  032304  012706  001000              MOV     #STBOT,R6
 8208  032310  016767  146516  145466      MOV     SLOC01,4                ;RESTORE VECTOR
 8209  032316  016767  146506  145474      MOV     SLOC00,20               ;RESTORE TRAP VECTOR
 8210
 8211                              ;
 8212                              ;
 8213  032324                      MEMTO:
 8214                              ;;*********************************************************************
 8215                              ;*TEST 223       TEST STACK OVERFLOW ON EMT TRAP
 8216                              ;;*********************************************************************
 8217  032324                      TST223:
 8218  032324  005267  146454              INC     $TESTN                  ;INCREMENT TEST NUMBER
 8219  032330  005067  145432              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8220  032334  012706  000400              MOV     #400,R6                 ;SETUP STACK FOR OVERFLOW
 8221  032340  016767  145464  146462      MOV     30,SLOC00               ;SAVE OLD EMT VECTOR
 8222  032346  012767  032374  145454      MOV     #EMTOA,30               ;SETUP ERROR ACTION ON EMT
 8223  032354  016767  145424  146450      MOV     4,SLOC01                ;SAVE VECTOR
 8224  032362  012767  032406  145414      MOV     #EMTOB,4                ;SETUP CORRECT TRAP VECTOR FOR
 8225                                                                      ;OVERFLOW
 8226  032370  104000                      EMT                             ; TEST INSTRUCTION
 8227  032372  000240                      NOP
 8228  032374  012706  001000      EMTOA:  MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
 8229                                                                      ;FAILURE OF STACK OVERFLOW
 8230  032400  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 8231  032402  001010                      .WORD   1010            ;UNIQUE ERROR NUMBER
 8232  032404  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
 8233  032406                      EMTOB:
 8234  032406  016767  146416  145414      MOV     SLOC00,30               ;RESTORE TRAP VECTOR
 8235  032414  016767  146412  145362      MOV     SLOC01,4                ;RESTORE VECTOR
 8236  032422  005067  145340              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8237  032426  012706  001000              MOV     #STBOT,R6
 8238
 8239  032432                      MTRPO:
 8240                              ;;*********************************************************************
 8241                              ;*TEST 224       TEST STACK OVERFLOW ON TRAP
 8242                              ;;*********************************************************************
 8243  032432                      TST224:
 8244  032432  005267  146346              INC     $TESTN                  ;INCREMENT TEST NUMBER
 8245  032436  005067  145324              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 8246  032442  012706  000400              MOV     #400,R6                 ;SETUP STACK FOR OVERFLOW
 8247  032446  016767  145362  146354      MOV     34,SLOC00               ;SAVE OLD TRP VECTOR
 8248  032454  012767  032502  145352      MOV     #TRPOA,34               ;SETUP ERROR ACTION ON TRP
 8249  032462  016767  145316  146342      MOV     4,SLOC01                ;SAVE VECTOR
 8250  032470  012767  032520  145306      MOV     #TRPOB,4                ;SETUP CORRECT TRAP VECTOR FOR
 8251                                                                      ;OVERFLOW
 8252  032476  104400                      TRAP                            ; TEST INSTRUCTION
 8253  032500  000240                      NOP
 8254  032502  010637  001062      TRPOA:  MOV     SP,@#SAVSP1             ;SAVE ERROR DATA
```

```
8255  032506  012706  001000              MOV     #STBOT,R6                       ;RESTORE R6 FOR ERROR CALL
8256                                                                              ;FAILURE OF STACK OVERFLOW
8257  032512  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8258  032514  001011                      .WORD   1011                    ;UNIQUE ERROR NUMBER
8259  032516  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8260  032520                      TRP08:
8261  032520  016767  146304  145306      MOV     SLOC00,34                       ;RESTORE TRAP VECTOR
8262  032526  016767  146300  145250      MOV     SLOC01,4                        ;RESTORE VECTOR
8263  032534  005067  145226              CLR     CPEREG                          ;CLEAR CPU ERROR REGISTER
8264  032540  012706  001000              MOV     #STBOT,R6
8265
8266                                      ;
8267                                      ;
8268  032544                      MBPT0:
8269                                      ;;*************************************************************************
8270                                      ;*TEST 225       TEST STACK OVERFLOW ON BPT
8271                                      ;;*************************************************************************
8272  032544                      TST225:
8273  032544  005267  146234              INC     $TESTN                  ;INCREMENT TEST NUMBER
8274  032550  005067  145212              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
8275  032554  012706  000400              MOV     #400,R6                         ;SETUP STACK FOR OVERFLOW
8276  032560  016767  145230  146242      MOV     14,SLOC00                       ;SAVE OLD BPT VECTOR
8277  032566  012767  032614  145220      MOV     #BPTOA,14                       ;SETUP ERROR ACTION ON BPT
8278  032574  016767  145204  146230      MOV     4,SLOC01                        ;SAVE VECTOR
8279  032602  012767  032[illegible]2  145174      MOV     #BPT08,4                        ;SETUP CORRECT TRAP VECTOR FOR
8280                                                                              ;OVERFLOW
8281  032610  000003                      BPT                                     ; TEST INSTRUCTION
8282  032612  000240                      NOP
8283  032614  010637  001062      BPTOA:  MOV     SP,@#SAVSP1                     ;SAVE ERROR DATA
8284  032620  012706  001000              MOV     #STBOT,R6                       ;RESTORE R6 FOR ERROR CALL
8285                                                                              ;FAILURE OF STACK OVERFLOW
8286  032624  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8287  032626  001012                      .WORD   1012                    ;UNIQUE ERROR NUMBER
8288  032630  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8289  032632                      BPT0B:
8290  032632  005067  145130              CLR     CPEREG                          ;CLEAR CPU ERROR REGISTER
8291  032636  016767  146166  145150      MOV     SLOC00,14                       ;RESTORE TRAP VECTOR
8292  032644  016767  146162  145132      MOV     SLOC01,4                        ;RESTORE VECTOR
8293  032652  012706  001000              MOV     #STBOT,R6
8294
8295                                      ;
8296                                      ;
8297  032656                      MILA0:
8298                                      ;;*************************************************************************
8299                                      ;*TEST 226       TEST STACK OVERFLOW AND ILLEGAL JMP INSTRUCTION
8300                                      ;;*************************************************************************
8301  032656                      TST226:
8302  032656  005267  146122              INC     $TESTN                  ;INCREMENT TEST NUMBER
8303  032662  005067  145100              CLR     CPEREG                          ;CLEAR CPU ERROR REGISTER
8304  032666  012706  000400              MOV     #400,R6                         ;SETUP STACK FOR OVERFLOW
8305  032672  016767  145112  146130      MOV     10,SLOC00                       ;SAVE OLD ILLEGAL INST. VECTOR
8306  032700  012767  032730  145102      MOV     #ILA0A,10                       ;SETUP ERROR ACTION ILLEGAL OPCODE
8307  032706  016767  145072  146116      MOV     4,SLOC01                        ;SAVE VECTOR
8308  032714  012767  032742  145062      MOV     #ILB08,4                        ;SETUP CORRECT TRAP VECTOR FOR
8309                                                                              ;OVERFLOW
8310  032722  005001                      CLR     R1
```

```
8311  032724  000101                          JMP     R1                      ; TEST INSTRUCTION
8312  032726  000240                          NOP
8313  032730  012706  001000          ILAOA:  MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
8314                                                                          ;FAILURE OF STACK OVERFLOW
8315  032734  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8316  032736  001013                          .WORD   1013            ;UNIQUE ERROR NUMBER
8317  032740  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8318  032742                          ILBOB:
8319  032742  016767  146064  145034          MOV     SLOC01,4                ;RESTORE VECTOR
8320  032750  016767  146054  145032          MOV     SLOC00,10               ;RESTORE TRAP VECTOR
8321  032756  005067  145004                  CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
8322  032762  012706  001000                  MOV     #STBOT,R6
8323
8324                                  ;
8325  032766                          MILLBO:
8326                                  ;;*****************************************************************
8327                                  ;*TEST 227       TEST STACK OVERFLOW ON ILLEGAL JSR INST
8328                                  ;;*****************************************************************
8329  032766                          TST227:
8330  032766  005267  146012                  INC     $TESTN                  ;INCREMENT TEST NUMBER
8331  032772  012706  000400                  MOV     #400,R6                 ;SETUP STACK FOR OVERFLOW
8332  032776  016767  145006  146024          MOV     10,SLOC00               ;SAVE OLD VECTOR
8333  033004  012767  033034  144776          MOV     #ILLBOA,10              ;SETUP ERROR ACTION ON ILL. OPCODE
8334  033012  016767  144766  146012          MOV     4,SLOC01                ;SAVE VECTOR
8335  033020  012767  033046  144756          MOV     #ILLBOB,4               ;SETUP CORRECT TRAP VECTOR FOR OVERFLOW
8336  033026  005001                          CLR     R1
8337  033030  004501                          JSR     R5,R1                   ;*** TEST INSTRUCTION***
8338  033032  000240                          NOP
8339  033034  012706  001000          ILLBOA: MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
8340                                                                          ;ERROR!! FAILURE OF STACK OVERFLOW
8341  033040  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8342  033042  001014                          .WORD   1014            ;UNIQUE ERROR NUMBER
8343  033044  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8344  033046  005037  177766          ILLBOB: CLR     @#CPEREG                ;CLEAR CPU ERROR REGISTER
8345  033052  016767  145752  144730          MOV     SLOC00,10               ;RESTORE TRAP VECTOR
8346  033060  016767  145746  144716          MOV     SLOC01,4                ;RESTORE VECTOR
8347  033066  012706  001000                  MOV     #STBOT,R6
8348
8349                                  ;
8350                                  ;
8351  033072                          MSTO:
8352                                  ;;*****************************************************************
8353                                  ;*TEST 230       TEST FOR FALSE STACK OVERFLOW
8354                                  ;;*****************************************************************
8355  033072                          TST230:
8356  033072  005267  145706                  INC     $TESTN                  ;INCREMENT TEST NUMBER
8357  033076  016767  144702  145724          MOV     4,SLOC00                ;SAVE VECTOR
8358  033104  012767  033152  144672          MOV     #MSTOE,4                ;ANTICIPATE OVERFLOW ERROR
8359  033112  012706  001002                  MOV     #1002,R6                ;SETUP LEGAL R6
8360  033116  005746                          TST     -(R6)                   ;TRY TO CAUSE STACK OVERFLOW
8361  033120  012706  002002                  MOV     #2002,R6                ;SETUP LEGAL R6
8362  033124  005746                          TST     -(R6)                   ;TRY TO CAUSE STACK OVERFLOW
8363  033126  012706  004002                  MOV     #4002,R6                ;SETUP LEGAL R6
8364  033132  005746                          TST     -(R6)                   ;TRY TO CAUSE STACK OVERFLOW
8365  033134  012706  010002                  MOV     #10002,R6               ;SETUP LEGAL R6
8366  033140  005746                          TST     -(R6)                   ;TRY TO CAUSE STACK OVERFLOW
```

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8367  033142  012706  100402          MOV     #100402,R6              ;SETUP  LEGAL R6
8368  033146  005746                  TST     -(R6)                   ;TRY TO CAUSE STACK OVERFLOW
8369  033150  000405                  BR      MSTOEE                  ;EXIT MODULE
8370  033152  012706  001000  MSTOE:  MOV     #STBOT,R6               ;RESTORE R6 FOR ERROR CALL
8371                                                                  ;ERROR!! INVALID STACK OVERFLOW ERROR
8372  033156  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8373  033160  001015                  .WORD   1015                    ;UNIQUE ERROR NUMBER
8374  033162  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8375  033164  016767  145640  144612  MSTOEE: MOV     SLOC00,4        ;RESTORE VECTOR
8376  033172  012706  001000          MOV     #STBOT,R6
8377
8378                                  ;
8379                                  ;
8380  033176                          MTT:
8381                                  ;;*****************************************************************
8382                                  ;*TEST 231       TEST T-BIT TRAPS
8383                                  ;;*****************************************************************
8384  033176                          TST231:
8385  033176  005267  145602          INC     $TESTN                  ;INCREMENT TEST NUMBER
8386  033202  012706  001000          MOV     #STBOT,R6               ;SETUP STACK
8387  033206  016767  144602  145614  MOV     14,SLOC00               ;SAVE OLD T-BIT VECTOR
8388  033214  012746  000020          MOV     #20,-(R6)               ;PUSH T-BIT
8389  033220  012746  033242          MOV     #MTTA,-(R6)             ;SETUP ERROR TRAP VECTOR
8390  033224  012767  033250  144562  MOV     #MTTB,14                ;SETUP NEW T-BIT VECTOR
8391  033232  000002                  RTI                             ;CAUSE A T BIT SET IN PSW
8392                                                                  ;SHOULD NEVER BE EXECUTED
8393  033234  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8394  033236  001016                  .WORD   1016                    ;UNIQUE ERROR NUMBER
8395  033240  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8396                                                                  ;DIDNT TAKE CORRECT TRAP
8397  033242                          MTTA:
8398  033242  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8399  033244  001017                  .WORD   1017                    ;UNIQUE ERROR NUMBER
8400  033246  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8401  033250  022706  000774  MTTB:   CMP     #STBOT-4,R6             ;VERIFY SP DECIRMENT
8402  033254  001403                  BEQ     MTTD                    ;BRANCH IF GOOD
8403                                                                  ;BAD SP
8404  033256  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8405  033260  001020                  .WORD   1020                    ;UNIQUE ERROR NUMBER
8406  033262  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8407  033264  021627  033242  MTTD:   CMP     (R6),#MTTA               VERIFY PC SAVED ON STACK
8408  033270  001403                  BEQ     MTTE                    ;BRANCH IF GOOD
8409                                                                  ;INCORRECT PC ON STACK
8410  033272  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8411  033274  001021                  .WORD   1021                    ;UNIQUE ERROR NUMBER
8412  033276  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8413  033300                          MTTE:
8414  033300  016767  145524  144506  MOV     SLOC00,14               ;RESTORE VECTOR 14
8415  033306  012706  001000          MOV     #STBOT,R6
8416
8417
8418  033312                          ;
8419                                  MTTS:
8420                                  ;;*****************************************************************
8421                                  ;*TEST 232       TEST T-BIT TRAPS WITH RTT
8422  033312                          ;;*****************************************************************
                                    TST232:
```

```
8423  033312  005267  145466          INC     $TESTN          ;INCREMENT TEST NUMBER
8424  033316  012706  001000          MOV     #STBOT,R6       ;SETUP STACK
8425  033322  016767  144466  145500  MOV     14,SLOC00       ;SAVE OLD T-BIT VECTOR
8426  033330  012746  000020          MOV     #20,-(R6)       ;PUSH T-BIT
8427  033334  012746  033356          MOV     #MTTSA,-(R6)    ;SETUP ERROR TRAP VECTOR
8428  033340  012767  033366  144446  MOV     #MTTSB,14       ;SETUP NEW T-BIT VECTOR
8429  033346  000006                  RTT                     ;CAUSE A T BIT SET IN PSW
8430                                                          ;SHOULD NEVER BE EXECUTED
8431  033350  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8432  033352  001022                  .WORD   1022            ;UNIQUE ERROR NUMBER
8433  033354  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8434  033356  000240          MTTSA:  NOP                     ;RTT WILL EXECUTE THIS INSTRUCTION
8435                                                          ;WITH A T-BIT TRAP
8436                                                          ;DIDNT TAKE CORRECT TRAP
8437  033360                  MTTSQ:
8438  033360  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8439  033362  001023                  .WORD   1023            ;UNIQUE ERROR NUMBER
8440  033364  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8441  033366  022706  000774  MTTSB:  CMP     #STBOT-4,R6     ;VERIFY SP DECIRMENT
8442  033372  001403                  BEQ     MTTSD           ;BRANCH IF GOOD
8443                                                          ;BAD SP
8444  033374  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8445  033376  001024                  .WORD   1024            ;UNIQUE ERROR NUMBER
8446  033400  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8447  033402  021627  033360  MTTSD:  CMP     (R6),#MTTSQ     ;VERIFY PC SAVED ON STACK
8448  033406  001403                  BEQ     MTTSE           ;BRANCH IF GOOD
8449                                                          ;INCORRECT PC ON STACK
8450  033410  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8451  033412  001025                  .WORD   1025            ;UNIQUE ERROR NUMBER
8452  033414  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8453  033416                  MTTSE:
8454  033416  016767  145406  144370  MOV     SLOC00,14       ;RESTORE VECTOR 14
8455  033424  012706  001000          MOV     #STBOT,R6
8456
8457  033430                  MTTR:
8458                          ;;*********************************************************************
8459                          ;*TEST 233      TEST OLD STATUS ON T-BIT TRAP
8460                          ;;*********************************************************************
8461  033430                  TST233:
8462  033430  005267  145350          INC     $TESTN          ;INCREMENT TEST NUMBER
8463  033434  012706  001000          MOV     #STBOT,R6       ;SETUP STACK
8464  033440  016767  144350  145362  MOV     14,SLOC00       ;SAVE OLD  VECTOR
8465  033446  012746  000020          MOV     #20,-(R6)       ;PUSH T-BIT
8466  033452  012746  033504          MOV     #MTTRA,-(R6)    ;SETUP ERROR TRAP VECTOR
8467  033456  012767  033512  144330  MOV     #MTTRB,14       ;SETUP NEW T-BIT VECTOR
8468  033464  012767  000357  144304  MOV     #357,PS         ;SET PRIORITY AND COND C
8469  033472  000277                  SCC
8470  033474  000002                  RTI
8471                                                          ;SHOULD NEVER EXECUTE
8472  033476  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8473  033500  001026                  .WORD   1026            ;UNIQUE ERROR NUMBER
8474  033502  001127                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
8475                                                          ;DIDNT TAKE CORRECT TRAP
8476  033504                  MTTRA:
8477  033504  104000                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
8478  033506  001027                  .WORD   1027            ;UNIQUE ERROR NUMBER
```

```
8479  033510  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8480  033512  026727  145260  000020  MTTRB:  CMP     STBOT-2,#20             ;VERIFY PSW ON STACK
8481  033520  001403                          BEQ     MTTRC                   ;BRANCH IF CORRECT STATUS
8482                                                                          ;BAD STATUS ON STACK
8483  033522  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8484  033524  001030                          .WORD   1030                    ;UNIQUE ERROR NUMBER
8485  033526  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8486  033530  012706  001000          MTTRC:  MOV     #STBOT,R6               ;SETUP STACK
8487  033534  012746  000377                  MOV     #377,-(R6)              ;PUSH T-BIT
8488  033540  012746  033572                  MOV     #MTTRD,-(R6)            ;SETUP ERROR TRAP VECTOR
8489  033544  012767  033600  144242          MOV     #MTTRE,14               ;SETUP NEW T-BIT VECTOR
8490  033552  012767  000000  144216          MOV     #0,PS                   ;CLEAR PRIORITY
8491  033560  000257                          CCC                             ;CLEAR CONDITION CODES
8492  033562  000002                          RTI
8493                                                                          ;SHOULD NEVER EXECUTE
8494  033564  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8495  033566  001031                          .WORD   1031                    ;UNIQUE ERROR NUMBER
8496  033570  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8497                                                                          ;DIDNT TAKE CORRECT TRAP
8498  033572                          MTTRD:
8499  033572  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8500  033574  001032                          .WORD   1032                    ;UNIQUE ERROR NUMBER
8501  033576  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8502  033600  026727  145172  000377  MTTRE:  CMP     STBOT-2,#377            ;VERIFY OLD PSW ON STACK
8503  033606  001403                          BEQ     MTTRF                   ;BRANCH IF GOOD
8504                                                                          ;OLD PSW INCORRECT
8505  033610  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8506  033612  001033                          .WORD   1033                    ;UNIQUE ERROR NUMBER
8507  033614  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8508  033616                          MTTRF:
8509  033616  016767  145206  144170          MOV     SLOC00,14               ;RESTORE VECTOR
8510  033624  012706  001000                  MOV     #STBOT,R6
8511
8512                                          ;
8513  033630                          MRT:
8514                                          ;;*************************************************************************
8515                                          ;*TEST 234      TEST RESERVED INST TRAP
8516                                          ;;*************************************************************************
8517  033630                          TST234:
8518  033630  005267  145150                  INC     @TESTN                  ;INCREMENT TEST NUMBER
8519  033634  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
8520  033640  016767  144144  145162          MOV     10,SLOC00               ;SAVE OLD  VECTOR
8521  033646  012767  033664  144134          MOV     #MRTB,10                ;SETUP NEW RESERVED VECTOR
8522  033654  000077                          77
8523                                                                          ;DIDNT TAKE CORRECT TRAP
8524  033656                          MRTA:
8525  033656  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8526  033660  001034                          .WORD   1034                    ;UNIQUE ERROR NUMBER
8527  033662  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8528  033664  022706  000774          MRTB:   CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8529  033670  001403                          BEQ     MRTE                    ;BRANCH IF GOOD
8530                                                                          ;BAD PC ON STACK
8531  033672  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8532  033674  001035                          .WORD   1035                    ;UNIQUE ERROR NUMBER
8533  033676  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8534  033700  021627  033656          MRTE:   CMP     (R6),#MRTA              ;VERFY PROPER PC ON STACK
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8535  033704  001403                          BEQ     MRTF                    ;BRANCH IF GOOD
8536                                                                          ;INCORRECT PC ON STACK
8537  033706  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8538  033710  001036                          .WORD   1036                    ;UNIQUE ERROR NUMBER
8539  033712  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8540  033714                          MRTF:
8541  033714  016767  145110  144066          MOV     SLOC00,10               ;RESTORE TRAP VECTOR
8542  033722  012706  001000                  MOV     #STBOT,R6
8543
8544                                  ;
8545                                  ;
8546  033726                          MRTO:
8547                                  ;;*********************************************************************
8548                                  ;*TEST 235       TEST OLD STATUS ON RESERVED INST TRAP
8549                                  ;;*********************************************************************
8550  033726                          TST235:
8551  033726  005267  145052                  INC     @TESTN                  ;INCREMENT TEST NUMBER
8552  033732  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
8553  033736  016767  144046  145064          MOV     10,SLOC00               ;SAVE OLD  VECTOR
8554  033744  012767  033770  144036          MOV     #MRTOB,10               ;SETUP NEW VECTOR
8555  033752  005067  144020                  CLR     PS                      ;CLEAR PRIORITY AND COND C
8556  033756  000257                          CCC
8557  033760  000077                          77
8558                                                                          ;DIDNT TAKE CORRECT TRAP
8559  033762                          MRTOA:
8560  033762  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8561  033764  001037                          .WORD   1037                    ;UNIQUE ERROR NUMBER
8562  033766  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8563  033770  026727  145002  000000  MRTOB:  CMP     STBOT-2,#0              ;VERIFY PSW ON STACK
8564  033776  001403                          BEQ     MRTOC                   ;BRANCH IF CORRECT STATUS
8565                                                                          ;BAD STATUS ON STACK
8566  034000  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8567  034002  001040                          .WORD   1040                    ;UNIQUE ERROR NUMBER
8568  034004  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8569  034006  012706  001000          MRTOC:  MOV     #STBOT,R6               ;SETUP STACK
8570  034012  012767  034040  143770          MOV     #MRTOE,10               ;SET UP TRAP VECTOR
8571  034020  012767  000357  143750          MOV     #357,PS                 ;SET PRIORITY
8572  034026  000277                          SCC                             ;SET CONDITION CODES
8573  034030  000077                          77                              ;RESERVED INSTRUCTION
8574
8575                                                                          ;DIDNT TAKE CORRECT TRAP
8576  034032                          MRTOD:
8577  034032  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8578  034034  001041                          .WORD   1041                    ;UNIQUE ERROR NUMBER
8579  034036  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8580  034040  026727  144732  000357  MRTOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
8581  034046  001403                          BEQ     MRTOF                   ;BRANCH IF GOOD
8582                                                                          ;OLD PSW INCORRECT
8583  034050  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8584  034052  001042                          .WORD   1042                    ;UNIQUE ERROR NUMBER
8585  034054  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8586  034056                          MRTOF:
8587  034056  016767  144746  143724          MOV     SLOC00,10               ;RESOTRE TRAP VECTOR
8588  034064  012706  001000                  MOV     #STBOT,R6
8589
8590  034070                          MTP:
```

```
8591                                    ;;*****************************************************************
8592                                    ;*TEST 236      TEST TRAP INST
8593                                    ;;*****************************************************************
8594  034070                            TST236:
8595  034070  005267  144710                   INC     $TESTN                  ;INCREMENT TEST NUMBER
8596  034074  012706  001000                   MOV     #STBOT,R6               ;SETUP STACK
8597  034100  016767  143730  144722           MOV     34,SLOC00               ;SAVE OLD  VECTOR
8598  034106  012767  034132  143720           MOV     #MTPB,34                ;SETUP NEW TRAP VECTOR
8599  034114  005067  143656                   CLR     PS                      ;CLEAR PRIORITY ABND COND C
8600  034120  000257                           CCC
8601  034122  104400                           TRAP
8602                                                                            ;DIDNT TAKE CORRECT TRAP
8603  034124                            MTPR:
8604  034124  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8605  034126  001043                           .WORD   1043                    ;UNIQUE ERROR NUMBER
8606  034130  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8607  034132  022706  000774            MTPB:  CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8608  034136  001403                           BEQ     MTPQ                    ;BRANCH IF GOOD
8609                                                                            ;BAD PC ON STACK
8610  034140  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8611  034142  001044                           .WORD   1044                    ;UNIQUE ERROR NUMBER
8612  034144  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8613  034146  021627  034124            MTPQ:  CMP     (R6),#MTPR              ;VERFY PROPER PC ON STACK
8614  034152  001403                           BEQ     MTPF                    ;BRANCH IF GOOD
8615                                                                            ;INCORRECT PC ON STACK
8616  034154  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8617  034156  001045                           .WORD   1045                    ;UNIQUE ERROR NUMBER
8618  034160  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8619  034162                            MTPF:
8620  034162  016767  144642  143644           MOV     SLOC00,34               ;RESTORE VECTOR
8621  034170  012706  001000                   MOV     #STBOT,R6
8622
8623                                    ;
8624                                    ;
8625  034174                            MTPO:
8626                                    ;;*****************************************************************
8627                                    ;*TEST 237      TEST OLD STATUS SAVED ON TRAP
8628                                    ;;*****************************************************************
8629  034174                            TST237:
8630  034174  005267  144604                   INC     $TESTN                  ;INCREMENT TEST NUMBER
8631  034200  012706  001000                   MOV     #STBOT,R6               ;SETUP STACK
8632  034204  016767  143624  144616           MOV     34,SLOC00               ;SAVE OLD  VECTOR
8633  034212  012767  034236  143614           MOV     #MTPOB,34               ;SETUP NEW TRAP VECTOR
8634  034220  005067  143552                   CLR     PS                      ;CLEAR PRIORITY AND COND C
8635  034224  000257                           CCC
8636  034226  104400                           TRAP
8637                                                                            ;DIDNT TAKE CORRECT TRAP
8638  034230                            MTPOA:
8639  034230  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8640  034232  001046                           .WORD   1046                    ;UNIQUE ERROR NUMBER
8641  034234  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8642  034236  026727  144534  000000  MTPOB:  CMP     STBOT-2,#0              ;VERIFY PSW ON STACK
8643  034244  001403                           BEQ     MTPOC                   ;BRANCH IF CORRECT STATUS
8644                                                                            ;BAD STATUS ON STACK
8645  034246  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8646  034250  001047                           .WORD   1047                    ;UNIQUE ERROR NUMBER
```

```
8647  034252  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8648  034254  012706  001000          MTPOC:  MOV     #STBOT,R6               ;SETUP STACK
8649  034260  012767  034306  143546          MOV     #MTPOE,34               ;SET UP TRAP VECTOR
8650  034266  012767  000357  143502          MOV     #357,PS                 ;SET PRIORITY
8651  034274  000277                          SCC                             ;SET CONDITION CODES
8652  034276  104400                          TRAP                            ;ISSUE TRAP
8653                                                                          ;DIDNT TAKE CORRECT TRAP
8654  034300                          MTPOD:
8655  034300  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8656  034302  001050                          .WORD   1050                    ;UNIQUE ERROR NUMBER
8657  034304  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8658  034306  026727  144464  000357  MTPOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
8659  034314  001403                          BEQ     MTPOF                   ;BRANCH IF GOOD
8660                                                                          ;OLD PSW INCORRECT
8661  034316  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8662  034320  001051                          .WORD   1051                    ;UNIQUE ERROR NUMBER
8663  034322  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8664  034324                          MTPOF:
8665  034324  016767  144500  143502          MOV     SLOC00,34               ;RESTORE TRAP VECTOR
8666  034332  012706  001000                  MOV     #STBOT,R6
8667
8668                                  ;
8669                                  ;
8670  034336                          MTPA:
8671                                  ;;*****************************************************************
8672                                  ;*TEST 240       TEST ALL TRAP OPCODES - SELF MODIFYING
8673                                  ;;*****************************************************************
8674  034336                          TST240:
8675  034336  005267  144442                  INC     @TESTN                  ;INCREMENT TEST NUMBER
8676  034342  005003                          CLR     R3                      ;SETUP REGISTER TO INDICATE OPCODE
8677  034344  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
8678  034350  016767  143460  144452          MOV     34,SLOC00               ;SAVE OLD  VECTOR
8679  034356  016767  143422  144446          MOV     4,SLOC01                ;SAVE IN CASE OF HALT
8680  034364  012767  034420  143412          MOV     #MTPAH,4                ;SETUP HALT TRAP
8681  034372  012767  034426  143434          MOV     #MTPAA,34               ;SETUP NEW TRAP VECTOR
8682  034400  000167  000022                  JMP     MTPAA                   ;GO INTO LOOPING CODE
8683                                  ;
8684  034404  000000                  MTPAL:  HALT                            ;SET TO A ZERO
8685                                                                          ;TRAP INSTRUCTION FAILED TO TRAP
8686  034406  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8687  034410  001052                          .WORD   1052                    ;UNIQUE ERROR NUMBER
8688  034412  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8689                                                                          ;EXAMINE OPCCODE AT LOCATION MTPAL:
8690
8691  034414  000167  000006                  JMP     MTPAA                   ;ATTEMPT TO GO ON
8692                                  ;
8693                                                                          ;ERROR, EITHER CANT MODIFY LOCATION MTPAL
8694  034420                          MTPAH:
8695  034420  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8696  034422  001053                          .WORD   1053                    ;UNIQUE ERROR NUMBER
8697  034424  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8698
8699                                                                          ;OR TRAP INSTRUCTION FAILED
8700  034426                          MTPAA:
8701  034426  005203                          INC     R3                      ;GET NEXT OPCODE
8702
```

```
8703  034430  012706  001000          MOV     #STBOT,R6               ;RESTORE STACK
8704  034434  020327  000400          CMP     R3,#400                 ;SEE IF LAST OPCODE
8705  034440  001406                  BEQ     MTPAE                   ;BRANCH IF DONE
8706  034442  012767  104400  177734  MOV     #104400,MTPAL           ;TRAP OPCODE INTO LOCATION
8707  034450  060367  177730          ADD     R3,MTPAL                ;FORM TEST OPCODE
8708  034454  000753                  BR      MTPAL                   ;EXECUTE TEST
8709  034456                  MTPAE:
8710
8711  034456  016767  144346  143350  MOV     SLOC00,34
8712  034464  016767  144342  143312  MOV     SLOC01,4                ;RESTORE VECTORS
8713
8714  034472  012706  001000          MOV     #STBOT,R6
8715
8716                          ;
8717                          ;
8718  034476                  MIOT:
8719                          ;;*****************************************************************
8720                          ;*TEST 241       TEST IOT TRAP
8721                          ;;*****************************************************************
8722  034476                  TST241:
8723  034476  005267  144302          INC     $TESTN                  ;INCREMENT TEST NUMBER
8724  034502  012706  001000          MOV     #STBOT,R6               ;SETUP STACK
8725  034506  016767  143306  144314  MOV     20,SLOC00               ;SAVE OLD  VECTOR
8726  034514  012767  034532  143276  MOV     #MIOTB,20               ;SETUP NEW IOT VECTOR
8727  034522  000004                  IOT                             ;***TEST INSTRUCTION***
8728                                                                  ;ERROR! DIDNT TAKE CORRECT TRAP
8729  034524                  MIOTA:
8730  034524  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8731  034526  001054                  .WORD   1054                    ;UNIQUE ERROR NUMBER
8732  034530  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8733  034532  022706  000774  MIOTB:  CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8734  034536  001403                  BEQ     MIOTD                   ;BRANCH IF GOOD
8735                                                                  ;BAD PC ON STACK
8736  034540  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8737  034542  001055                  .WORD   1055                    ;UNIQUE ERROR NUMBER
8738  034544  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8739  034546  021627  034524  MIOTD:  CMP     (R6),#MIOTA             ;VERFY PROPER PC ON STACK
8740  034552  001403                  BEQ     MIOTF                   ;BRANCH IF GOOD
8741                                                                  ;INCORRECT PC ON STACK
8742  034554  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8743  034556  001056                  .WORD   1056                    ;UNIQUE ERROR NUMBER
8744  034560  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8745  034562  016767  144242  143230  MIOTF:  MOV     SLOC00,20       ;RESTORE VECTOR
8746  034570  012706  001000          MOV     #STBOT,R6
8747
8748  034574                  MITO:
8749                          ;;*****************************************************************
8750                          ;*TEST 242       TEST OLD STATUS ON IOT TRAP
8751                          ;;*****************************************************************
8752  034574                  TST242:
8753  034574  005267  144204          INC     $TESTN                  ;INCREMENT TEST NUMBER
8754  034600  012706  001000          MOV     #STBOT,R6               ;SETUP STACK
8755  034604  016767  143210  144216  MOV     20,SLOC00               ;SAVE OLD  VECTOR
8756  034612  012767  034636  143200  MOV     #MITOB,20               ;SETUP NEW IOT VECTOR
8757  034620  005067  143152          CLR     PS                      ;CLEAR PRIORITY AND COND C
8758  034624  000257                  CCC
```

```
8759  034626  000004                          IOT
8760
8761  034630                          MITOA:
8762  034630  104000                          ERROR
8763  034632  001057                          .WORD   1057
8764  034634  001127                          .WORD   CPUERR
8765  034636  026727  144134  000000  MITOB:  CMP     STBOT-2,#0
8766  034644  001403                          BEQ     MITOC
8767
8768  034646  104000                          ERROR
8769  034650  001060                          .WORD   1060
8770  034652  001127                          .WORD   CPUERR
8771  034654  012706  001000          MITOC:  MOV     #STBOT,R6
8772  034660  012767  034706  143132          MOV     #MITOE,20
8773  034666  012767  000357  143102          MOV     #357,PS
8774  034674  000277                          SCC
8775  034676  000004                          IOT
8776
8777  034700                          MITOD:
8778  034700  104000                          ERROR
8779  034702  001061                          .WORD   1061
8780  034704  001127                          .WORD   CPUERR
8781  034706  026727  144064  000357  MITOE:  CMP     STBOT-2,#357
8782  034714  001403                          BEQ     MITOF
8783
8784  034716  104000                          ERROR
8785  034720  001062                          .WORD   1062
8786  034722  001127                          .WORD   CPUERR
8787  034724                          MITOF:
8788  034724  016767  144100  143066          MOV     SLOC00,20
8789  034732  012706  001000                  MOV     #STBOT,R6
8790
8791
8792  034736                          MET:
8793
8794
8795
8796  034736
8797  034736  005267  144042          TST243: INC     $TESTN
8798  034742  012706  001000                  MOV     #STBOT,R6
8799  034746  016767  143056  144054          MOV     30,SLOC00
8800  034754  012767  035006  143046          MOV     #METB,30
8801  034762  016767  143046  144042          MOV     34,SLOC01
8802  034770  012767  043470  143036          MOV     #$ERROR,34
8803  034776  104000                          EMT
8804
8805  035000                          META:
8806  035000  104400                          TRAP
8807  035002  001063                          .WORD   1063
8808  035004  001127                          .WORD   CPUERR
8809  035006  022706  000774          METB:   CMP     #STBOT-4,R6
8810  035012  001403                          BEQ     METD
8811
8812  035014  104000                          ERROR
8813  035016  001064                          .WORD   1064
8814  035020  001127                          .WORD   CPUERR

                                        ;DIDNT TAKE CORRECT TRAP

                                        ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        ;UNIQUE ERROR NUMBER
                                        ;ADDRESS OF ERROR MESSAGE
                                        ;VERIFY PSW ON STACK
                                        ;BRANCH IF CORRECT STATUS
                                        ;BAD STATUS ON STACK
                                        ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        ;UNIQUE ERROR NUMBER
                                        ;ADDRESS OF ERROR MESSAGE
                                        ;SETUP STACK
                                        ;SET UP TRAP VECTOR
                                        ;SET PRIORITY
                                        ;SET CONDITION CODES

                                        ;DIDNT TAKE CORRECT TRAP

                                        ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        ;UNIQUE ERROR NUMBER
                                        ;ADDRESS OF ERROR MESSAGE
                                        ;VERIFY OLD PSW ON STACK
                                        ;BRANCH IF GOOD
                                        ;OLD PSW INCORRECT
                                        ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        ;UNIQUE ERROR NUMBER
                                        ;ADDRESS OF ERROR MESSAGE

                                        ;RESTORE VECTOR

                                        ;
                                        ;;*******************************************************************
                                        ;*TEST 243      TEST EMULATOR TRAP INSTRUCTION  (EMT)
                                        ;;*******************************************************************
                                                INC     $TESTN          ;INCREMENT TEST NUMBER
                                                MOV     #STBOT,R6       ;SETUP STACK
                                                MOV     30,SLOC00       ;SAVE OLD  VECTOR
                                                MOV     #METB,30        ;SETUP NEW EMT VECTOR
                                                MOV     34,SLOC01       ;SAVE TRAP VECTOR
                                                MOV     #$ERROR,34      ;SET UP TO HANDLE EMT ERROR
                                                EMT
                                                                        ;DIDNT TAKE CORRECT TRAP
                                                TRAP                    ;ERROR TRAP
                                                .WORD   1063            ;ERROR NUMBER
                                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
                                                CMP     #STBOT-4,R6     ;VERIFY SP DECRIMENT
                                                BEQ     METD            ;BRANCH IF GOOD
                                                                        ;BAD PC ON STACK
                                                ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
                                                .WORD   1064            ;UNIQUE ERROR NUMBER
                                                .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
```

```
8815  035022  021627  035000          METD:   CMP     (R6),#META              ;VERFY PROPER PC ON STACK
8816  035026  001403                          BEQ     METF                    ;BRANCH IF GOOD
8817                                                                          ;INCORRECT PC ON STACK
8818  035030  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8819  035032  001065                          .WORD   1065                    ;UNIQUE ERROR NUMBER
8820  035034  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8821  035036  016767  143770  142770  METF:   MOV     SLOC01,34               ;RESTORE VECTOR
8822  035044  016767  143760  142756          MOV     SLOC00,30               ;RESTORE VECTOR
8823  035052  012706  001000                  MOV     #STBOT,R6
8824
8825                                          ;
8826  035056                                  METO:
8827                                          ;;**********************************************************************
8828                                          ;*TEST 244       TEST OLD STATUS ON EMT TRAP
8829                                          ;;**********************************************************************
8830  035056                                  TST244:
8831  035056  005267  143722                  INC     $TESTN                  ;INCREMENT TEST NUMBER
8832  035062  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
8833  035066  016767  142736  143734          MOV     30,SLOC00               ;SAVE OLD  VECTOR
8834  035074  012767  035134  142726          MOV     #METOB,30               ;SETUP NEW EMT VECTOR
8835  035102  016767  142726  143722          MOV     34,SLOC01               ;SAVE TRAP VECTOR
8836  035110  012767  043470  142716          MOV     #$ERROR,34              ;SET UP TRAP VECTOR
8837  035116  005067  142654                  CLR     PS                      ;CLEAR PRIORITY AND COND C
8838  035122  000257                          CCC
8839  035124  104000                          EMT
8840                                                                          ;DIDNT TAKE CORRECT TRAP
8841  035126                                  METOA:
8842  035126  104400                          TRAP                            ;ERROR TRAP
8843  035130  001066                          .WORD   1066                    ;ERROR NUMBER
8844  035132  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8845  035134  026727  143636  000000  METOB:  CMP     STBOT-2,#0              ;VERIFY PSW ON STACK
8846  035142  001403                          BEQ     METOC                   ;BRANCH IF CORRECT STATUS
8847                                                                          ;BAD STATUS ON STACK
8848  035144  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8849  035146  001067                          .WORD   1067                    ;UNIQUE ERROR NUMBER
8850  035150  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8851  035152  012706  001000          METOC:  MOV     #STBOT,R6               ;SETUP STACK
8852  035156  012767  035204  142644          MOV     #METOE,30               ;SET UP TRAP VECTOR
8853  035164  012767  000357  142604          MOV     #357,PS                 ;SET PRIORITY
8854  035172  000277                          SCC                             ;SET CONDITION CODES
8855  035174  104000                          EMT
8856                                                                          ;DIDNT TAKE CORRECT TRAP
8857  035176                                  METOD:
8858  035176  104400                          TRAP                            ;ERROR TRAP
8859  035200  001070                          .WORD   1070                    ;ERROR NUMBER
8860  035202  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8861  035204  026727  143566  000357  METOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
8862  035212  001403                          BEQ     METOF                   ;BRANCH IF GOOD
8863                                                                          ;OLD PSW INCORRECT
8864  035214  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8865  035216  001071                          .WORD   1071                    ;UNIQUE ERROR NUMBER
8866  035220  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8867  035222                                  METOF:
8868  035222  016767  143604  142604          MOV     SLOC01,34               ;RESTORE VECTOR
8869  035230  016767  143574  142572          MOV     SLOC00,30               ;RESTORE VECTOR
8870  035236  012706  001000                  MOV     #STBOT,R6
```

```
8871
8872                                    ;
8873                                    ;
8874  035242                            MBT:
8875                                    ;;*****************************************************************
8876                                    ;*TEST 245       TEST BPT TRAP
8877                                    ;;*****************************************************************
8878  035242                            TST245:
8879  035242  005267  143536                   INC     #TESTN                  ;INCREMENT TEST NUMBER
8880  035246  012706  001000                   MOV     #STBOT,R6               ;SETUP STACK
8881  035252  016767  142536  143550          MOV     14,SLOC00               ;SAVE OLD  VECTOR
8882  035260  012767  035276  142526          MOV     #MBTB,14                ;SETUP NEW BPT VECTOR
8883  035266  000003                           BPT
8884                                                                            ;DIDNT TAKE CORRECT TRAP
8885  035270                            MBTA:
8886  035270  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8887  035272  001072                           .WORD   1072                    ;UNIQUE ERROR NUMBER
8888  035274  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8889  035276  022706  000774          MBTB:   CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8890  035302  001403                           BEQ     MBTD                    ;BRANCH IF GOOD
8891                                                                            ;BAD PC ON STACK
8892  035304  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8893  035306  001073                           .WORD   1073                    ;UNIQUE ERROR NUMBER
8894  035310  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8895  035312  021627  035270          MBTD:   CMP     (R6),#MBTA              ;VERFY PROPER PC ON STACK
8896  035316  001403                           BEQ     MBTF                    ;BRANCH IF GOOD
8897                                                                            ;INCORRECT PC ON STACK
8898  035320  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8899  035322  001074                           .WORD   1074                    ;UNIQUE ERROR NUMBER
8900  035324  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8901  035326  016767  143476  142460  MBTF:   MOV     SLOC00,14               ;RESTORE VECTOR
8902  035334  012706  001000                   MOV     #STBOT,R6
8903
8904                                    ;
8905                                    ;
8906  035340                            MBTO:
8907                                    ;;*****************************************************************
8908                                    ;*TEST 246       TEST OLD STATUS ON BPT TRAP
8909                                    ;;*****************************************************************
8910  035340                            TST246:
8911  035340  005267  143440                   INC     #TESTN                  ;INCREMENT TEST NUMBER
8912  035344  012706  001000                   MOV     #STBOT,R6               ;SETUP STACK
8913  035350  016767  142440  143452          MOV     14,SLOC00               ;SAVE OLD  VECTOR
8914  035356  012767  035402  142430          MOV     #MBTOB,14               ;SETUP NEW BPT VECTOR
8915  035364  005067  142406                   CLR     PS                      ;CLEAR PRIORITY AND COND C
8916  035370  000257                           CCC
8917  035372  000003                           BPT
8918                                                                            ;DIDNT TAKE CORRECT TRAP
8919  035374                            MBTOA:
8920  035374  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8921  035376  001075                           .WORD   1075                    ;UNIQUE ERROR NUMBER
8922  035400  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8923  035402  026727  143370  000000  MBTOB:  CMP     STBOT-2,#0              ;VERIFY PSW ON STACK
8924  035410  001403                           BEQ     MBTOC           ;BRANCH IF CORRECT STATUS
8925                                                                            ;BAD STATUS ON STACK
8926  035412  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
```

```
8927  035414  001076                          .WORD   1076                    ;UNIQUE ERROR NUMBER
8928  035416  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8929  035420  012706  001000          MBTOC:  MOV     #STBOT,R6               ;SETUP STACK
8930  035424  012767  035452  142362          MOV     #MBTOE,14               ;SET UP TRAP VECTOR
8931  035432  012767  000357  142336          MOV     #357,PS                 ;SET PRIORITY
8932  035440  000277                          SCC                             ;SET CONDITION CODES
8933  035442  000003                          BPT
8934                                                                          ;DIDNT TAKE CORRECT TRAP
8935  035444                          MBTOD:
8936  035444  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8937  035446  001077                          .WORD   1077                    ;UNIQUE ERROR NUMBER
8938  035450  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8939  035452  026727  143320  000357  MBTOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
8940  035460  001403                          BEQ     MBTOF                   ;BRANCH IF GOOD
8941                                                                          ;OLD PSW INCORRECT
8942  035462  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8943  035464  001100                          .WORD   1100                    ;UNIQUE ERROR NUMBER
8944  035466  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8945  035470                          MBTOF:
8946  035470  016767  143334  142316          MOV     SLOC00,14               ;RESTORE VECTOR
8947  035476  012706  001000                  MOV     #STBOT,R6
8948
8949                                  ;
8950                                  ;
8951  035502                          MIL:
8952                                  ;;**********************************************************************
8953                                  ;*TEST 247       TEST ILLEGAL JUMP INSTRUCTION TRAP
8954                                  ;;**********************************************************************
8955  035502                          TST247:
8956  035502  005267  143276                  INC     $TESTN                  ;INCREMENT TEST NUMBER
8957  035506  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
8958  035512  016767  142272  143310          MOV     10,SLOC00               ;SAVE OLD  VECTOR
8959  035520  012767  035540  142262          MOV     #MILB,10                ;SETUP NEW ILLEGAL VECTOR
8960  035526  005001                          CLR     R1
8961  035530  000101                          JMP     R1                      ;**TEST INSTRUCTIO
8962                                                                          ;DIDNT TAKE CORRECT TRAP
8963  035532                          MILA:
8964  035532  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8965  035534  001101                          .WORD   1101                    ;UNIQUE ERROR NUMBER
8966  035536  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8967  035540  022706  000774          MILB:   CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8968  035544  001403                          BEQ     MILD                    ;BRANCH IF GOOD
8969                                                                          ;BAD PC ON STACK
8970  035546  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8971  035550  001102                          .WORD   1102                    ;UNIQUE ERROR NUMBER
8972  035552  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8973  035554  021627  035532          MILD:   CMP     (R6),#MILA              ;VERFY PROPER PC ON STACK
8974  035560  001403                          BEQ     MILF                    ;BRANCH IF GOOD
8975                                                                          ;INCORRECT PC ON STACK
8976  035562  104000                          ERROR                           ;ALL FRRORS TO TRAP TO EMT VECTOR
8977  035564  001103                          .WORD   1103                    ;UNIQUE ERROR NUMBER
8978  035566  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8979  035570  016767  143234  142212  MILF:   MOV     SLOC00,10               ;RESTORE VECTOR
8980  035576  012706  001000                  MOV     #STBOT,R6
8981
8982  035602                          MILO:
```

```
 8983                                   ;;*****************************************************************
 8984                                   ;*TEST 250      TEST OLD STATUS ON ILLEGAL JUMP TRAP
 8985                                   ;;*****************************************************************
 8986  035602                           TST250:
 8987  035602  005267  143176                  INC     $TESTN                  ;INCREMENT TEST NUMBER
 8988  035606  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
 8989  035612  016767  142172  143210         MOV     10,SLOC00               ;SAVE OLD  VECTOR
 8990  035620  012767  035646  142162         MOV     #MILOB,10               ;SETUP NEW ILLEGAL VECTOR
 8991  035626  005067  142144                  CLR     PS                      ;CLEAR PRIORITY AND COND C
 8992  035632  000257                          CCC
 8993  035634  005001                          CLR     R1
 8994  035636  000101                          JMP     R1
 8995
 8996  035640                           MILOA:                                 ;DIDNT TAKE CORRECT TRAP
 8997  035640  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 8998  035642  001104                          .WORD   1104                    ;UNIQUE ERROR NUMBER
 8999  035644  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9000  035646  026727  143124  000004  MILOB:  CMP     STBOT-2,#4              ;VERIFY PSW ON STACK
 9001  035654  001403                          BEQ     MILOC                   ;BRANCH IF CORRECT STATUS
 9002                                                                          ;BAD STATUS ON STACK
 9003  035656  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9004  035660  001105                          .WORD   1105                    ;UNIQUE ERROR NUMBER
 9005  035662  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9006  035664  012706  001000          MILOC:  MOV     #STBOT,R6               ;SETUP STACK
 9007  035670  012767  035716  142112         MOV     #MILOE,10               ;SET UP TRAP VECTOR
 9008  035676  012767  000357  142072         MOV     #357,PS                 ;SET PRIORITY
 9009  035704  000277                          SCC                             ;SET CONDITION CODES
 9010  035706  000101                          JMP     R1
 9011
 9012  035710                           MILOD:                                 ;DIDNT TAKE CORRECT TRAP
 9013  035710  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9014  035712  001106                          .WORD   1106                    ;UNIQUE ERROR NUMBER
 9015  035714  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9016  035716  026727  143054  000357  MILOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
 9017  035724  001403                          BEQ     MILOF                   ;BRANCH IF GOOD
 9018                                                                          ;OLD PSW INCORRECT
 9019  035726  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9020  035730  001107                          .WORD   1107                    ;UNIQUE ERROR NUMBER
 9021  035732  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9022  035734                           MILOF:
 9023  035734  016767  143070  142046         MOV     SLOC00,10               ;RESTORE VECTOR
 9024  035742  012706  001000                  MOV     #STBOT,R6
 9025
 9026                                   ;
 9027                                   ;
 9028  035746                           MIALL:
 9029                                   ;;*****************************************************************
 9030                                   ;*TEST 251      TEST ILLEGAL JSR INSTRUCTION TRAP
 9031                                   ;;*****************************************************************
 9032  035746                           TST251:
 9033  035746  005267  143032                  INC     $TESTN                  ;INCREMENT TEST NUMBER
 9034  035752  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
 9035  035756  016767  142026  143044         MOV     10,SLOC00               ;SAVE OLD  VECTOR
 9036  035764  012767  036004  142016         MOV     #MIALLB,10              ;SETUP NEW ILLEGAL VECTOR
 9037  035772  005003                          CLR     R3
 9038  035774  004303                          JSR     R3,R3
```

```
                                        ;DIDNT TAKE CORRECT TRAP
035776                          MIALLA:
035776  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036000  001110                        .WORD   1110            ;UNIQUE ERROR NUMBER
036002  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
036004  022706  000774        MIALLB: CMP     #STBOT-4,R6     ;VERIFY SP DECRIMENT
036010  001403                        BEQ     MIALLD          ;BRANCH IF GOOD
                                                            ;BAD PC ON STACK
036012  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036014  001111                        .WORD   1111            ;UNIQUE ERROR NUMBER
036016  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
036020  021627  035776        MIALLD: CMP     (R6),#MIALLA    ;VERFY PROPER PC ON STACK
036024  001403                        BEQ     MIALLF          ;BRANCH IF GOOD
                                                            ;INCORRECT PC ON STACK
036026  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036030  001112                        .WORD   1112            ;UNIQUE ERROR NUMBER
036032  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
036034  016767  142770  141746 MIALLF: MOV     SLOC00,10       ;RESTORE VECTOR
036042  012706  001000                MOV     #STBOT,R6

                                ;
                                ;
036046                          MJSI:
                                ;;**********************************************************************
                                ;*TEST 252      TEST OLD STATUS ON ILLEGAL JSR TRAP
                                ;;**********************************************************************
036046                          TST252:
036046  005267  142732                INC     $TESTN          ;INCREMENT TEST NUMBER
036052  012706  001000                MOV     #STBOT,R6       ;SETUP STACK
036056  016767  141726  142744        MOV     10,SLOC00       ;SAVE OLD  VECTOR
036064  012767  036112  141716        MOV     #MJSIB,10       ;SETUP NEW VECTOR
036072  005067  141700                CLR     PS              ;CLEAR PRIORITY AND COND C
036076  000257                        CCC
036100  005003                        CLR     R3
036102  004303                        JSR     R3,R3

                                        ;DIDNT TAKE CORRECT TRAP
036104                          MJSIA:
036104  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036106  001113                        .WORD   1113            ;UNIQUE ERROR NUMBER
036110  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
036112  026727  142660  000004 MJSIB: CMP     STBOT-2,#4      ;VERIFY PSW ON STACK
036120  001403                        BEQ     MJSIC           ;BRANCH IF CORRECT STATUS
                                                            ;BAD STATUS ON STACK
036122  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036124  001114                        .WORD   1114            ;UNIQUE ERROR NUMBER
036126  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
036130  012706  001000        MJSIC:  MOV     #STBOT,R6       ;SETUP STACK
036134  012767  036162  141646        MOV     #MJSIE,10       ;SET UP TRAP VECTOR
036142  012767  000357  141626        MOV     #357,PS         ;SET PRIORITY
036150  000277                        SCC                     ;SET CONDITION CODES
036152  004303                        JSR     R3,R3

                                        ;DIDNT TAKE CORRECT TRAP
036154                          MJSID:
036154  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
036156  001115                        .WORD   1115            ;UNIQUE ERROR NUMBER
036160  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
```

```
 9095  036162  026727  142610  000357  MJSIE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
 9096  036170  001403                          BEQ     MJSIF                   ;BRANCH IF GOOD
 9097                                                                          ;OLD PSW INCORRECT
 9098  036172  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9099  036174  001116                          .WORD   1116                    ;UNIQUE ERROR NUMBER
 9100  036176  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9101  036200                          MJSIF:
 9102  036200  016767  142624  141602          MOV     SLOC00,10               ;RESTORE VECTOR
 9103  036206  012706  001000                  MOV     #STBOT,R6
 9104
 9105                                  ;
 9106                                  ;
 9107                                  ;;*****************************************************************
 9108                                  ;*TEST 253       I/O TIME OUT TEST
 9109                                  ;;*****************************************************************
 9110  036212                          TST253:
 9111  036212  005267  142566                  INC     $TESTN                  ;INCREMENT TEST NUMBER
 9112  036216  005067  141544                  CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 9113  036222  016767  141556  142600          MOV     4,SLOC00                ;SAVE VECTOR
 9114  036230  012767  036256  141546          MOV     #2$,4                   ;SET UP VECTOR TO HANDLE NXM
 9115  036236  012767  030000  141532          MOV     #30000,PS               ;INIT THE PSW TO A KNOWN STATE
 9116  036244  005737  177700                  TST     @#177700                ;TRY TO ACCESS HARDWARE ADDRESS
 9117                                                                          ;FOR GENERAL PURPOSE REG 0. THIS
 9118                                                                          ;IS NOT IMPLEMENTED ON KDJ11
 9119                                                                          ;SHOULD CAUSE TIME OUT.
 9120  036250                          1$:
 9121  036250  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9122  036252  001117                          .WORD   1117                    ;UNIQUE ERROR NUMBER
 9123  036254  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9124  036256  022767  000020  141502  2$:     CMP     #BIT04,CPEREG           ;IS CPU ERROR REGISTER CORRECT?
 9125  036264  001403                          BEQ     3$
 9126  036266  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9127  036270  001120                          .WORD   1120                    ;UNIQUE ERROR NUMBER
 9128  036272  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9129  036274  022627  036250          3$:     CMP     (SP)+,#1$               ;CHECK THAT STACK CONTAINS CORRECT ADDR.
 9130  036300  001403                          BEQ     4$                      ;
 9131  036302  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9132  036304  001121                          .WORD   1121                    ;UNIQUE ERROR NUMBER
 9133  036306  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9134  036310  022627  030000          4$:     CMP     (SP)+,#30000            ;IS THE PSW OK?
 9135  036314  001403                          BEQ     5$                      ;
 9136  036316  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9137  036320  001122                          .WORD   1122                    ;UNIQUE ERROR NUMBER
 9138  036322  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9139  036324  005067  141436          5$:     CLR     CPEREG                  ;CLEAR THE CPU ERROR REGISTER
 9140  036330  016767  142474  141446          MOV     SLOC00,4                ;RESTORE VECTOR
 9141
 9142                                  ;;*****************************************************************
 9143                                  ;*TEST 254       ODD ADDRESS/ILLEGAL INST FETCH TRAP TEST
 9144                                  ;;*****************************************************************
 9145                                  ;THIS PROGRAM GENERATES AN ODD ADDRESS IN THE PC. THE KDJ11 SHOULD
 9146                                  ;TRAP THROUGH ADDR 4
 9147                                  ;;*****************************************************************
 9148  036336                          TST254:
 9149  036336  005267  142442                  INC     $TESTN                  ;INCREMENT TEST NUMBER
 9150  036342  005067  141420                  CLR     CPEREG                  ;INIT THE CPU ERROR REG
```

```
QBUSEX= 000001            1#    634
RBUF  = 177562          497#
RCSR  = 177560          496#
RECDAT  001036          617#
REDZON= ****** U        9220
RESTAR  001476          738#  10003
RESVEC= 000010          320#
RET1    014404         4196#   4244    4265    4300
RET2    014506         4228#   4273    4292
RET3    014600         4257#   4284
RLB1  = ****** U        3185
RLCC  = ****** U        4789
RLO   = ****** U        3151
RL2   = ****** U        3222
RL3   = ****** U        3259
RL4   = ****** U        3293
RL6   = ****** U        3345
RL7   = ****** U        3369
ROM   = ****** U        3585
RRB1  = ****** U        3435
RRCC  = ****** U        4841
RRO   = ****** U        3415
RT    = ****** U        8513
RTO   = ****** U        8546
RTS   = ****** U        4075
RTSE    014126          4109    4114#
RTS1    014060          4083    4090#
RTS6    014074          4091    4100#
SAVSP1  001062           628#   8254*   8283*  10398*
SAVSP2  001064           629#  10399*
SBCC  = ****** U        4709
SBCCC = ****** U        4745
SDPAR0= 172260           423#
SDPAR1= 172262           424#
SDPAR2= 172264           425#
SDPAR3= 172266           426#
SDPAR4= 172270           427#
SDPAR5= 172272           428#
SDPAR6= 172274           429#
SDPAR7= 172276           430#
SDPDR0= 172220           401#
SDPDR1= 172222           402#
SDPDR2= 172224           403#
SDPDR3= 172226           404#
SDPDR4= 172230           405#
SDPDR5= 172232           406#
SDPDR6= 172234           407#
SDPDR7= 172236           408#
SEQ     001066           635#  3464*   3467    3483*   3487    3495*   3498    3514*   3526    3534*   3547    3555*   3561
                        3569*  3574    3710*   3713    3721*   3727    3735*   3737    3745*   3753    3761    3769*   3786*
                        3792   3812*   3820    3840*   3847    3867*   3876    3896*   3904    3924*   3932    3952*   3959
                        3989*  3996    4010*   4016    4030*   4037    4051*   4056
SHMOD = 000001            1#    573   10006
SIPAR0= 172240           412#
SIPAR1= 172242           413#
SIPAR2= 172244           414#
```

```
SIPAR3= 172246          4150
SIPAR4= 172250          4160
SIPAR5= 172252          4170
SIPAR6= 172254          4180
SIPAR7= 172256          4190
SIPDR0= 172200          3900
SIPDR1= 172202          3910
SIPDR2= 172204          3920
SIPDR3= 172206          3930
SIPDR4= 172210          3940
SIPDR5= 172212          3950
SIPDR6= 172214          3960
SIPDR7= 172216          3970
SKIPID  041742          9979    9981#
SLOC00  001030           612#   5865*  5872   5885   8080*  8105   8121*  8152   8165*  8178   8193*  8209   8221*
                        8234   8247*  8261   8276*  8291   8305*  8320   8332*  8345   8357*  8375   8387*  8414
                        8425*  8454   8464*  8509   8520*  8541   8553*  8587   8597*  8620   8632*  8665   8678*
                        8711   8725*  8745   8755*  8788   8799*  8822   8833*  8869   8881*  8901   8913*  8946
                        8958*  8979   8989*  9023   9035*  9056   9068*  9102   9113*  9140   9151*  9217   9226*
                        9269   9280*  9284   9300*  9583   9599*  9625   9678*  9703   9722*  9738   9772*  9787
                        9805*  9823   9833*  9884   9893*  9919   9931*  9963
SLOC01  001032           613#   8167*  8177   8195*  8208   8223*  8235   8249*  8262   8278*  8292   8307*  8319
                        8334*  8346   8679*  8712   8801*  8821   8835*  8868   9153*  9218   9301*  9584   9600*
                        9626   9679*  9704   9723*  9739   9773*  9788   9806*  9824   9834*  9885   9894*  9920
                        9932*  9964
SOB     = ****** U      5228
SOPAA   = ****** U      2103
SOPBB   = ****** U      2146
SOPD    = ****** U      1254
SOPE    = ****** U      1286
SOPF    = ****** U      1319
SOPG    = ****** U      1352
SOPH    = ****** U      1383
SOPI    = ****** U      1417
SOPJ    = ****** U      1449
SOPL    = ****** U      1513
SOPM    = ****** U      1548
SOPN    = ****** U      1592
SOPO    = ****** U      1627
SOPP    = ****** U      1690
SOPQ    = ****** U      1737
SOPR    = ****** U      1795
SOPS    = ****** U      1838
SOPT    = ****** U      1872
SOPU    = ****** U      1892
SOPV    = ****** U      1958
SOPV0   = ****** U      1927
SOPX    = ****** U      1993
SOPY    = ****** U      2030
SOPZ    = ****** U      2066
SOP1    = ****** U      1198
SOP2    = ****** U      1225
SPAU    = ****** U      8016
SPAU1   031420          8025    8030#
SPAU2   031446          8034    8039#
SPAU3   031472          8042    8046#
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SPAU4   031522          8050    8054#
SPAU5   031542          8057    8061#
SPAU6   031564          8064    8068#
SPS     001070           636#   3783*   3813    3841    3868    3897    3925    3953    3980    3990*   4012    4031    4052
                        4072
SPSJ    001072           637#   3784*   3785*   3800    3828    3855    3884    3912    3940    3967    3991*   3992*   3998
                        4018    4039    4058
SPT3B = ****** U        2183
SP0   = ****** U        1170
SR0   = 177572           339#   6672
SR1   = 177574           340#
SR2   = 177576           341#
SR3   = 172516           342#
STACK = 001000           224#    698
START   001266           529     535    695#
STBOT = 001000           507#   1131    4081    4191   4194*   4213    5272   5273*   5297    5328    7073    7092    7094
                        7228    7236    7246    7254    8039    8046    8061    8068    8087    8109    8125    8136    8146
                        8153    8171    8180    8200    8207    8228    8237    8255    8264    8284    8293    8313    8322
                        8339    8347    8370    8376    8386    8401    8415    8424    8441    8455    8463    8480    8486
                        8502    8510    8519    8528    8542    8552    8563    8569    8580    8588    8596    8607    8621
                        8631    8642    8648    8658    8666    8677    8703    8714    8724    8733    8746    8754    8765
                        8771    8781    8789    8798    8809    8823    8832    8845    8851    8861    8870    8880    8889
                        8902    8912    8923    8929    8939    8947    8957    8967    8980    8988    9000    9006    9016
                        9024    9034    9044    9057    9067    9079    9085    9095    9103    9233    9246    9252    9258
                        9268
STKLMT= 177774           235#
ST0   = ****** U        8351
ST4   = ****** U        2221
ST4B  = ****** U        2253
ST5   = ****** U        2285
ST5B  = ****** U        2315
ST6   = ****** U        2349
ST7   = ****** U        2383
SWR     001046           621#    711*    713     719*    733*   9716
SWREG   000176           533#    719
SW0   = 000001           288#   3393
SW00  = 000001           278#    288
SW01  = 000002           277#    287
SW02  = 000004           276#    286
SW03  = 000010           275#    285
SW04  = 000020           274#    284
SW05  = 000040           273#    283
SW06  = 000100           272#    282
SW07  = 000200           271#    281
SW08  = 000400           270#    280
SW09  = 001000           269#    279
SW1   = 000002           287#   3393
SW10  = 002000           268#
SW11  = 004000           267#
SW12  = 010000           266#
SW13  = 020000           265#
SW14  = 040000           264#
SW15  = 100000           263#
SW2   = 000004           286#
SW3   = 000010           285#
SW37  = ****** U        3393
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SW4     = 000020              2840
SW5     = 000040              2830
SW6     = 000100              2820
SW7     = 000200              2810
SW8     = 000400              2800
SW9     = 001000              2790
SXT     = ****** U          5126
SXTCC   = ****** U          5038
S11     = ****** U          2706
S22     = ****** U          2852
S33     = ****** U          2974
S77     = ****** U          3118
TAGRAM= 000001                10    738
TA114   021552              5897    5905#
TA116   023620              6425    6434    6469#   6493
TBITVE= 000014               3210
TB114   021566              5906    5912#
TC114   021602              5913    5919#
TD114   021616              5920    5926#
TE102   017756             5376#
TE103   020010             5393#
TE104   020042             5410#
TE105   020074             5427#
TE106   020126             5444#
TE107   020160             5461#
TE110   020212             5478#
TE111   020244             5495#
TE112   020276             5512#
TE113   020574             5611#
TE113A  021070             5710#
TE114   021356             5852#
TE115   023060             6293#
TE115A  023330             6301    6324    6347    6381#
TE115B  023340             6302    6325    6348    6385#
TE115C  023346             6303    6326    6388#
TE115D  023354             6349    6391#
TE115F  023362             6377    6394#
TE116   023364             6396#
TE116A  023674             6421    6430    6496#
TE116B  023700             6405    6431    6500#
TE116C  023712             6414    6422    6505#
TE116D  023722             6404    6413    6423    6432    6509#
TE117   023732             6516#
TE117A  024070             6523    6562#
TE120   024076             6570#
TE120A  024162             6580    6594#
TE121   024262             6626#
TE122   024730             6752#
TE123   025214             6838#
TE124   025470             6926#
TE125   025756             7018#
TE125A  026266             7025    7069    7123#
TE126   026514             7214#
TE126A  026572             7225    7234#
TE126B  027366             7368    7421#
TE127   027704             7543#
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F 1


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TE127A  030154          7592    7635#
TE130   030414          7737#
TE130A  030762          7811    7862#
TF114   021632          5927    5933#
TG114   021646          5934    5940#
TH114   021662          5941    5947#
TKVEC   = 000060         328#
TP      = ******  U      8590
TPA     = ******  U      8670
TPO     = ******  U      8625
TPVEC   = 000064         329#    9599    9600    9601*   9602*   9625*   9626*
TRAPVE= 000034           327#     702*    703*
TRPO    = ******  U      8239
TRPOA   032502          8248    8254#
TRPOB   032520          8250    8260#
TRTVEC= 000014           322#
TRY     = ******  U      8071
TRYM    = ******  U      8113
TRYMA   032002          8122    8130#
TRYMB   032040          8134    8141#
TRYMC   032072          8144    8151#
TSGPR0= ******  U       875
TSGPR1= ******  U       912
TSGPR2= ******  U       949
TSGPR3= ******  U       986
TSGPR4= ******  U      1023
TSGPR5= ******  U      1060
TSGPR6= ******  U      1097
TSMMU0  014130         41116#
TSPSW8= ******  U      1134
TSTLOC  001076          644#
TST1    001510          753#
TST10   002044          916#
TST100  010072         29788
TST101  010172         30128
TST102  010272         30538
TST103  010362         30938
TST104  010446         31228
TST105  010550         31558
TST106  010636         31898
TST107  010732         32268
TST11   002146          953#
TST110  011024         32638
TST111  011114         32978
TST112  011164         33238
TST113  011236         33498
TST114  011304         33738
TST115  011356         33978
TST116  011422         34198
TST117  011454         34398
TST12   002250          990#
TST120  011512         34628
TST121  012070         35888
TST122  012434         37088
TST123  012624         37818
TST124  013476         39878
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TST125  014030          4079#
TST126  014130          4120#
TST127  014746          4315#
TST13   002352          1027#
TST130  015026          4350#
TST131  015112          4387#
TST132  015200          4425#
TST133  015262          4461#
TST134  015360          4506#
TST135  015454          4552#
TST136  015550          4596#
TST137  015652          4643#
TST14   002454          1064#
TST140  016020          4713#
TST141  016104          4749#
TST142  016204          4793#
TST143  016310          4845#
TST144  016412          4899#
TST145  016516          4936#
TST146  016622          4988#
TST147  016736          5042#
TST15   002556          1101#
TST150  017022          5080#
TST151  017134          5134#
TST152  017276          5195#
TST153  017372          5232#
TST154  017466          5270#
TST155  017672          5346#
TST156  017724          5363#
TST157  017756          5380#
TST16   002664          1138#
TST160  020010          5397#
TST161  020042          5414#
TST162  020074          5431#
TST163  020126          5448#
TST164  020160          5465#
TST165  020212          5482#
TST166  020244          5499#
TST167  020276          5516#
TST17   003006          1177#
TST170  020574          5615#
TST171  021070          5714#
TST172  021356          5856#
TST173  021664          5953#
TST174  022236          6075#
TST175  022340          6112#
TST176  022442          6149#
TST177  022544          6186#
TST2    001550           785#
TST20   003044          1202#
TST200  022646          6223#
TST201  022750          6260#
TST202  023060          6297#
TST203  023364          6400#
TST204  023732          6520#
TST205  024076          6574#
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TST206	024262	6630#
TST207	024730	6756#
TST21	003104	1229#
TST210	025214	6842#
TST211	025470	6930#
TST212	025756	7022#
TST213	026514	7218#
TST214	027704	7547#
TST215	030414	7741#
TST216	031372	8020#
TST217	031570	8075#
TST22	003150	1258#
TST220	031732	8117#
TST221	032110	8161#
TST222	032216	8189#
TST223	032324	8217#
TST224	032432	8243#
TST225	032544	8272#
TST226	032656	8301#
TST227	032766	8329#
TST23	003222	1290#
TST230	033072	8355#
TST231	033176	8384#
TST232	033312	8422#
TST233	033430	8461#
TST234	033630	8517#
TST235	033726	8550#
TST236	034070	8594#
TST237	034174	8629#
TST24	003300	1323#
TST240	034336	8674#
TST241	034476	8722#
TST242	034574	8752#
TST243	034736	8796#
TST244	035056	8830#
TST245	035242	8878#
TST246	035340	8910#
TST247	035502	8955#
TST25	003356	1356#
TST250	035602	8986#
TST251	035746	9032#
TST252	036046	9065#
TST253	036212	9110#
TST254	036336	9148#
TST255	036626	9224#
TST256	037046	9278#
TST257	037114	9298#
TST26	003430	1387#
TST260	037250	9351#
TST261	037354	9390#
TST262	037464	9431#
TST263	037552	9467#
TST264	040002	9550#
TST265	040134	9592#
TST266	040314	9639#
TST267	040374	9665#

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TST27   003510            14210
TST270  040556            97140
TST271  040712            97480
TST272  040750            97680
TST273  041046            98020
TST274  041144            98300
TST275  041416            98910
TST276  041550            99290
TST3    001600             8070
TST30   003564            14530
TST31   003730            15170
TST32   004012            15520
TST33   004110            15960
TST34   004172            16310
TST35   004326            16940
TST36   004444            17410
TST37   004602            17990
TST4    001630             8270
TST40   004710            18420
TST41   004772            18730
TST42   005020            18960
TST43   005100            19310
TST44   005150            19620
TST45   005230            19970
TST46   005314            20340
TST47   005376            20700
TST5    001660             8460
TST50   005462            21070
TST51   005562            21500
TST52   005646            21870
TST53   005734            22250
TST54   006006            22570
TST55   006062            22890
TST56   006130            23190
TST57   006206            23530
TST6    001710             8620
TST60   006270            23870
TST61   006360            24250
TST62   006414            24470
TST63   006460            24760
TST64   006530            25070
TST65   006610            25410
TST66   006710            25830
TST67   007022            26320
TST7    001742             8790
TST70   007152            26860
TST71   007220            27100
TST72   007270            27340
TST73   007374            27790
TST74   007474            28200
TST75   007562            28560
TST76   007646            28880
TST77   007754            29290
TT    = ****** U          8380    8418
TTR   = ****** U          8457
TYPDS = 104405            9992   10328#
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TYPE  = 104401          9980    9990    9993   10060   10182   10251   10324#  10405   10408   10411
TYPOC = 104402         10325#  10410   10413
TYPON = 104404         10327#
TYPOS = 104403         10326#
T114    021524          5871    5884    5896#
T116    023556          6407    6416    6449#   6466
T122A   025042          6762    6776    6789#
T122B   025174          6760    6828#
T123A   025426          6847    6905#
T123B   025436          6909#
T123C   025444          6912#
T123D   025452          6851    6916#
T123E   025460          6895    6921#
T123F   025464          6902    6923#
T124A   025714          6935    6998#
T124B   025724          7002#
T124C   025732          7005#
T124D   025740          6939    7009#
T124E   025746          6988    7013#
T124F   025752          6995    7015#
UDPAR0= 177660           379#
UDPAR1= 177662           380#
UDPAR2= 177664           381#
UDPAR3= 177666           382#
UDPAR4= 177670           383#
UDPAR5= 177672           384#
UDPAR6= 177674           385#
UDPAR7= 177676           386#
UDPDR0= 177620           357#
UDPDR1= 177622           358#
UDPDR2= 177624           359#
UDPDR3= 177626           360#
UDPDR4= 177630           361#
UDPDR5= 177632           362#
UDPDR6= 177634           363#
UDPDR7= 177636           364#
UIPAR0= 177640           368#
UIPAR1= 177642           369#
UIPAR2= 177644           370#
UIPAR3= 177646           371#
UIPAR4= 177650           372#
UIPAR5= 177652           373#
UIPAR6= 177654           374#
UIPAR7= 177656           375#
UIPDR0= 177600           346#
UIPDR1= 177602           347#
UIPDR2= 177604           348#
UIPDR3= 177606           349#
UIPDR4= 177610           350#
UIPDR5= 177612           351#
UIPDR6= 177614           352#
UIPDR7= 177616           353#
UNXPIR  037346          9302    9376#
WAITIN  001074           641#   9726    9776    9809    9837    9848    9859    9872    9897
XBUF  = 177566           499#
XCSR  = 177564           498#   9603*   9611*
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XOR    = ****** U        5191
XRCC   = ****** U        5076
$APTHD  000204            555    5610
$ASTAT= ****** U        10365   10380
$ATYC   043246          10336   10338#
$ATY1   043222          10334#
$ATY3   043230          10045   10335#
$ATY4   043240          10337#  10416
$CHARC  042454          10062*  10072*  10079   10105*  10110#
$CKSWR= ****** U        10331
$CMTAG= ****** U          698     704     706
$CPUOP  001026            599#
$CRLF   001257            679#  10061   10122
$DBLK   042714          10148   10182   10190#
$DEVCT  001010            590#
$DOAGN  042026           9986    9995   10001#
$DTBL   042704          10151   10186#
$ENDAD  042016            542    9997#
$ENDCT  041764            705    9988#
$ENULL  042032           9993   10004#
$ENV    001020            595#   6632    9234    9594   10040   10343   10367   10414
$ENVM   001021            596#    731   10042   10047   10345
$EOP    041730           9977#
$EOPCT  041756            705*   9985#   9989
$ERFLG  001052            623#    706*  10392*
$ERROR  043470            700     735    8802    8836   10392#  10393
$ETABL  001020            594#
$ETEND  001030            567     606#
$FATAL  001002            587#  10371*
$FFLG   043466          10334*  10337*  10365   10374*  10382#
$FILLC  042472          10065   10119#
$FILLS  042471          10118#
$GET42  042006           9994#
$GTSWR= ****** U        10330
$HD     = 000003          212     213
$HIBTS  000204            562#
$LF     042475          10122#
$LFLG   043465          10375*  10381#
$MAIL   001000            563     567     585#    723   10040
$MBADR  000206            563#
$MFLG   043464          10335*  10341   10376*  10380#
$MSGAD  001014            592#  10351*  10354
$MSGLG  001016            593#  10356*
$MSGTY  001000            586#  10349   10357*  10369   10373*
$NULL   042470          10067   10117#
$NWTST= 000001            748#    750     780#    782     804#    824#    843#    859#    876#    913#    950#    987#   1024#
                         1061#   1098#   1135#   1172#   1174    1199#   1226#   1255#   1287#   1320#   1353#   1384#   1418#
                         1450#   1514#   1549#   1593#   1628#   1691#   1738#   1796#   1839#   1873#   1893#   1928#   1959#
                         1994#   2031#   2067#   2104#   2147#   2184#   2222#   2254#   2286#   2316#   2350#   2384#   2422#
                         2444#   2473#   2504#   2538#   2580#   2629#   2683#   2707#   2731#   2776#   2817#   2853#   2885#
                         2926#   2975#   3009#   3050#   3090#   3119#   3152#   3186#   3223#   3260#   3294#   3320#   3346#
                         3370#   3394#   3416#   3436#   3459#   3585#   3705#   3778#   3984#   4076#   4117#   4312#   4347#
                         4384#   4422#   4458#   4501#   4503    4549#   4593#   4640#   4710#   4746#   4790#   4842#   4893#
                         4895    4933#   4985#   5039#   5077#   5127#   5129    5192#   5229#   5267#   5343#   5360#   5377#
                         5394#   5411#   5428#   5445#   5462#   5479#   5496#   5513#   5612#   5711#   5853#   5950#   6072#
                         6109#   6146#   6183#   6220#   6257#   6294#   6397#   6517#   6571#   6627#   6753#   6839#   692?#
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                    7019#  7215#  7544#  7738#  8017#  8072#  8114#  8158#  8186#  8214#  8240#  8269#  8298#
                    8326#  8352#  8381#  8419#  8458#  8514#  8547#  8591#  8626#  8671#  8719#  8749#  8793#
                    8827#  8875#  8907#  8952#  8983#  9029#  9062#  9107#  9142#  9144   9221#  9275#  9295#
                    9344#  9346   9385#  9387   9425#  9427   9456#  9458   9538#  9540   9589#  9633#  9635
                    9659#  9661   9708#  9710   9742#  9744   9762#  9764   9791#  9793   9827#  9888#  9926#
$OCNT   043146      10223*  10252*  10265#
$OMODE  043150      10218*  10222*  10227   10230*  10241*  10267#
$PASS   001006        589#    704*    730*   9596    9978    9982*   9983*   9991   10004
$PASTM  000212        565#
$PATCH  043636 G    10422#
$QUES   042474      10121#
$RDCHR= ****** U    10331
$RDDEC= ****** U    10331
$RDLIN= ****** U    10331
$RDOCT= ****** U    10331
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. ABS.  043656     000

 ERRORS DETECTED:  0

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 RUN-TIME RATIO:  1549/1148=1.3
 CORE USED:  55K  (109 PAGES)

 DOCUMENT PAGES:  225
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