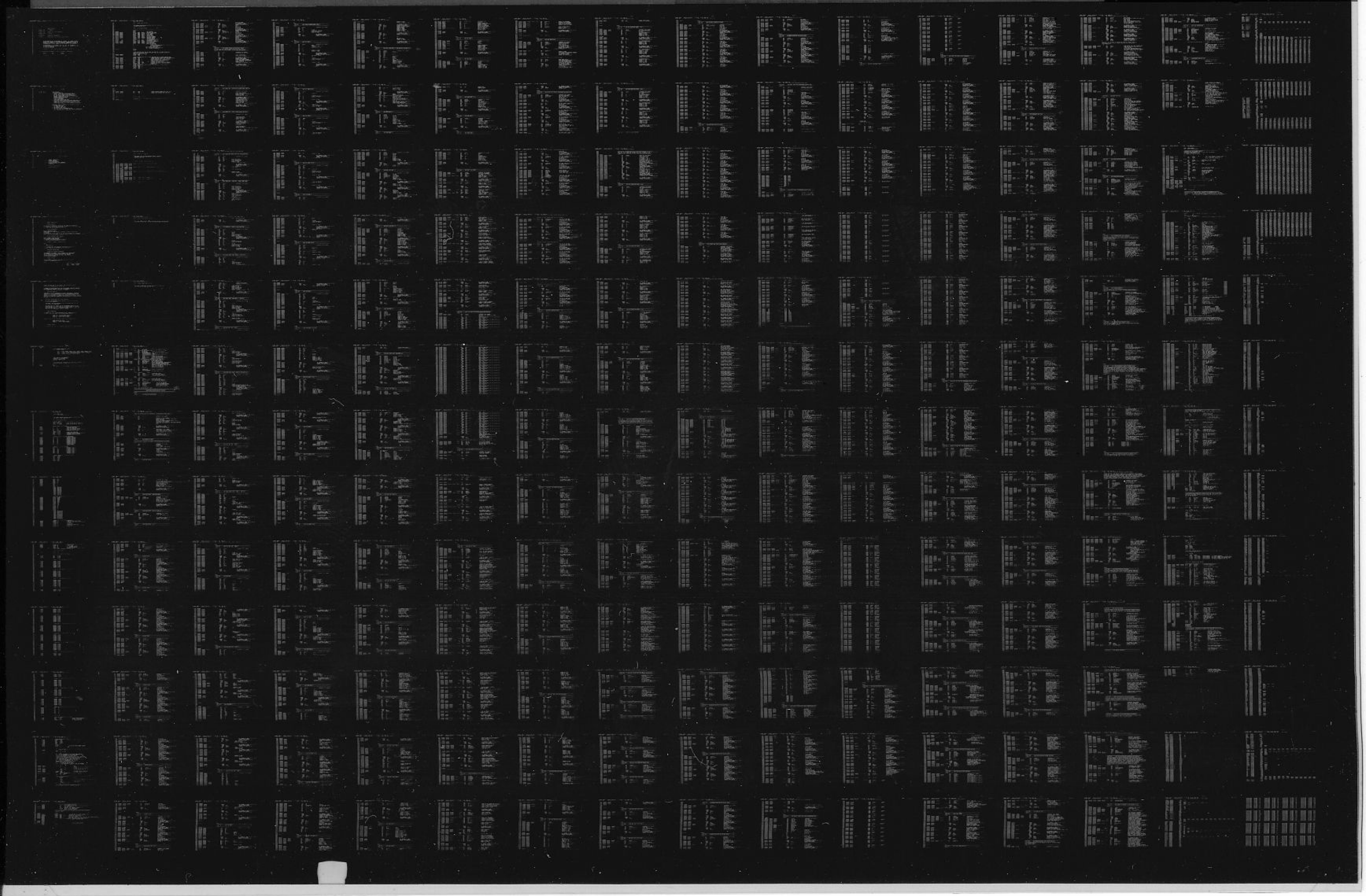
KDJ11-A KDJ11 CPU DIAG
CZKDJB0

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```
                                                        .REM &


                        IDENTIFICATION
                        ------ -------
          PRODUCT CODE:   AC-T7048-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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                                                                .REM &
                                        HISTORY
                                        -------

        OCT-83  REV. A          FIRST RELEASE
        FEB-84  REV. B          CORRECTIONS MADE TO:
                                1. CORRECT VECTOR AREA MAINTENANCE PROBLEM
                                2. SET APT SWR TO 2000 SO THAT DEFAULT IS TO
                                   NOT TEST BEVENT WHEN  IN APT ENVIRONMENT.
                                3. PREVENT ^TESTN FROM GETTING OUT OF SYNC WHE"
                                   SKIPPING DESELECTED TESTS.
                                4. PREVENT EXECUTION OF RESET INSTRUCTION TEST WHEN
                                   IN APT ENVIRONMENT.
                                5. CHANGE MARK INSTRUCTION TEST.
                                6. TURN CACHE MEMORY SYSTEM OFF DURING NON-CACHE TESTS.
                                7. ENSURE THAT CPU ERROR REGISTER IS CLEARED AFTER
                                   COMPLETION OF TEST THAT MIGHT CAUSE IT TO BE SET.
                                8. SAVE PC AND CONTENTS OF R6 ON UNEXPECTED INTERRUPTS

                                ADDITIONAL TESTS TO IMPROVE TEST COVERAGE INCLUDE:
                                1. RED ZONE TRAP TEST
                                2. I/O TIME OUT TRAP TEST
                                3. ODD ADDRESS TRAP TEST
                                4. PRE-FETCH BUFFER INVALIDATION TEST
                                5. TEST FOR SLOW C BIT ON ROR, ROL AND SXT INSTRUCTIONS
                                6. WAIT INSTRUCTION TEST WHEN BEVENT TEST IS SELECTED
                                                                        &
```

```
                                                        .REM &


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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
```

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

                        ;*KT11 VECTOR ADDRESS

                        MMVEC=  250

                        ;*KT11 STATUS REGISTER ADDRESSES

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

                        ;*USER "I" PAGE DESCRIPTOR REGISTERS

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

                        ;*USER "D" PAGE DESCRIPTOR REGISTORS

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

                        ;*USER "I" PAGE ADDRESS REGISTERS

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

                        ;*USER "D" PAGE ADDRESS REGISTERS

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

```
382          177666                  UDPAR3= 177666
383          177670                  UDPAR4= 177670
384          177672                  UDPAR5= 177672
385          177674                  UDPAR6= 177674
386          177676                  UDPAR7= 177676
387
388                                  ;*SUPERVISOR "I" PAGE DESCRIPTOR REGISTERS
389
390          172200                  SIPDR0= 172200
391          172202                  SIPDR1= 172202
392          172204                  SIPDR2= 172204
393          172206                  SIPDR3= 172206
394          172210                  SIPDR4= 172210
395          172212                  SIPDR5= 172212
396          172214                  SIPDR6= 172214
397          172216                  SIPDR7= 172216
398
399                                  ;*SUPERVISOR "D" PAGE DESCRIPTOR REGISTERS
400
401          172220                  SDPDR0= 172220
402          172222                  SDPDR1= 172222
403          172224                  SDPDR2= 172224
404          172226                  SDPDR3= 172226
405          172230                  SDPDR4= 172230
406          172232                  SDPDR5= 172232
407          172234                  SDPDR6= 172234
408          172236                  SDPDR7= 172236
409
410                                  ;*SUPERVISOR "I" PAGE ADDRESS REGISTERS
411
412          172240                  SIPAR0= 172240
413          172242                  SIPAR1= 172242
414          172244                  SIPAR2= 172244
415          172246                  SIPAR3= 172246
416          172250                  SIPAR4= 172250
417          172252                  SIPAR5= 172252
418          172254                  SIPAR6= 172254
419          172256                  SIPAR7= 172256
420
421                                  ;*SUPERVISOR "D" PAGE ADDRESS REGISTERS
422
423          172260                  SDPAR0= 172260
424          172262                  SDPAR1= 172262
425          172264                  SDPAR2= 172264
426          172266                  SDPAR3= 172266
427          172270                  SDPAR4= 172270
428          172272                  SDPAR5= 172272
429          172274                  SDPAR6= 172274
430          172276                  SDPAR7= 172276
431
432                                  ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
433
434          172300                  KIPDR0= 172300
435          172302                  KIPDR1= 172302
436          172304                  KIPDR2= 172304
437          172306                  KIPDR3= 172306
```

```
438          172310                  KIPDR4= 172310
439          172312                  KIPDR5= 172312
440          172314                  KIPDR6= 172314
441          172316                  KIPDR7= 172316
442
443                                  ;*KERNEL "D" PAGE DESCRIPTOR REGISTERS
444
445          172320                  KDPDR0= 172320
446          172322                  KDPDR1= 172322
447          172324                  KDPDR2= 172324
448          172326                  KDPDR3= 172326
449          172330                  KDPDR4= 172330
450          172332                  KDPDR5= 172332
451          172334                  KDPDR6= 172334
452          172336                  KDPDR7= 172336
453
454                                  ;*KERNEL "I" PAGE ADDRESS REGISTERS
455
456          172340                  KIPAR0= 172340
457          172342                  KIPAR1= 172342
458          172344                  KIPAR2= 172344
459          172346                  KIPAR3= 172346
460          172350                  KIPAR4= 172350
461          172352                  KIPAR5= 172352
462          172354                  KIPAR6= 172354
463          172356                  KIPAR7= 172356
464
465                                  ;*KERNEL "D" PAGE ADDRESS REGISTERS
466
467          172360                  KDPAR0= 172360
468          172362                  KDPAR1= 172362
469          172364                  KDPAR2= 172364
470          172366                  KDPAR3= 172366
471          172370                  KDPAR4= 172370
472          172372                  KDPAR5= 172372
473          172374                  KDPAR6= 172374
474          172376                  KDPAR7= 172376
475
476                                  ;THESE ARE FLOATING POINT ACCUMULATOR EQUATES
477          000000                  AC0=    %0
478          000001                  AC1=    %1
479          000002                  AC2=    %2
480          000003                  AC3=    %3
481          000004                  AC4=    %4
482          000005                  AC5=    %5
483          000006                  AC6=    %6
484          000007                  AC7=    %7
485
486          000244                  FPVEC=  244
487
488                                  ;THESE ARE CACHE REGISTER EQUATES
489          177746                  CCR=    177746          ;CACHE CONTROL REGISTER
490          177744                  MSER=   177744          ;MEMORY SYSTEM ERROR REGISTER
491          177752                  HITMIS= 177752          ;HIT/MISS REGISTER
492          177766                  CPEREG= 177766          ;CPU ERROR REGISTER
493
```

```
                                ;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
```

```
                                ;;*****************************************************************
            000204                      .$X=.    ;;SAVE CURRENT LOCATION
            000024                      .=24     ;;SET POWER FAIL TO POINT TO START OF PROGRAM
000024      000200                      200      ;;FOR APT START UP
            000044                      .=44     ;;POINT TO APT INDIRECT ADDRESS PNTR.
000044      000204                      $APTHDR  ;;POINT TO APT HEADER BLOCK
            000204                      .=.$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               ;       "       "       "       "
```

```
                        
                        
                        
                        
001066  000000  SEQ:    .WORD   0               ;STORES SEQUENCE NUMBER FOR JUMP TESTS
001070  000000  SPS:    .WORD   0               ;STORES STACK POINTER FOR JUMP TESTS
001072  000000  SPSJ:   .WORD   0               ;STORES STACK POINTER FOR JUMP TESTS
                        
                        
001074  177777  WAITIN: .WORD   177777
                        
                        ;!!!!!!THIS IS IT. THE PROGRAM TEST LOCATION AND WRITE BUFFER!!!!!!!!!!!!!!!!!!
001076                  TSTLOC:
001076  000002          .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     #$ERROP,@#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$:
001542  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
001544  000002                          .WORD   2                       ;UNIQUE ERROR NUMBER
001546  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
001550                          4$:

001550                          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
                                        BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   15                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                1$:     CLR     R1                      ;R1=0
                                        CMP     R1,#0                   ;DOES R1=0
                                        BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   16                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                2$:     MOV     #125252,R1              ;R1=125252
                                        CMP     R1,#125252              ;DOES R1=125252
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   17                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                3$:     MOV     #52525,R1               ;R1=52525
                                        CMP     R1,#052525              ;DOES R1=52525
                                        BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   20                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                4$:
;
GPR2TS:
;;*********************************************************************
;*TEST 11        R2 BIT TESTS
;;*********************************************************************
TST11:
                                        INC     $TESTN                  ;INCREMENT TEST NUMBER
                                        MOV     #177777,R2              ;R2=177777
                                        CMP     R2,#177777              ;DOES R2=177777
                                        BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   21                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                1$:     CLR     R2                      ;R2=0
                                        CMP     R2,#0                   ;DOES R2=0
                                        BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   22                      ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                2$:     MOV     #125252,R2              ;R2=125252
                                        CMP     R2,#125252              ;DOES R2=125252
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .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$:   MOV     #52525,R3               ;R3=52525
 1014  002336  020327  052525                CMP     R3,#052525              ;DOES R3=52525
 1015  002342  001403                        BEQ     4$                      ;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                           GPRSTS:
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  1  000                          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                          MSPB:
```

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

```
                                ;;*****************************************************************
                                ;*TEST 22       TEST SINGLE OPS MODE1-EVEN BYTE-CLRB,COMB,INCB
                                ;;*****************************************************************
003150                          TST22:
003150  005267  175630                  INC     #TESTN                  ;INCREMENT TEST NUMBER
003154  005004                          CLR     R4
003156  005014                          CLR     (R4)
003160  005114                          COM     (R4)            ;SETUP TEST DATA
003162  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
003164  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
003166  001403                          BEQ     2$              ;BRANCH IF GOOD
                                                                ;CLEAR (0) EVEN BYTE FAILED
003170                          1$:
003170  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003172  000057                          .WORD   57                      ;UNIQUE ERROR NUMBER
003174  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003176  105214                  2$:     INCB    (R4)            ;*TEST INSTRUCTION
003200  100405                          BMI     3$              ; TEST FLAGS
003202  001404                          BEQ     3$
003204  105114                          COMB    (R4)            ;*TEST INSTRUCTION
003206  105214                          INCB    (R4)
003210  105214                          INCB    (R4)
003212  001403                          BEQ     4$              ;BRANCH IF GOOD
                                                                ;COMB OR INCB FAILED
003214                          3$:
003214  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003216  000060                          .WORD   60                      ;UNIQUE ERROR NUMBER
003220  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003222                          4$:
                                ;
003222                          MSPE0:
                                ;;*****************************************************************
                                ;*TEST 23       TEST SINGLE OPS - ODD BYTE - CLRB, COMB, DECB
                                ;;*****************************************************************
003222                          TST23:
003222  005267  175556                  INC     #TESTN                  ;INCREMENT TEST NUMBER
003226  005004                          CLR     R4
003230  005014                          CLR     (R4)
003232  005114                          COM     (R4)            ;SETUP TEST DATA
003234  005204                          INC     R4              ;POINT TO ODD BYTE
003236  105014                          CLRB    (R4)            ;*TEST INSTRUCTION
003240  001403                          BEQ     1$              ;BRANCH IF GOOD
                                                                ;CLEAR ODD BYTE FAILED
003242  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
003244  000061                          .WORD   61                      ;UNIQUE ERROR NUMBER
003246  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
003250  005304                  1$:     DEC     R4              ;POINT TO EVEN BYTE
003252  005214                          INC     (R4)            ;LOC 0=1 0
003254  005204                          INC     R4              ;POINT TO ODD BYTE
003256  105114                          COMB    (R4)            ;*TEST INSTRUCTION
003260  105214                          INCB    (R4)            ;LOC 0=-1 0
003262  100003                          BPL     2$              ;BRANCH IF ERROR
003264  001402                          BEQ     2$              ;
003266  105214                          INCB    (R4)            ;*TEST INSTRUCTION
003270  001403                          BEQ     3$              ;BRANCH IF GOOD
```

```
1311
1312  003272                        2$:                                     ;MODE 1, ODD BYTE FAILED
1313  003272  104000                        ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1314  003274  000062                        .WORD   62                              ;UNIQUE ERROR NUMBER
1315  003276  001127                        .WORD   CPUERR                          ;ADDRESS OF ERROR MESSAGE
1316  003300                        3$:
1317
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$:   DEC     R4              ;POINT TO ODD BYTE
1402  003464  005304                    DEC     R4
1403  003466  105224                    INCB    (R4)+           ;400=1 0
1404  003470  105124                    COMB    (R4)+           ;*TEST INSTRUCTION
1405  003472  100003                    BPL     2$              ;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     $TESTN                  ;INCREMENT TEST NUMBER
1455  003570  005000                          CLR     R4              ;R4=0
1456  003572  005001                          CLR     R1
1457  003574  105101                          COMB    R1
1458  003576  005201                          INC     R1              ;R1=400
1459  003600  005011                          CLR     (R1)
1460  003602  005121                          COM     (R1)+           ;400=-1
1461  003604  005011                          CLR     (R1)            ;
1462  003606  105111                          COMB    (R1)            ;402=000 377
1463  003610  005014                          CLR     (R4)            ;
1464  003612  105114                          COMB    (R4)            ;
1465  003614  005214                          INC     (R4)            ;0=400
1466  003616  105034                          CLRB    @(R4)+          ;*TEST INSTRUCTION 400=377 000
1467  003620  001403                          BEQ     1$              ;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$:                                     ;MODE 3, EVEN BYTE FAILED
1481  003646  104000                        ERROR                                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1482  003650  000074                        .WORD   74                              ;UNIQUE ERROR NUMBER
1483  003652  001127                        .WORD   CPUERR                          ;ADDRESS OF ERROR MESSAGE
1484  003654  005304                  3$:   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
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```
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                          ;
                                      MSPN:
1593                                  ;;*****************************************************************
1594                                  ;*TEST 33        TEST CLR, COM, INC - MODE 5
1595                                  ;;*****************************************************************
1596  004110                          TST33:
1597  004110  005267  174670                 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                                  ;
                                      MSPO:
1627  004172                          ;;*****************************************************************
1628                                  ;*TEST 34        TEST NEG MODE 5
1629                                  ;;*****************************************************************
1630  004172                          TST34:
1631  004172  005267  174606                 INC     $TESTN                  ;INCREMENT TEST NUMBER
1632  004176  005004                         CLR     R4
1633  004200  105104                         COMB    R4
1634  004202  005204                         INC     R4              ;R4-400
1635  004204  005001                         CLR     R1
1636  004206  105101                         COMB    R1
1637  004210  005301                         DEC     R1              ;R1-376
1638  004212  005002                         CLR     R2              ;R2-0
1639  004214  005012                         CLR     (R2)            ;0-0
1640  004216  005014                         CLR     (R4)            ;
1641  004220  005114                         COM     (R4)            ;400--1
1642  004222  005011                         CLR     (R1)            ;376-0
1643  004224  005454                         NEG     @-(R4)          ;0-0
1644  004226  001403                         BEQ     2$              ;BRANCH IF GOOD
1645                                                                  ;NEG FAILED
1646
```

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1647  004230                          10$:
1648  004230  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1649  004232  000106                        .WORD   106             ;UNIQUE ERROR NUMBER
1650  004234  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1651  004236  005334                  20$:  DEC     @(R4)+          ;0->-1
1652  004240  005454                        NEG     @(R4)           ;0->1
1653  004242  001403                        BEQ     30$             ;BRANCH IF BAD
1654  004244  102402                        BVS     30$             ;BRANCH IF BAD
1655  004246  100401                        BMI     30$             ;BRANCH IF BAD
1656  004250  103403                        BCS     40$             ;BRANCH IF GOOD
1657                                                                ;NEG FAILED
1658  004252                          30$:
1659  004252  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1660  004254  000107                        .WORD   107             ;UNIQUE ERROR NUMBER
1661  004256  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1662  004260  005334                  40$:  DEC     @(R4)+          ; TEST RESULT OF NEGATE
1663  004262  001403                        BEQ     60$             ;BRANCH IF GOOD
1664                                                                ;RESULT OF NEGATE BAD
1665  004264                          50$:
1666  004264  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1667  004266  000110                        .WORD   110             ;UNIQUE ERROR NUMBER
1668  004270  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1669  004272  105212                  60$:  INCB    (R2)            ;0->1
1670  004274  005454                        NEG     @-(R4)          ;0->-1
1671  004276  001403                        BEQ     70$             ;
1672  004300  102402                        BVS     70$
1673  004302  103001                        BCC     70$             ;
1674  004304  100403                        BMI     80$             ;BRANCH IF GOOD
1675                                                                ;BAD NEGATE
1676  004306                          70$:
1677  004306  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1678  004310  000111                        .WORD   111             ;UNIQUE ERROR NUMBER
1679  004312  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1680  004314  105212                  80$:  INCB    (R2)            ;0->0
1681  004316  001403                        BEQ     100$            ;BRANCH IF GOOD
1682  004320                          90$:
1683  004320  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1684  004322  000112                        .WORD   112             ;UNIQUE ERROR NUMBER
1685  004324  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1686  004326                          100$:
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)            ;
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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
172€  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                          MSP0:
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$:
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1759  004506  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1760  004510  000116                    .WORD   116             ;UNIQUE ERROR NUMBER
1761  004512  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1762  004514  005364  000002    2$:     DEC     2(R4)           ; TEST RESULT OF NEGATE
1763  004520  001403                    BEQ     4$              ;BRANCH IF GOOD
1764                                                            ;RESULT OF NEGATE FAILED
1765  004522                    3$:
1766  004522  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1767  004524  000117                    .WORD   117             ;UNIQUE ERROR NUMBER
1768  004526  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1769  004530  005464  000000    4$:     NEG     0(R4)           ;0=0
1770  004534  001403                    BEQ     5$              ; BRANCH IF GOOD
1771                                                            ;NEGATE FAILED
1772  004536  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1773  004540  000120                    .WORD   120             ;UNIQUE ERROR NUMBER
1774  004542  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1775  004544  105461  000374    5$:     NEGB    374(R1)         ;374=0 377
1776  004550  102403                    BVS     6$              ;
1777  004552  001402                    BEQ     6$
1778  004554  100001                    BPL     6$
1779  004556  103403                    BCS     7$              ;BRANCH IF GOOD
1780                                                            ;NEGATE FAILED
1781  004560                    6$:
1782  004560  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1783  004562  000121                    .WORD   121             ;UNIQUE ERROR NUMBER
1784  004564  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1785  004566  105261  000374    7$:     INCB    374(R1)         ;374=0
1786  004572  001403                    BEQ     9$              ;BRANCH IF GOOD
1787                                                            ;NEGATE FAILED
1788  004574                    8$:
1789  004574  104000                    ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
1790  004576  000122                    .WORD   122             ;UNIQUE ERROR NUMBER
1791  004600  001127                    .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
1792  004602                    9$:
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     $TESTN                  ;INCREMENT TEST NUMBER
1844  004714  005004                        CLR     R4
1845  004716  005014                        CLR     (R4)            ;0=0
1846  004720  005002                        CLR     R2              ;
1847  004722  105102                        COMB    R2
1848  004724  005202                        INC     R2              ;R2=400
1849  004726  005012                        CLR     (R2)            ;400=0
1850  004730  005472  177400                NEG     @-400(R2)       ;NEG OF 0=0
1851  004734  103401                        BCS     1$              ;****
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                            MSPT:
1873                                    ;;*****************************************************************
1874                                    ;*TEST 41       TEST SINGLE OPERAND MODE 2 REG 7
1875                                    ;;*****************************************************************
1876  004772                            TST41:
1877  004772  005267  174006                   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:
1897  005020  005267  173760                   INC     @TESTN                  ;INCREMENT TEST NUMBER
1898  005024  005004                           CLR     R4              ;R4=0
1899  005026  000277                           SCC                     ;CONDITION CODES =1111
1900  005030  000244                           CLZ                     ;CC=1011
1901  005032  005704                           TST     R4              ;*TEST INSTRUCTION
1902  005034  103403                           BCS     1$
1903  005036  102402                           BVS     1$
1904  005040  100401                           BMI     1$              ;BRANCH IF ERROR
1905  005042  001403                           BEQ     2$              ;BRANCH IF GOOD
1906  005044                            1$:
1907  005044  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1908  005046  000131                           .WORD   131                     ;UNIQUE ERROR NUMBER
1909  005050  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1910                                                                    ;TST MODE 0 FAILED
1911  005052  005304                   2$:     DEC     R4              ;R4=-1
1912  005054  000277                           SCC
1913  005056  000250                           CLN                     ;CC=0111
1914  005060  005704                           TST     R4              ;*TEST INSTRUCTION MODE 0
1915  005062  103403                           BCS     3$              ;BRANCH IF ERROR
1916  005064  102402                           BVS     3$
1917  005066  001401                           BEQ     3$
1918  005070  100403                           BMI     4$              ;BRANCH IF GOOD
1919  005072                            3$:
1920  005072  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
1921  005074  000132                           .WORD   132                     ;UNIQUE ERROR NUMBER
1922  005076  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
1923                                                                    ;TST FAILED
1924  005100                            4$:
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  005126                          1@:
1943  005126  104000                        ERROR                           ;ALL ERRORS 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                                  MSPV:
1958  005150                          ;;*****************************************************************
1959                                  ;*TEST 44       TEST TST MODE 1
1960                                  ;;*****************************************************************
1961                                  TST44:
1962  005150
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                          30$:
2096  005454  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2097  005456  000144                          .WORD   144                     ;UNIQUE ERROR NUMBER
2098  005460  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2099                                                                  ;MODE 2 ODD BYTE FAILED
2100  005462                          40$:
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  005542  005267  173216          INC     @TESTN                  ;INCREMENT TEST NUMBER
2152  005546  005004                  CLR     R4
2153  005550  005014                  CLR     (R4)            ;0=0
2154  005552  105114                  COMB    (R4)            ;
2155  005554  005214                  INC     (R4)            ;0=400
2156  005556  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                  TSTB2:
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     @-(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                          TST56:
2320  006130  005267  172650                  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     $TESTN                  ;INCREMENT TEST NUMBER
2355  006212  005004                          CLR     R4
2356  006214  005014                          CLR     (R4)            ;0-0
2357  006216  105104                          COMB    R4
2358  006220  005204                          INC     R4              ;R4-400
2359  006222  005014                          CLR     (R4)
2360  006224  005114                          COM     (R4)            ;400--1
2361  006226  005764  177400                  TST     -400(R4)        ;**TEST LOCATION 0
2362  006232  103403                          BCS     1$              ;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
```

```
                                                        ;ERROR! CC ERROR
006262                                  3$:
006262  104000                                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
006264  000164                                  .WORD   164             ;UNIQUE ERROR NUMBER
006266  001127                                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
006270                                  4$:

                                        ;
006270                                  MST7:
                                        ;;*****************************************************************
                                        ;*TEST 60        TEST TST MODE 7
                                        ;;*****************************************************************
006270                                  TST60:
006270  005267  172510                          INC     @TESTN                  ;INCREMENT TEST NUMBER
006274  005004                                  CLR     R4
006276  005014                                  CLR     (R4)
006300  005124                                  COM     (R4)+           ;0=-1
006302  005014                                  CLR     (R4)            ;2=0
006304  005002                                  CLR     R2              ;R2=0
006306  005004                                  CLR     R4
006310  105104                                  COMB    R4
006312  005204                                  INC     R4              ;R4=400
006314  005014                                  CLR     (R4)            ;400=0
006316  005774  177402                        TST     @-376(R4)       ;**TEST LOCATION 0
006322  103403                                  BCS     1$              ;ERROR IF CARRY
006324  102402                                  BVS     1$              ;ERROR IF OVERFLOW
006326  001401                                  BEQ     1$              ;ERROR IF ZERO
006330  100403                                  BMI     2$              ;BRANCH IF GOOD
                                                        ;ERROR! ERROR IN CC
006332                                  1$:
006332  104000                                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
006334  000165                                  .WORD   165             ;UNIQUE ERROR NUMBER
006336  001127                                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
006340  005222                          2$:     INC     (R2)+           ;0=-2 R2=2
006342  005774  177402                        TST     @-376(R4)       ;** CHECK CONTENTS OF LOCATION 2
006346  100401                                  BMI     3$              ;ERROR IF MINUS
006350  001403                                  BEQ     4$              ;BRANCH IF GOOD
                                                        ;ERROR! CC SHOULD = 0100
006352                                  3$:
006352  104000                                  ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
006354  000166                                  .WORD   166             ;UNIQUE ERROR NUMBER
006356  001127                                  .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
006360                                  4$:

                                        ;
                                        ;
006360                                  MOMO:
                                        ;;*****************************************************************
                                        ;*TEST 61        TEST MOVE MODE 0
                                        ;;*****************************************************************
006360                                  TST61:
006360  005267  172420                          INC     @TESTN                  ;INCREMENT TEST NUMBER
006364  005004                                  CLR     R4              ;R4=0
006366  005001                                  CLR     R1
006370  005101                                  COM     R1              ;R1= 1
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
```

```
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                          MOM27:
2504                                  ;;*******************************************************************
2505                                  ;*TEST 64        TEST MOV MODE 27,00
2506                                  ;;*******************************************************************
2507  006530                          TST64:
2508  006530  005267  172250                INC     @TESTN          ;INCREMENT TEST NUMBER
2509  006534  000257                        CCC                     ;CC=0000
2510  006536  012704  125252                MOV     #125252,R4      ;**TEST MOVE
2511  006542  001401                        BEQ     1$              ;ERROR IF = 0
2512  006544  100403                        BMI     2$              ;BRANCH IF MINUS
2513                                                                ;ERROR! CC SHOULD = 1000
2514  006546                          1$:
2515  006546  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2516  006550  000174                        .WORD   174             ;UNIQUE ERROR NUMBER
2517  006552  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2518  006554  012701  052525          2$:   MOV     #052525,R1      ;**TEST MOVE
2519  006560  100401                        BMI     3$              ;ERROR IF MINUS
2520  006562  001003                        BNE     4$              ;BRANCH IF NE 0
2521                                                                ;ERROR! CC SHOULD = 0000
2522  006564                          3$:
2523  006564  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2524  006566  000175                        .WORD   175             ;UNIQUE ERROR NUMBER
2525  006570  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2526  006572  060104                  4$:   ADD     R1,R4           ;R1+R4=-1
2527  006574  100403                        BMI     6$              ;BRANCH IF MINUS
2528                                                                ;ERROR! MOV FAILED
2529  006576                          5$:
2530  006576  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2531  006600  000176                        .WORD   176             ;UNIQUE ERROR NUMBER
2532  006602  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2533  006604  005204                  6$:   INC     R4              ;R4+1=0
2534  006606  001373                        BNE     5$              ;ERROR IF NOT ZERO
2535
2536                                  ;
2537  006610                          MBIOO:
2538                                  ;;*******************************************************************
2539                                  ;*TEST 65        TEST BIC, BIS MODE 0,0
2540                                  ;;*******************************************************************
2541  006610                          TST65:
2542  006610  005267  172170                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                                                    ;ERROR! CC SHOULD = 0100
2768  007366                            7$:
2769  007366  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2770  007370  000216                          .WORD   216             ;UNIQUE ERROR NUMBER
2771  007372  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2772  007374                            8$:
2773
2774                                    ;
2775  007374                            MBC11:
2776                                    ;;*****************************************************************
2777                                    ;*TEST 73       TEST BIT, CMP MODE 1.1
2778                                    ;;*****************************************************************
2779  007374                            TST73:
2780  007374  005267  171404                   INC     $TESTN          ;INCREMENT TEST NUMBER
2781  007400  012704  000400                   MOV     #400,R4         ;R4=400
2782  007404  012714  052525                   MOV     #052525,(R4)    ;400=052525
2783  007410  012701  000402                   MOV     #402,R1         ;R1=402
2784  007414  012711  125252                   MOV     #125252,(R1)    ;402=125252
2785  007420  000241                           CLC                     ;CLEAR CARRY
2786  007422  031411                           BIT     (R4),(R1)       ;*=052525^125252=0
2787  007424  103401                           BCS     1$              ;ERROR IF CARRY
2788  007426  001403                           BEQ     2$              ;BRANCH IF GOOD
2789                                                                    ;ERROR! CC SHOULD = 0100
2790  007430                            1$:
2791  007430  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2792  007432  000217                          .WORD   217             ;UNIQUE ERROR NUMBER
2793  007434  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2794  007436  021411                    2$:   CMP     (R4),(R1)       ;400-402=125253
2795  007440  001403                           BEQ     3$              ;ERROR IF ZERO
2796  007442  103002                           BCC     3$              ;ERROR IF NO CARRY
2797  007444  102001                           BVC     3$              ;ERROR IF NO OVERFLOW
2798  007446  100403                           BMI     4$              ;BRANCH IF GOOD
2799                                                                    ;ERROR! CC SHOULD = 1000
2800  007450                            3$:
2801  007450  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2802  007452  000220                          .WORD   220             ;UNIQUE ERROR NUMBER
2803  007454  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2804  007456  005014                    4$:   CLR     (R4)
2805  007460  005214                          INC     (R4)            ;400=1
2806  007462  031114                          BIT     (R1),(R4)       ;125252^1=0
2807  007464  001403                          BEQ     6$              ;BRANCH IF GOOD
2808                                                                   ;ERROR! CC SHOULD= 0100
2809  007466                            5$:
2810  007466  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
2811  007470  000221                          .WORD   221             ;UNIQUE ERROR NUMBER
2812  007472  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
2813  007474                            6$:
2814
2815                                    ;
2816  007474                            MM22:
2817                                    ;;*****************************************************************
2818                                    ;*TEST 74       TEST MOV MODE 2.2
2819                                    ;;*****************************************************************
2820  007474                            TST74:
2821  007474  005267  171304                   INC     $TESTN                  ;INCREMENT TEST NUMBER
2822  007500  012704  000400                   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$:
2837  007540  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2838  007542  000222                      .WORD   222                     ;UNIQUE ERROR NUMBER
2839  007544  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2840  007546  005244                      INC     -(R4)           ;400=1 R4=400
2841
2842  007550  061411                      ADD     (R4),(R1)       ;1+ -1 =0
2843  007552  001403                      BEQ     4$              ;BRANCH IF GOOD
2844                                                              ;ERROR! CC SHOULD = 0100
2845  007554                      3$:
2846  007554  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2847  007556  000223                      .WORD   223                     ;UNIQUE ERROR NUMBER
2848  007560  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESS.GE
2849  007562                      4$:
2850
2851                                      ;
2852  007562                      MS22:
2853                                      ;;*******************************************************************
2854                                      ;*TEST 75        TEST SUB MODE 2,2
2855                                      ;;*******************************************************************
2856  007562                      TST75:
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$:
2869  007620  104000                      ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2870  007622  000224                      .WORD   224                     ;UNIQUE ERROR NUMBER
2871  007624  001127                      .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2872  007626  005241                      INC     -(R1)                   ;R1=1777771
2873  007630  162721  177771              SUB     #177771,(R1)+           ;R1=0
2874  007634  100401                      BMI     3$                      ;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$:
2882
2883                                ;
2884  007646                        M8822:
2885                                ;;*****************************************************************
2886                                ;*TEST 76       TEST BIC, BICB, BIS, BISB MODE 2,2
2887                                ;;*****************************************************************
2888  007646                        TST76:
2889  007646  005267  171132               INC     @TESTN                  ;INCREMENT TEST NUMBER
2890  007652  012704  000400               MOV     #400,R4         ;R4=400
2891  007656  012701  000402               MOV     #402,R1         ;R1=402
2892  007662  012702  000404               MOV     #404,R2         ;R2=404
2893  007666  012714  141401               MOV     #141401,(R4)    ;400=303 001
2894  007672  012711  177405               MOV     #177405,(R1)    ;402=377 005
2895  007676  012722  000070               MOV     #70,(R2)+       ;404=2070
2896  007702  012722  177777               MOV     #-1,(R2)+       ;406=-1
2897  007706  042421                       BIC     (R4)+,(R1)+     ;402=074004
2898  007710  001401                       BEQ     1$              ;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$:
2919  007746  104000                       ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2920  007750  000230                       .WORD   230                     ;UNIQUE ERROR NUMBER
2921  007752  001127                       .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2922  007754                        6$:
2923
2924                                ;
2925  007754                        M8C22:
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
2968  010064  104000            7$:     ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
2969  010066  000234                    .WORD   234                     ;UNIQUE ERROR NUMBER
2970  010070  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
2971  010072                    8$:
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
```

```
                                                        ;ERROR! CC SHOULD =0001
010140                          10$:
010140  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
010142  000235                          .WORD   235             ;UNIQUE ERROR NUMBER
010144  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
010146  022712  054120          20$:    CMP     #54120,(R2)     ; TEST R4 AUTO-INC AND RESULT
010152  001403                          BEQ     40$             ;BRANCH IF GOOD
                                                        ;ERROR! CC SHOULD = 0100 R4=2 R1=4
010154                          30$:
010154  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
010156  000236                          .WORD   236             ;UNIQUE ERROR NUMBER
010160  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
010162  005067  167612          40$:    CLR     0               ;RESTORE VECTORS
010166  005067  167610                  CLR     2               ;       "

                                ;
010172                          MCB44:
                                ;;*******************************************************************
                                ;*TEST 101       TEST CMP, BIT MODE 4,4
                                ;;*******************************************************************
010172                          TST101:
010172  005267  170606                  INC     @TESTN                  ;INCREMENT TEST NUMBER
010176  012704  000400                  MOV     #400,R4                 ;R4=400
010202  012701  000402                  MOV     #402,R1                 ;R1=402
010206  012721  125366                  MOV     #125366,(R1)+           ;402=125366 R1=404
010212  012724  173001                  MOV     #173001,(R4)+           ;400=173001 R4=402
010216  024441                          CMP     -(R4),-(R1)             ;173001 - 125366=045603 CC=0000
010220  103401                          BCS     1$                      ;ERROR IF CARRY
010222  100003                          BPL     2$                      ;BRANCH IF GOOD
                                                                        ;BAD COMPARE
010224                          10$:
010224  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
010226  000237                          .WORD   237             ;UNIQUE ERROR NUMBER
010230  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
010232  005204                  20$:    INC     R4
010234  005201                          INC     R1              ;R1=403
010236  000261                          SEC                     ;SET CARRY
010240  134144                          BITB    -(R1),-(R4)     ;173-1=0
010242  103001                          BCC     3$              ;C SHOULD REMAIN SET
010244  001403                          BEQ     4$              ;BRANCH IF GOOD
                                                                ;INCORRECT COMPARE R4=400 R1=402
010246                          30$:
010246  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
010250  000240                          .WORD   240             ;UNIQUE ERROR NUMBER
010252  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
010254  005724                  40$:    TST     (R4)+           ;R4=402
010256  005201                          INC     R1              ;R1=403
010260  124441                          CMPB    -(R4),-(R1)     ;173 - 173=0
010262  001403                          BEQ     6$              ;BRANCH IF GOOD
                                                                ;BAD COMPARE
010264                          50$
010264  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
010266  000241                          .WORD   241             ;UNIQUE ERROR NUMBER
010270  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
010272                          60$
```

```
                                        ;
                                        MAS5:
                                        ;;*****************************************************************
                                        ;*TEST 102       TEST ADD MODE 5,5
                                        ;;*****************************************************************
                                        TST102:
                                                INC     #TESTN                  ;INCREMENT TEST NUMBER
                                                MOV     #400,R4
                                                MOV     #1,(R4)+                ;400=1
                                                MOV     #-2,(R4)+               ;402=-2
                                                MOV     #400,(R4)+              ;404=400
                                                MOV     #402,(R4)               ;406=402 R4=406
                                                MOV     #410,R1                 ;R1=410
                                                ADD     @-(R4),@-(R1)           ;1= -2= -1
                                                BEQ     1$                      ;ERROR IF ZERO
                                                BPL     1$                      ;ERROR IF PLUS
                                                BCC     2$                      ;BRANCH IF GOOD
                                                                                ;ERROR! BAD ADD
                                        1$:
                                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                                .WORD   242                     ;UNIQUE ERROR NUMBER
                                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        2$:     ADD     #4,R4                   ;R4=410
                                                ADD     @-(R1),@-(R4)           ;-1 + 1 = 0
                                                BEQ     4$                      ;BRANCH IF GOOD
                                                                                ;ERROR! CC SHOULD= 0100 R4=406 R1=402
                                        3$:
                                                ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                                .WORD   243                     ;UNIQUE ERROR NUMBER
                                                .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        4$:
                                        ;
                                        ;
                                        ;
                                        ;.............................. ..
                                        ;TEST DOP BIT(B) MODE 6,6
                                        ;
                                                ;
                                                ;
                                                ;
                                        MB66:
                                        ;;*****************************************************************
                                        ;*TEST 103       TEST BIT, BITB MODE 6,6
                                        ;;*****************************************************************
                                        TST103:
                                                INC     #TESTN                  ;INCREMENT TEST NUMBER
                                                CLR     R4                      ;R4=0
                                                MOV     #400,R1                 ;
                                                MOV     #125252,(R1)+           ;400=125252
                                                MOV     #1,(R1)+                ;402=1
                                                MOV     #100000,(R1)+           ;404=1000000  R1=406
                                                BIT     400(R4),-4(R1)          ;(400)*(402)=0
                                                BEQ     2$                      ;BRANCH IF GOOD
                                                                                ;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                          MRLB1:
3186                                  ;;*********************************************************************
3187                                  ;*TEST 106       TEST ROL, ROLB MODE 1
3188                                  ;;*********************************************************************
3189  010636                          TST106:
3190  010636  005267  170142                INC     @TESTN          ;INCREMENT TEST NUMBER
3191  010642  005004                        CLR     R4              ;R4=0
3192  010644  012714  052525                MOV     #052525,(R4)    ;0=52525
3193  010650  006114                        ROL     (R4)            ;**TEST INSTRUCTION, 0=125252
3194  010652  100005                        BPL     1$              ;ERROR IF PLUS
3195  010654  102004                        BVC     1$              ;ERROR IF NO OVERFLOW
3196  010656  103403                        BCS     1$              ;ERROR IF CARRY
3197  010660  021427  125252                CMP     (R4),#125252    ;SEE IF R4=EXPECTED
3198  010664  001403                        BEQ     2$              ;BRANCH IF GOOD
3199                                                                ;BAD ROL ,CC SHOULD=1010
3200  010666                          1$:
3201  010666  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3202  010670  000252                        .WORD   252             ;UNIQUE ERROR NUMBER
3203  010672  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3204  010674  012714  125252          2$:   MOV     #125252,(R4)    ;0=125252
3205  010700  005204                        INC     R4              ;R4=1
3206  010702  000277                        SCC                     ;CC=1111
3207  010704  106114                        ROLB    (R4)            ;**TEST INSTRUCTION
3208  010706  100406                        BMI     3$              ;ERROR IF RESULT IS POSITIVE
3209  010710  103005                        BCC     3$              ;ERROR IF NO CARRY
3210  010712  102004                        BVC     3$              ;ERROR IF V CLEAR
3211  010714  005304                        DEC     R4              ;R4=0
3212  010716  022714  052652                CMP     #052652,(R4)    ;ERROR IF 0 NE EXPECTED
3213  010722  001403                        BEQ     4$              ;BRANCH IF GOOD
3214                                                                ;ERROR! BAD ROLB ODD BYTE,CC SHOULD=1011
```

```
3215  010724                          3$:
3216  010724  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3217  010726  000253                        .WORD   253                     ;UNIQUE ERROR NUMBER
3218  010730  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3219  010732                          4$:
3220
3221                                  ;
3222  010732                          MRL2:
3223                                  ;;*****************************************************************
3224                                  ;*TEST 107       TEST ROL, ROLB MODE 2
3225                                  ;;*****************************************************************
3226  010732                          TST107:
3227  010732  005267  170046                INC     $TESTN                  ;INCREMENT TEST NUMBER
3228  010736  005004                        CLR     R4                      ;R4=0
3229  010740  012714  100000                MOV     #100000,(R4)            ;0=100000
3230  010744  000257                        CCC                             ;CC=0000
3231  010746  006124                        ROL     (R4)+                   ;*TEST INSTRUCTION
3232  010750  103002                        BCC     1$                      ;ERROR IF NO CARRY
3233  010752  102001                        BVC     1$                      ;ERROR IF NO OVERFLOW
3234  010754  001403                        BEQ     2$                      ;BRANCH IF GOOD
3235                                                                        ;ROL FAILED .CCSHOULD= 0100
3236  010756                          1$:
3237  010756  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3238  010760  000254                        .WORD   254                     ;UNIQUE ERROR NUMBER
3239  010762  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3240  010764  005304                  2$:   DEC     R4
3241  010766  005304                        DEC     R4
3242  010770  001012                        BNE     3$                      ;ERROR IN AUTO-DEC
3243  010772  012714  004040                MOV     #4040,(R4)              ;0=4040
3244  010776  000241                        CLC
3245  011000  106124                        ROLB    (R4)+                   ;**TEST INSTURCTION
3246  011002  103405                        BCS     3$                      ;ERROR IF CARRY SET
3247  011004  102404                        BVS     3$                      ;ERROR IF V
3248  011006  005304                        DEC     R4
3249  011010  022714  004100                CMP     #04100,(R4)             ;SEE IF 0= EXPECTED RESULT
3250  011014  001403                        BEQ     4$                      ;BRANCH IF GOOD
3251                                                                        ;ERROR! BAD ROL
3252  011016                          3$:
3253  011016  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3254  011020  000255                        .WORD   255                     ;UNIQUE ERROR NUMBER
3255  011022  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3256  011024                          4$:
3257
3258                                  ;
3259  011024                          MRL3:
3260                                  ;;*****************************************************************
3261                                  ;*TEST 110       TEST ROL, ROLB MODE 3
3262                                  ;;*****************************************************************
3263  011024                          TST110:
3264  011024  005267  167754                INC     $TESTN                  ;INCREMENT TEST NUMBER
3265  011030  005004                        CLR     R4                      ;R4=0
3266  011032  012714  052525                MOV     #052525,(R4)                    ;0=52525
3267  011036  000277                        SCC                             ;CC=1111
3268  011040  006137  000000                ROL     @#0                     ;**TEST INSRUCTION MODE 3 WITH PC
3269  011044  100005                        BPL     1$                      ;ERROR IF PLUS
3270  011046  102004                        BVC     1$                      ;ERROR IF NO OVERFLOW
```

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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     #123456,0(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                          TST117:
3440  011454  005267  167324                INC     $TESTN                  ;INCREMENT TEST NUMBER
3441  011460  005004                        CLR     R4                      ;R4=0
3442  011462  012714  000001                MOV     #1,(R4)                 ;0=1
3443  011466  000277                        SCC                             ;CC=1111
3444  011470  106014                        RORB    (R4)                    ;0=000200, NO C
3445  011472  103004                        BCC     1$                      ;ERROR IF NO CARRY
3446  011474  100003                        BPL     1$                      ;ERROR IF PLUS
3447  011476  022714  000200                CMP     #200,(R4)               ;CHECK RESULT
3448  011502  001403                        BEQ     2$                      ;BRANCH IF GOOD
3449                                                                        ;ERROR! BAD RESULT
3450  011504                          1$:
3451  011504  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3452  011506  000266                        .WORD   266                     ;UNIQUE ERROR NUMBER
3453  011510  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3454  011512                          2$:
3455
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                          41:
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                          51:
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                          61:
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                          71:
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          MJU4:   NOP
3539  011746  022701  011744                  CMP     #MJU4,R1        ; TEST AUTO-DECR
3540  011752  001403                          BEQ     MJU4A           ;BRANCH IF GOOD
3541                                                                  ;ERROR! MODE 4 AUTO-DEC FAILED
3542  011754                          81:
3543  011754  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3544  011756  000276                          .WORD   276             ;UNIQUE ERROR NUMBER
3545  011760  001127                           WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3546
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                          91:
```

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3551  011772  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3552  011774  000277                        .WORD   277             ;UNIQUE ERROR NUMBER
3553  011776  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3554
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$:
3565  012024  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3566  012026  000300                        .WORD   300             ;UNIQUE ERROR NUMBER
3567  012030  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3568
3569  012032  005237  001066        MJU6A:  INC     @#SEQ           ;UPDATE SEQUENCER
3570  012036  012701  012056                MOV     #MJ7+10,R1      ;SETUP INDEX
3571  012042  000171  177770                JMP     @-10(R1)        ;EXECUTE MODE 7 JUMP
3572  012046  012052                MJ7:    .WORD   MJU7            ;POINTER FOR MODE 7
3573  012050  000000                        HALT
3574  012052  022737  000007  001066 MJU7:   CMP     #7,@#SEQ        ; TEST FOR CORRECT SEQUENCE
3575  012060  001403                        BEQ     MJU7E           ;BRANCH IF GOOD SEQUENCE
3576                                                                ;ERROR!  TESTING OUT OF SEQUENCE
3577  012062                        11$:
3578  012062  104000                        ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
3579  012064  000301                        .WORD   301             ;UNIQUE ERROR NUMBER
3580  012066  001127                        .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
3581
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     #1288,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 INSTRUCTION
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              698:  .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              708:  .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              718:  .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              728:  .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              738:  .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              748:  .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              758:  .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              768:  .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              778:  .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              788:  .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              798:  .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              808:  .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              818:  .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              828:  .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              838:  .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              848:  .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              858:  .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              868:  .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                  878:    .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                  888:    .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                  898:    .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                  908:    .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                  918:    .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                  928:    .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                  938:    .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                  948:    .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                  958:    .WORD   111             ;JMP    (R1)
3688  012400  000137  012412                  JMP     @#01298         ;JUMP OVER ERROR CALL
3689  012404                          1288:                           ;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          1298:   MOV     #32.,R2         ;SET UP R2 AS COUNTER
3698  012416  012703  012104                  MOV     #6418,R3        ;SET UP R3 AS POINTER
3699  012422  012713  000111          1308:   MOV     #111,(R3)       ;RESTORE OVER WRITTEN JUMPS
3700  012426  062703  000006                  ADD     #6,R3           ;POINT TO NEXT OVER WRITTEN ADDR.
3701  012432  077205                          SOB     R2,1308         ;DO UNTIL R2=0
3702
3703                                  ;
3704  012434                          MUP:
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 SEQUENCER
3711  012446  000117                          JMP     (R7)            ;JUMP MODE 17(SHOULD BE .N-LINE)
3712                                  ;
3713  012450  005737  001066          MUP17:  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          21:     INC     @#SEQ           ;UPDATE SEQUENCE NUMBER
3722  012470  000127  000401                  JMP     #401            ;JUMP MODE 27
3723                                                                  ;(THE #4C1=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                          10:
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                          20:
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                          30:
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                          40:
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$:
3808  012726  104000                           ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
3809  012730  000311                           .WORD   311                     ;UNIQUE ERROR NUMBER
3810  012732  001127                           .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
3811
3812  012734  005237  001066           MJSR2B: INC     @SEQ                    ;UPDATE SEQUENCE COUNTER
3813  012740  013706  001070                   MOV     @SPS,R6                 ;RELOAD STACK POINTER
3814  012744  012701  012756                   MOV     #MJSR4,R1               ;SETUP JSR MODE 3
3815  012750  005004                           CLR     R4                      ;DIFFERENT DATA TO R4
3816  012752  004431                           JSR     R4,@(R1)+               ;JSR MODE 3
3817  012754  000000                           HALT
3818  012756  013144           MJSR4:  .WORD   MJSR3                   ;LITERAL FOR JUMP MODE 3
3819                                    ;
3820  012760  022737  000001  001066  MJSR1:  CMP     #1,@SEQ                 ; TEST FOR CORRECT SEQUENCE
3821  012766  001403                           BEQ     MJSR1A                  ;BRANCH IF GOOD
3822                                                                            ;ERROR! MODE 1 JUMPED TO OUT OF SEQUENCE
3823  012770                            7$:
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   CPUE R                  ;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     @#MJSR8-2,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               ;VFRIFY 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     $TESTN                  ;INCREMENT TEST NUMBER
4081  014034  012706  001000                  MOV     #STBOT,R6               ;INSURE VALID STACK
4082  014040  012746  123456                  MOV     #123456,-(R6)           ;SETUP TEST REGISTER
4083  014044  012703  014060                  MOV     #RTS1,R3                ;SETUP TEST PC
4084  014050  000203                          RTS     R3                      ;**TEST INSTRUCTION
4085  014052  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4086  014054  000332                          .WORD   332                     ;UNIQUE ERROR NUMBER
4087  014056  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4088                                                                  ;INCORRECT PC ON RTS
4089
4090  014060  022703  123456          RTS1:   CMP     #123456,R3
4091  014064  001403                          BEQ     RTS6                    ;BRANCH IF GOOD
4092                                                                          ;ERROR! REGISTER CONTENTS INCORRECT
4093  014066  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4094  014070  000333                          .WORD   333                     ;UNIQUE ERROR NUMBER
4095  014072  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4096
4097                                  ;
4098                                  ;THIS TEST CHECKS AN UN-TESTED PLA TERM
4099                                  ;
4100  014074  010601                  RTS6:   MOV     R6,R1                   ;SAVE STACK IN R1
4101  014076  012705  014114                  MOV     #1$,R5                  ;MOVE EXPECTED RETURN ADDR TO R5
4102  014102  010506                          MOV     R5,R6                   ;MOVE RETURN ADDR TO R6
4103  014104  000206                          RTS     R6                      ;>>>>>TEST INSTRUCTION<<<<<
4104                                                                          ;ERROR! RTS NOT EXECUTED
4105  014106  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
4106  014110  000334                          .WORD   334                     ;UNIQUE ERROR NUMBER
4107  014112  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
4108  014114  021506                  1$:     CMP     (R5),R6                 ;IS R6=31506?
4109  014116  001403                          BEQ     RTSE                    ;IF IT IS THEN GO TO END OF TEST
4110                                                                          ;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                    TSM##UO:
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     MTS0
```

```
                                        ;
                                        ;ROUTINE TO CHECK STACKS AFTER TWO RTS STATEMENTS
                                        ;
014474  012737  040000  177776  CHECK:  MOV     #040000,@#177776        ;SET PSW TO SUP MODE
014502  004767  000060                  JSR     PC,CHECK1               ; TEST SUP, KER, AND USE STACKS
014506  022716  000000          RET2:   CMP     #0,(SP)                 ;IS SUP STACK CLEARED
014512  001403                          BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014514  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014516  000351                          .WORD   351                     ;UNIQUE ERROR NUMBER
014520  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        ;
014522  012737  140000  177776  1$:     MOV     #140000,@#177776        ;SET PSW TO USE MODE
014530  022716  000000                  CMP     #0,(SP)                 ;IS USE STACK CLEARED
014534  001403                          BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014536  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014540  000352                          .WORD   352                     ;UNIQUE ERROR NUMBER
014542  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        ;
014544  005037  177776          2$:     CLR     @#177776                ;SET PSW TO KER MODE
014550  022716  014404                  CMP     #RET1,(SP)              ;DOES KER STACK HAVE CORRECT DATA
014554  001403                          BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014556  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014560  000353                          .WORD   353                     ;UNIQUE ERROR NUMBER
014562  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        ;
014564  000207                  3$:     RTS     PC                      ;RETURN
                                        ;
                                        ;ROUTINE TO CHECK STACKS AFTER ONE RTS
                                        ;
014566  012737  140000  177776  CHECK1: MOV     #140000,@#177776        ;SET PSW TO USE MODE
014574  004767  000060                  JSR     PC,CHECK2               ; TEST KER, SUP, AND USE STACKS
014600  022716  000000          RET3:   CMP     #0,(SP)                 ;IS USE STACK CLEARED
014604  001403                          BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014606  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014610  000354                          .WORD   354                     ;UNIQUE ERROR NUMBER
014612  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        ;
014614  005037  177776          1$:     CLR     @#177776                ;SET PSW TO KER MODE
014620  022716  014404                  CMP     #RET1,(SP)              ;IS KER STACK CORRECT
014624  001403                          BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014626  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014630  000355                          .WORD   355                     ;UNIQUE ERROR NUMBER
014632  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        ;
014634  012737  040000  177776  2$:     MOV     #040000,@#177776        ;SET PSW TO SUP MODE
014642  022716  014506                  CMP     #RET2,(SP)              ;IS SUP STACK CORRECT
014646  001403                          BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014650  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014652  000356                          .WORD   356                     ;UNIQUE ERROR NUMBER
014654  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
                                        ;
014656  000207                  3$:     RTS     PC                      ;RETURN
                                        ;
                                        ;ROUTINE TO CHECK STACKS AFTER ZERO RTS
                                        ;
014660  022716  014600          CHECK2: CMP     @RET3,(SP)              ;IS USE STACK CORRECT
014664  001403                          BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014666  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014670  000357                          .WORD   357                     ;UNIQUE ERROR NUMBER
014672  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        
014674  012737  040000  177776  1$:     MOV     @40000,@#177776         ;SET PSW TO SUP MODE
014702  022716  014506                  CMP     @RET2,(SP)              ;IS SUP STACK CORRECT
014706  001403                          BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014710  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014712  000360                          .WORD   360                     ;UNIQUE ERROR NUMBER
014714  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        
014716  005037  177776          2$:     CLR     @#177776                ;SET PSW TO KER MODE
014722  022716  014404                  CMP     @RET1,(SP)              ;IS KER STACK CORRECT
014726  001403                          BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
014730  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014732  000361                          .WORD   361                     ;UNIQUE ERROR NUMBER
014734  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        
014736  012737  140000  177776  3$:     MOV     @140000,@#177776        ;SET PSW TO USE MODE
014744  000207                          RTS     PC                      ;RETURN
                                        ;
014746                          MTSO:
014746                          MMVCC:
                                        ;;*********************************************************************
                                        ;*TEST 127      TEST MOV CONDITION CODES - **0-
                                        ;;*********************************************************************
014746                          TST127:
014746  005267  164032                  INC     $TESTN                  ;INCREMENT TEST NUMBER
014752  000277                          SCC                             ;
014754  000244                          CLZ                             ;CC=1011
014756  012704  000000                  MOV     #0,R4                   ;CC=0101, R4=0
014762  100403                          BMI     1$                      ;ERROR IF N FLAG
014764  102402                          BVS     1$                      ;ERROR IF V FLAG SET
014766  103001                          BCC     1$                      ;ERROR IF C FLAG CLEAR
014770  001403                          BEQ     2$                      ;SKIP IF Z FLAG SET
                                                                        ;CC SHOULD=0101
014772                          1$:
014772  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
014774  000362                          .WORD   362                     ;UNIQUE ERROR NUMBER
014776  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                        
015000  000277                  2$:     SCC
015002  000251                          .WORD   251                     ;CC=0110
015004  012704  100000                  MOV     #100000,R4              ;R4=100000, CC=1000
015010  001403                          BEQ     3$                      ;ERROR IF Z SET
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 IF 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                      SC                              ;
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 SE'
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
                        ;;*****************************************************************
015360                  TST134:
015360  005267  163420          INC     @TESTN                  ;INCREMENT TEST NUMBER
015364  000277                  SCC
015366  000244                  CLZ                             ;CC=1011
015370  005004                  CLR     R4                      ;R4=0, CC=0100
015372  100403                  BMI     1@                      ;ERROR IF MINUS
015374  102402                  BVS     1@                              ;ERROR IF V SET
015376  103401                  BCS     1@                      ;ERROR IF C SET
015400  001403                  BEQ     2@                      ;BRANCH IF GOOD
                                                                ;ERROR! BAD CC ON CLR
015402                  1@:
015402  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015404  000374                  .WORD   374                     ;UNIQUE ERROR NUMBER
015406  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

015410  005104          2@:     COM     R4                      ;R4=-1
015412  000277                  SCC                             ;CC=1111
015414  005704                  TST     R4                      ;CC=1000
015416  001403                  BEQ     3@                      ;ERROR IF Z SET
015420  102402                  BVS     3@                      ;ERROR IF V SET
015422  103401                  BCS     3@                      ;ERROR IF C SET
015424  100403                  BMI     4@                      ;BRANCH IF GOOD
                                                                ;ERROR! BAD TST CC
015426                  3@:
015426  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015430  000375                  .WORD   375                     ;UNIQUE ERROR NUMBER
015432  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

015434  000277          4@:     SCC                             ;CC=1111
015436  000304                  SWAB    R4                      ;CC=1000
015440  102402                  BVS     5@                      ;ERROR IF V SET
015442  103401                  BCS     5@                      ;ERROR IF C SET
015444  100403                  BMI     6@                      ;BRANCH IF GOOD
                                                                ;ERROR! BAD SWAB CC
015446                  5@:
015446  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
015450  000376                  .WORD   376                     ;UNIQUE ERROR NUMBER
015452  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

015454                  6@:


015454                  MADCC:
                        ;;*****************************************************************
                        ;*TEST 135       TEST ADD CONDITION CODES - ****
                        ;;*****************************************************************
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  Z 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                          TST141:
4750  016104  005267  162674                  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
```

```
                                ;;*****************************************************************
                                ;THIS TEST IS TO CHECK FOR A SLOW C BIT PATH INTERNAL TO THE J11 DATA CHIP
                                ;PROBLEM IS ONLY EXHIBITED ON EARLY MASK SETS (1590 AND 1593)
                                ;;*****************************************************************
016412                          TST144:
016412  005267  162366                INC     @TESTN                  ;INCREMENT TEST NUMBER
016416  012701  052525                MOV     #52525,R1               ;INIT R1 WITH DATA
016422  000241                        CLC                             ;CLEAR THE C BIT
016424  006001                        ROR     R1                      ;R1=025252, C BIT =1
016426  006001                        ROR     R1                      ;R1=112525, C BIT =0
016430  006001                        ROR     R1                      ;R1=045252, C BIT =1
016432  103403                        BCS     1$                      ;BRANCH IF CARRY BIT SET
016434  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
016436  000426                        .WORD   426                     ;UNIQUE ERROR NUMBER
016440  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
016442  022701  045252        1$:     CMP     #45252,R1               ;IS DATA IN R1 = TO EXPECTED DATA?
016446  001403                        BEQ     2$                      ;BRANCH IF YES
016450  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
016452  000427                        .WORD   427                     ;UNIQUE ERROR NUMBER
016454  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
016456  012701  125252        2$:     MOV     #125252,R1              ;SET UP R1
016462  000241                        CLC                             ;CLEAR THE CARRY BIT
016464  006101                        ROL     R1                      ;R1=052524, C BIT =1
016466  006101                        ROL     R1                      ;R1=125251, C BIT =0
016470  006101                        ROL     R1                      ;R1=052522, C BIT =1
016472  103403                        BCS     3$                      ;BRANCH IF CARRY SET
016474  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
016476  000430                        .WORD   430                     ;UNIQUE ERROR NUMBER
016500  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
016502  022701  052522        3$:     CMP     #052522, R1             ;IS DATA IN R1 = TO EXPECTED DATA?
016506  001403                        BEQ     4$
016510  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
016512  000431                        .WORD   431                     ;UNIQUE ERROR NUMBER
016514  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
016516                          4$:
                                
                                
016516                          MALCC:
                                ;;*****************************************************************
                                ;*TEST 145      TEST ASL CONDITION CODES - ****
                                ;;*****************************************************************
016516                          TST145:
016516  005267  162262                INC     @TESTN                  ;INCREMENT TEST NUMBER
016522  012704  060000                MOV     #60000,R4               ;R4= 0110000000000000
016526  000257                        CCC                             ;CC=0000
016530  006304                        ASL     R4                      ;C=0 R4= 1100000000000000
016532  103402                        BCS     1$                      ;ERROR IF CARRY
016534  102001                        BVC     1$                      ;ERROR IF V CLEAR
016536  100403                        BMI     2$                      ;BRANCH IF GOOD
                                                                        ;ERROR! ASL  FAILED
016540                          1$:
016540  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
016542  000432                        .WORD   432                     ;UNIQUE ERROR NUMBER
016544  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                
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                                                    ;ERROR! BAD ASR
5008  016666                            3$:
5009  016666  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5010  016670  000437                          .WORD   437             ;UNIQUE ERROR NUMBER
5011  016672  001127                          .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5012
5013  016674  006204                    4$:   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     P1,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$:
5105  017100  104000                  ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
5106  017102  000445                  .WORD   445                     ;UNIQUE ERROR NUMBER
5107  017104  001127                  .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
5108
5109  017106  074404          4$:     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     $TESTN                  ;INCREMENT TEST NUMBER
5136  017140  005004                          CLR     R4              ;TRASH R4
5137  017142  00025                           CCC                     ;CC=0000
5138  017144  000271                          .WORD   271             ;CC=1001
5139  017146  006704                          SXT     R4              ;*TEST INSTRUCTION
5140  017150  102405                          BVS     1$              ;BRANCH IF OVERFLOW IS NOT CLEARED
5141  017152  100004                          BPL     1$              ;BRANCH IF N BIT EFFECTED
5142  017154  001403                          BEQ     1$              ;BRANCH 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
```

```
                                ;;*****************************************************************
017372                          TST153:
017372  005267  161406                  INC     $TESTN                  ;INCREMENT TEST NUMBER
017376  012704  000555                  MOV     #555,R4         ;SETUP TEST COUNTER
017402  000277                          SCC                     ;CC=17
017404  103017                  1$:     BCC     2$              ;ERROR IF CARRY CLEAR
017406  102016                          BVC     2$              ;ERROR IF NO OVERFLOW
017410  100015                          BPL     2$              ;ERROR IF PLUS
017412  001014                          BNE     2$              ;ERROR IF ZERO
017414  077405                          SOB     R4,1$           ;*TEST INSTRUCTION
017416  103005                          BCC     3$              ;ERROR IF CARRY CLEAR
017420  102004                          BVC     3$              ;ERROR IF NO OVERFLOW
017422  100003                          BPL     3$              ;ERROR IF PLUS
017424  001002                          BNE     3$              ;ERROR IF ZERO
017426  000167  00002C                  JMP     4$
                                                                ;ERROR! CC EFFECTED DURING TEST
017432                          3$:
017432  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
017434  000455                          .WORD   455                     ;UNIQUE ERROR NUMBER
017436  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
017440  000167  000006                  JMP     4$
                                                                ;ERROR! CC EFFECTED AFTER TEST
017444                          2$:
017444  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
017446  000456                          .WORD   456                     ;UNIQUE ERROR NUMBER
017450  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
017452  020427  000000          4$:     CMP     R4,#0           ;IS R4 CORRECT
017456  001403                          BEQ     5$              ;YES GO ON
                                                                ;ERROR! NO GO TO ERROR
017460  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
017462  000457                          .WORD   457                     ;UNIQUE ERROR NUMBER
017464  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
017466                          5$:
                                ;
                                ;
017466                          MMARK:
                                ;;*****************************************************************
                                ;*TEST 154       TEST MARK INSTRUCTION
                                ;;*****************************************************************
017466                          TST154:
017466  005267  161312                  INC     $TESTN                  ;INCREMENT TEST NUMBER
017472  012706  000700                  MOV     #STBOT-100,SP           ;SETUP TEST STACK = 700
017476  012737  125252  000776          MOV     #125252,@#STBOT-2       ;SET UP NEW R5 VALUE ON STACK
017504  012705  017526                  MOV     #1$,R5                  ;PUT NEW PC IN R5
017510  012746  006437                  MOV     #MARK+37,-(SP)          ;INSERT MARK 37 INSTRUCTION ONTO STACK
017514  000277                          SCC
017516  000116                          JMP     (SP)                    ;* TEST INSTRUCTION
                                                                ;MARK INSTRUCTION SHOULD HAVE GONE TO 1$
017520  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
017522  000460                          .WORD   460                     ;UNIQUE ERROR NUMBER
017524  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                ;
017526  101002                  1$:     BHI     2$              ;ERROR IF C OR Z BIT CLEAR
017530  100001                          BPL     2$              ;ERROR IF N BIT CLEAR
017532  102403                          BVS     3$              ;BRANCH IF V BIT SET
                                                                ;BAD CONDITION CODES ON MARK
```

```
5287  017534                        2$:
5288  017534  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5289  017536  000461                      .WORD   461             ;UNIQUE ERROR NUMBER
5290  017540  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5291  017542  022705  125252      3$:     CMP     #125252,R5      ;VERIFY R5
5292  017546  001403                      BEQ     4$              ;BRANCH IF GOOD
5293  017550  104000                      ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
5294  017552  000462                      .WORD   462             ;UNIQUE ERROR NUMBER
5295  017554  001127                      .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
5296
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
```

```
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
```

```
                                        ;
                                T166:
                                ;;*****************************************************************
                                ;*TEST 167      TEST MULTIPLE CLEARS OF CC BITS
                                ;;*****************************************************************
                                TST167:
                                        INC     @TESTN                  ;INCREMENT TEST NUMBER
                                        MOV     #30000,@#177776         ;INIT PSW
                                        SCC                             ;SETUP PSW
                                        .WORD   243                     ; TEST CLC CLV
                                        CMP     #30014,@#177776         ;PSW CORRECT?
                                        BEQ     1$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   502                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
                                1$:     SCC                             ;SETUP PSW
                                        .WORD   245                     ; TEST CLC CLZ
                                        CMP     #30012,@#177776         ;PSW CORRECT?
                                        BEQ     2$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   503                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

                                2$:     SCC                             ;SETUP PSW
                                        .WORD   246                     ; TEST CLV CLZ
                                        CMP     #30011,@#177776         ;PSW CORRECT?
                                        BEQ     3$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   504                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

                                3$:     SCC                             ;SETUP PSW
                                        .WORD   247                     ; TEST CLC CLV CLZ
                                        CMP     #30010,@#177776         ;PSW CORRECT?
                                        BEQ     4$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   505                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

                                4$:     SCC                             ;SETUP PSW
                                        .WORD   251                     ; TEST CLN CLC
                                        CMP     #30006,@#177776         ;PSW CORRECT?
                                        BEQ     5$                      ;YES GO ON
                                                                        ;NO GO TO ERROR
                                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
                                        .WORD   506                     ;UNIQUE ERROR NUMBER
                                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE

                                5$:     SCC                             ;SETUP PSW
                                        .WORD   252                     ; TEST CLN CLV
                                        CMP     #30005,@#177776         ;PSW CORRECT?
                                        BEQ     6$                      ;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
```

```
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$:
5708
5709                                  ;
5710  021070                          TE113A:
5711                                  ;;*********************************************************************
5712                                  ;*TEST 171      TEST SIGNED AND CONDITIONAL BRANCHES
5713                                  ;;*********************************************************************
5714  021070
5715  021070  005267  157710          TST171: INC     @TESTN                  ;INCREMENT TEST NUMBER
5716  021074  000257                          CCC                             ;CLEAR ALL CC BITS IN PSW
5717  021076  002003                          BGE     1$                      ;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
```

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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
```

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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
```

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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-----
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 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$:   MOV     #8IT11,PS       ;ENABLE ALTERNATE REGISTER SET
6019  022074  005000                        CLR     R0              ;-----CLEAR-----
6020  022076  005001                        CLR     R1              ;---ALTERNATE---
6021  022100  005002                        CLR     R2              ;----REGISTER---
6022  022102  005003                        CLR     R3              ;------SET-----
6023  022104  005004                        CLR     R4              ;
6024  022106  005005                        CLR     R5              ;
6025  022110  042767  004000  155660        BIC     #8IT11,PS       ;BACK TO PRIMARY GPRS
6026  022116  012700  177777                MOV     #177777,R0      ;ENSURE THAT WRITES TO PRIMARY GPRS
6027  022122  010001                        MOV     R0,R1           ;DO NOT EFFECT ALTERNATE GPRS
6028  022124  010102                        MOV     R1,R2           ;
6029  022126  010203                        MOV     R2,R3           ;
6030  022130  010304                        MOV     R3,R4           ;
6031  022132  010405                        MOV     R4,R5           ;
6032  022134  052767  004000  155634        BIS     #8IT11,PS       ;RETURN TO ALTERNATE REGISTERS
6033  022142  005700                        TST     R0              ;SHOULD BE ALL 0'S
6034  022144  001403                        BEQ     9$              ;
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  00140?                        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                          ALR1TS:
6109                                  ;;**********************************************************************
6110                                  ;*TEST 175      ALTERNATE REGISTER SET R1 BIT TESTS
6111                                  ;;**********************************************************************
6112  022340                          TST175:
6113  022340  005267  156440                INC     @TESTN                  ;INCREMENT TEST NUMBER
6114  022344  012701  177777                MOV     #177777,R1              ;R1=177777
6115  022350  020127  177777                CMP     R1,#177777              ;DOES R1=177777
6116  022354  001403                        BEQ     1@                      ;YES GO ON
6117                                                                         ;NO GO TO ERROR
6118  022356  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6119  022360  000603                        .WORD   603                     ;UNIQUE ERROR NUMBER
6120  022362  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6121  022364  005001                1@:     CLR     R1                      ;R1=0
6122  022366  020127  000000                CMP     R1,#0                   ;DOES R1=0
6123  022372  001403                        BEQ     2@                      ;YES GO ON
6124                                                                         ;NO GO TO ERROR
6125  022374  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6126  022376  000604                        .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:
```

```
                                ;;*********************************************************************
                                ;*TEST 177       ALTERNATE REGISTER SET R3 BIT TESTS
                                ;;*********************************************************************
022544                          TST177:
022544  005267  156234                INC     $TESTN                  ;INCREMENT TEST NUMBER
022550  012703  177777                MOV     #177777,R3              ;R3=177777
022554  020327  177777                CMP     R3,#177777              ;DOES R3=177777
022560  001403                        BEQ     1$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022562  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022564  000613                        .WORD   613                     ;UNIQUE ERROR NUMBER
022566  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
022570  005003                1$:     CLR     R3                      ;R3=0
022572  020327  000000                CMP     R3,#0                   ;DOES R3=0
022576  001403                        BEQ     2$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022600  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022602  000614                        .WORD   614                     ;UNIQUE ERROR NUMBER
022604  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
022606  012703  125252        2$:     MOV     #125252,R3              ;R3=125252
022612  020327  125252                CMP     R3,#125252              ;DOES R3=125252
022616  001403                        BEQ     3$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022620  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022622  000615                        .WORD   615                     ;UNIQUE ERROR NUMBER
022624  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
022626  012703  052525        3$:     MOV     #52525,R3               ;R3=52525
022632  020327  052525                CMP     R3,#52525               ;DOES R3=52525
022636  001403                        BEQ     4$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022640  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022642  000616                        .WORD   616                     ;UNIQUE ERROR NUMBER
022644  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
022646                          4$:
                                ;
022646                          ALR4TS:
                                ;;*********************************************************************
                                ;*TEST 200       ALTERNATE REGISTER SET R4 BIT TESTS
                                ;;*********************************************************************
022646                          TST200:
022646  005267  156132                INC     $TESTN                  ;INCREMENT TEST NUMBER
022652  012704  177777                MOV     #177777,R4              ;R4=177777
022656  020427  177777                CMP     R4,#177777              ;DOES R4=177777
022662  001403                        BEQ     1$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022664  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022666  000617                        .WORD   617                     ;UNIQUE ERROR NUMBER
022670  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
022672  005004                1$:     CLR     R4                      ;R4=0
022674  020427  000000                CMP     R4,#0                   ;DOES R4=0
022700  001403                        BEQ     2$                      ;YES GO ON
                                                                      ;NO GO TO ERROR
022702  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
022704  000620                        .WORD   620                     ;UNIQUE ERROR NUMBER
022706  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

```
6239  022710  012704  125252          21:     MOV     #125252,R4              ;R4=125252
6240  022714  020427  125252                  CMP     R4,#125252              ;DOES R4=125252
6241  022720  001403                          BEQ     31                      ;YES GO ON
6242                                                                          ;NO GO TO ERROR
6243  022722  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6244  022724  000621                          .WORD   621                     ;UNIQUE ERROR NUMBER
6245  022726  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6246  022730  012704  052525          31:     MOV     #52525,R4               ;R4=52525
6247  022734  020427  052525                  CMP     R4,#52525               ;DOES R4=52525
6248  022740  001403                          BEQ     41                      ;YES GO ON
6249                                                                          ;NO GO TO ERROR
6250  022742  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6251  022744  000622                          .WORD   622                     ;UNIQUE ERROR NUMBER
6252  022746  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6253  022750                          41:
6254
6255                                  ;
6256  022750                          ALR5TS:
6257                                  ;;**********************************************************************
6258                                  ;*TEST 201       ALTERNATE REGISTER SET R5 BIT TESTS
6259                                  ;;**********************************************************************
6260  022750                          TST201:
6261  022750  005267  156030                  INC     @TESTN                  ;INCREMENT TEST NUMBER
6262  022754  012705  177777                  MOV     #177777,R5              ;R5=177777
6263  022760  020527  177777                  CMP     R5,#177777              ;DOES R5=177777
6264  022764  001403                          BEQ     11                      ;YES GO ON
6265                                                                          ;NO GO TO ERROR
6266  022766  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6267  022770  000623                          .WORD   623                     ;UNIQUE ERROR NUMBER
6268  022772  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6269  022774  005005                  11:     CLR     R5                      ;R5=0
6270  022776  020527  000000                  CMP     R5,#0                   ;DOES R5=0
6271  023002  001403                          BEQ     21                      ;YES GO ON
6272                                                                          ;NO GO TO ERROR
6273  023004  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6274  023006  000624                          .WORD   624                     ;UNIQUE ERROR NUMBER
6275  023010  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6276  023012  012705  125252          21:     MOV     #125252,R5              ;R5=125252
6277  023016  020527  125252                  CMP     R5,#125252              ;DOES R5=125252
6278  023022  001403                          BEQ     31                      ;YES GO ON
6279                                                                          ;NO GO TO ERROR
6280  023024  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6281  023026  000625                          .WORD   625                     ;UNIQUE ERROR NUMBER
6282  023030  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6283  023032  012705  052525          31:     MOV     #52525,R5               ;R5=52525
6284  023036  020527  052525                  CMP     R5,#52525               ;DOES R5=52525
6285  023042  001403                          BEQ     41                      ;YES GO ON
6286                                                                          ;NO GO TO ERROR
6287  023044  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
6288  023046  000626                          .WORD   626                     ;UNIQUE ERROR NUMBER
6289  023050  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
6290  023052  042767  004000  154716  41:     BIC     @#BIT11,PS              ;RETURN TO PRIMARY GEN PURPOSE REGS
6291
6292                                  ;
6293  023060                          TE115:
6294                                  ;;**********************************************************************
```

```
6295                                    ;+TEST 202      TEST MFPS (MOVE FROM PROCCESSOR STATUS) INST
6296                                    ;;**************************************************************
6297  023060                            TST202:
6298  023060  005267  155720                   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
6401  023364  005267  155414        TST203:         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$:     CMP     (R2),#177777            ;ARE WE DONE
6466  023614  001360                    BNE     T116                    ;NO GO TO T116
6467  023616  000207                    RTS     PC                      ;RETURN
6468                                    ;
6469  023620  106421            TA116:  MTPS    (R1)+                   ; TEST INSTRUCTION
6470  023622  023722  177776            CMP     @#177776,(R2)+          ;IS PSW CORRECT
6471  023626  001403                    BEQ     1$                      ;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                 ;
```

```
6855  025270  012703  000416              MOV     #416,R3                 ;
6856  025274  010104                      MOV     R1,R4                   ;
6857  025276  012737  030000  1  ...  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                                                        ;ERROR! GO TO ERROR IF TRAPPED
6916  025452                        T123D:
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                                                                          ;GO TO ERROR IF TRAPPED
7009  025740                          T124D:
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:
```

```
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
```

```
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 EPROR
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
```

```
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
```

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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$:  MOV     #TE1268,R1                ;SETUP POINTERS TO TABLES
7369
7370  027216  010137  001034          16$:  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  177776        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
```

```
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   16537   ;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
```

```
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                                                    ;NO GO TO ERROR
7752  030452  104000                        ERROR       ;ALL ERRORS TO TRAP TO EMT VECTOR
7753  030454  000756                        .WORD   756 ;UNIQUE ERROR NUMBER
7754  030456  001127                        .WORD   CPUERR ;ADDRESS OF ERROR MESSAGE
7755
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  031304  000004                          .WORD   4               ;TEST PSW
7985  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 V CTOR
8081  031612  012767  031654  146164      MOV     #MTRYA,4        ;SETUP HE STACK OVERFLOW TRAP POINTER
8082  031620  016701  146322              MOV     146,R1          ;SAVE CTOR
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
```

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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     SLOC01,4                ;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  145402                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     #EMT08,4                        ;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                          EMT08:
 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     #TRP08,4                        ;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                      TRP0B:
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     #BPT0A,14                       ;SETUP ERROR ACTION ON BPT
8278  032574  016767  145204  146230      MOV     4,SLOC01                        ;SAVE VECTOR
8279  032602  012767  032632  145174      MOV     #BPT0B,4                        ;SETUP CORRECT TRAP VECTOR FOR
8280                                                                              ;OVERFLOW
8281  032610  000003                      BPT                                     ; TEST INSTRUCTION
8282  032612  000240                      NOP
8283  032614  010637  001062      BPT0A:  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                  ;INCRE ÆNT 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     #ILB0B,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                        ILB08:
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     #ILLB08,4               ;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        ILLB08: 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
```

```
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                            MTTS:
8419                                    ;;**********************************************************************
8420                                    ;*TEST 232       TEST T-BIT TRAPS WITH RTT
8421                                    ;;**********************************************************************
8422  033312                            TST232:
```

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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
```

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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
```

```
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     #MRT0B,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  MRT0B:  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:
```

```
                                ;;*****************************************************************
                                ;*TEST 236       TEST TRAP INST
                                ;;*****************************************************************
034070                          TST236:
034070  005267  144710                  INC     $TESTN                  ;INCREMENT TEST NUMBER
034074  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
034100  016767  143730  144722          MOV     34,SLOC00               ;SAVE OLD  VECTOR
034106  012767  034132  143720          MOV     #MTPB,34                ;SETUP NEW TRAP VECTOR
034114  005067  143656                  CLR     PS                      ;CLEAR PRIORITY ABND COND C
034120  000257                          CCC
034122  104400                          TRAP
                                                                        ;DIDNT TAKE CORRECT TRAP
034124                          MTPR:
034124  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
034126  001043                          .WORD   1043                    ;UNIQUE ERROR NUMBER
034130  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
034132  022706  000774          MTPB:   CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
034136  001403                          BEQ     MTPQ                    ;BRANCH IF GOOD
                                                                        ;BAD PC ON STACK
034140  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
034142  001044                          .WORD   1044                    ;UNIQUE ERROR NUMBER
034144  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
034146  021627  034124          MTPQ:   CMP     (R6),#MTPR              ;VERFY PROPER PC ON STACK
034152  001403                          BEQ     MTPF                    ;BRANCH IF GOOD
                                                                        ;INCORRECT PC ON STACK
034154  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
034156  001045                          .WORD   1045                    ;UNIQUE ERROR NUMBER
034160  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
034162                          MTPF:
034162  016767  144642  143644          MOV     SLOC00,34               ;RESTORE VECTOR
034170  012706  001000                  MOV     #STBOT,R6
                                ;
                                ;
034174                          MTPO:
                                ;;*****************************************************************
                                ;*TEST 237       TEST OLD STATUS SAVED ON TRAP
                                ;;*****************************************************************
034174                          TST237:
034174  005267  144604                  INC     $TESTN                  ;INCREMENT TEST NUMBER
034200  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
034204  016767  143624  144616          MOV     34,SLOC00               ;SAVE OLD  VECTOR
034212  012767  034236  143614          MOV     #MTPOB,34               ;SETUP NEW TRAP VECTOR
034220  005067  143552                  CLR     PS                      ;CLEAR PRIORITY AND COND C
034224  000257                          CCC
034226  104400                          TRAP
                                                                        ;DIDNT TAKE CORRECT TRAP
034230                          MTPOA:
034230  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
034232  001046                          .WORD   1046                    ;UNIQUE ERROR NUMBER
034234  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
034236  026727  144534  000000  MTPOB:  CMP     STBOT-2,#0              ;VERIFY PSW ON STACK
034244  001403                          BEQ     MTPOC                   ;BRANCH IF CORRECT STATUS
                                                                        ;BAD STATUS ON STACK
034246  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
034250  001047                          .WORD   1047                    ;UNIQUE ERROR NUMBER
```

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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                   ;B ANCH 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                                                        ;DIDNT TAKE CORRECT TRAP
8761  034630                          MITOA:
8762  034630  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
8763  034632  001057                          .WORD   1057                ;UNIQUE ERROR NUMBER
8764  034634  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
8765  034636  026727  144134  000000  MITOB:  CMP     STBOT-2,#0          ;VERIFY PSW ON STACK
8766  034644  001403                          BEQ     MITOC               ;BRANCH IF CORRECT STATUS
8767                                                        ;BAD STATUS ON STACK
8768  034646  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
8769  034650  001060                          .WORD   1060                ;UNIQUE ERROR NUMBER
8770  034652  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
8771  034654  012706  001000          MITOC:  MOV     #STBOT,R6           ;SETUP STACK
8772  034660  012767  034706  143132        MOV     #MITOE,20           ;SET UP TRAP VECTOR
8773  034666  012767  000357  143102        MOV     #357,PS             ;SET PRIORITY
8774  034674  000277                        SCC                         ;SET CONDITION CODES
8775  034676  000004                        IOT
8776                                                        ;DIDNT TAKE CORRECT TRAP
8777  034700                          MITOD:
8778  034700  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
8779  034702  001061                          .WORD   1061                ;UNIQUE ERROR NUMBER
8780  034704  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
8781  034706  026727  144064  000357  MITOE:  CMP     STBOT-2,#357        ;VERIFY OLD PSW ON STACK
8782  034714  001403                          BEQ     MITOF               ;BRANCH IF GOOD
8783                                                        ;OLD PSW INCORRECT
8784  034716  104000                          ERROR                       ;ALL ERRORS TO TRAP TO EMT VECTOR
8785  034720  001062                          .WORD   1062                ;UNIQUE ERROR NUMBER
8786  034722  001127                          .WORD   CPUERR              ;ADDRESS OF ERROR MESSAGE
8787  034724                          MITOF:
8788  034724  016767  144100  143066        MOV     SLOC00,20           ;RESTORE VECTOR
8789  034732  012706  001000                MOV     #STBOT,R6
8790
8791                                        ;
8792  034736                          MET:
8793                                        ;;*****************************************************************
8794                                        ;*TEST 243      TEST EMULATOR TRAP INSTRUCTION  (EMT)
8795                                        ;;*****************************************************************
8796  034736                          TST243:
8797  034736  005267  144042                INC     #TESTN                  ;INCREMENT TEST NUMBER
8798  034742  012706  001000                MOV     #STBOT,R6               ;SETUP STACK
8799  034746  016767  143056  144054        MOV     30,SLOC00               ;SAVE OLD  VECTOR
8800  034754  012767  035006  143046        MOV     #METB,30                ;SETUP NEW EMT VECTOR
8801  034762  016767  143046  144042        MOV     34,SLOC01               ;SAVE TRAP VECTOR
8802  034770  012767  043470  143036        MOV     #!ERROR,34              ;SET UP TO HANDLE EMT ERROR
8803  034776  104000                        EMT
8804                                                        ;DIDNT TAKE CORRECT TRAP
8805  035000                          META:
8806  035000  104400                        TRAP                            ;ERROR TRAP
8807  035002  001063                        .WORD   1063                    ;ERROR NUMBER
8808  035004  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
8809  035006  022706  000774          METB:  CMP     #STBOT-4,R6             ;VERIFY SP DECRIMENT
8810  035012  001403                        BEQ     METD                    ;BRANCH IF GOOD
8811                                                        ;BAD PC ON STACK
8812  035014  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
8813  035016  001064                        .WORD   1064                    ;UNIQUE ERROR NUMBER
8814  035020  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
```

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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 ERRORS 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:
```

```
                                ;;*****************************************************************
                                ;*TEST 250      TEST OLD STATUS ON ILLEGAL JUMP TRAP
                                ;;*****************************************************************
035602                          TST250:
035602  005267  143176                  INC     $TESTN                  ;INCREMENT TEST NUMBER
035606  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
035612  016767  142172  143210          MOV     10,SLOC00               ;SAVE OLD  VECTOR
035620  012767  035646  142162          MOV     #MILOB,10               ;SETUP NEW ILLEGAL VECTOR
035626  005067  142144                  CLR     PS                      ;CLEAR PRIORITY AND COND C
035632  000257                          CCC
035634  005001                          CLR     R1
035636  000101                          JMP     R1
                                                                        ;DIDNT TAKE CORRECT TRAP
035640                          MILOA:
035640  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
035642  001104                          .WORD   1104                    ;UNIQUE ERROR NUMBER
035644  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
035646  026727  143124  000004  MILOB:  CMP     STBOT-2,#4              ;VERIFY PSW ON STACK
035654  001403                          BEQ     MILOC                   ;BRANCH IF CORRECT STATUS
                                                                        ;BAD STATUS ON STACK
035656  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
035660  001105                          .WORD   1105                    ;UNIQUE ERROR NUMBER
035662  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
035664  012706  001000          MILOC:  MOV     #STBOT,R6               ;SETUP STACK
035670  012767  035716  142112          MOV     #MILOE,10               ;SET UP TRAP VECTOR
035676  012767  000357  142072          MOV     #357,PS                 ;SET PRIORITY
035704  000277                          SCC                             ;SET CONDITION CODES
035706  000101                          JMP     R1
                                                                        ;DIDNT TAKE CORRECT TRAP
035710                          MILOD:
035710  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
035712  001106                          .WORD   1106                    ;UNIQUE ERROR NUMBER
035714  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
035716  026727  143054  000357  MILOE:  CMP     STBOT-2,#357            ;VERIFY OLD PSW ON STACK
035724  001403                          BEQ     MILOF                   ;BRANCH IF GOOD
                                                                        ;OLD PSW INCORRECT
035726  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
035730  001107                          .WORD   1107                    ;UNIQUE ERROR NUMBER
035732  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
035734                          MILOF:
035734  016767  143070  142046          MOV     SLOC00,10               ;RESTORE VECTOR
035742  012706  001000                  MOV     #STBOT,R6
                                ;
                                ;
035746                          MIALL:
                                ;;*****************************************************************
                                ;*TEST 251      TEST ILLEGAL JSR INSTRUCTION TRAP
                                ;;*****************************************************************
035746                          TST251:
035746  005267  143032                  INC     $TESTN                  ;INCREMENT TEST NUMBER
035752  012706  001000                  MOV     #STBOT,R6               ;SETUP STACK
035756  016767  142026  143044          MOV     10,SLOC00               ;SAVE OLD  VECTOR
035764  012767  036004  142016          MOV     #MIALLB,10              ;SETUP NEW ILLEGAL VECTOR
035772  005003                          CLR     R3
035774  004303                          JSR     R3,R3
```

```
9039                                                    ;DIDNT TAKE CORRECT TRAP
9040  035776                            MIALLA:
9041  035776  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9042  036000  001110                            .WORD   1110            ;UNIQUE ERROR NUMBER
9043  036002  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
9044  036004  022706  000774          MIALLB:   CMP     #STBOT-4,R6     ;VERIFY SP DECREMENT
9045  036010  001403                            BEQ     MIALLD          ;BRANCH IF GOOD
9046                                                                    ;BAD PC ON STACK
9047  036012  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9048  036014  001111                            .WORD   1111            ;UNIQUE ERROR NUMBER
9049  036016  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
9050  036020  021627  035776          MIALLD:   CMP     (R6),#MIALLA    ;VERIFY PROPER PC ON STACK
9051  036024  001403                            BEQ     MIALLF          ;BRANCH IF GOOD
9052                                                                    ;INCORRECT PC ON STACK
9053  036026  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9054  036030  001112                            .WORD   1112            ;UNIQUE ERROR NUMBER
9055  036032  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
9056  036034  016767  142770  141746  MIALLF:   MOV     SLOC00,10       ;RESTORE VECTOR
9057  036042  012706  001000                    MOV     #STBOT,R6
9058
9059                                    ;
9060                                    ;
9061  036046                            MJSI:
9062                                    ;;**************************************************************
9063                                    ;*TEST 252      TEST OLD STATUS ON ILLEGAL JSR TRAP
9064                                    ;;**************************************************************
9065  036046                            TST252:
9066  036046  005267  142732                    INC     $TESTN          ;INCREMENT TEST NUMBER
9067  036052  012706  001000                    MOV     #STBOT,R6       ;SETUP STACK
9068  036056  016767  141726  142744            MOV     10,SLOC00       ;SAVE OLD  VECTOR
9069  036064  012767  036112  141716            MOV     #MJSIB,10       ;SETUP NEW VECTOR
9070  036072  005067  141700                    CLR     PS              ;CLEAR PRIORITY AND COND C
9071  036076  000257                            CCC
9072  036100  005003                            CLR     R3
9073  036102  004303                            JSR     R3,R3
9074                                                                    ;DIDNT TAKE CORRECT TRAP
9075  036104                            MJSIA:
9076  036104  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9077  036106  001113                            .WORD   1113            ;UNIQUE ERROR NUMBER
9078  036110  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
9079  036112  026727  142660  000004  MJSIB:   CMP     STBOT-2,#4      ;VERIFY PSW ON STACK
9080  036120  001403                            BEQ     MJSIC           ;BRANCH IF CORRECT STATUS
9081                                                                    ;BAD STATUS ON STACK
9082  036122  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9083  036124  001114                            .WORD   1114            ;UNIQUE ERROR NUMBER
9084  036126  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
9085  036130  012706  001000          MJSIC:    MOV     #STBOT,R6       ;SETUP STACK
9086  036134  012767  036162  141646            MOV     #MJSIE,10       ;SET UP TRAP VECTOR
9087  036142  012767  000357  141626            MOV     #357,PS         ;SET PRIORITY
9088  036150  000277                            SCC                     ;SET CONDITION CODES
9089  036152  004303                            JSR     R3,R3
9090                                                                    ;DIDNT TAKE CORRECT TRAP
9091  036154                            MJSID:
9092  036154  104000                            ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9093  036156  001115                            .WORD   1115            ;UNIQUE ERROR NUMBER
9094  036160  001127                            .WORD   CPUERR          ;ADDRESS OF ERROR MESSAGE
```

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 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
```

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 9151  036346  016767  141432  142454          MOV     4,SLOC00                ;SAVE VECTOR
 9152  036354  012767  036414  141422          MOV     #2$,4                   ;SET UP VECTOR TO HANDLE ODD ADDR TRAP
 9153  036362  016767  141420  142442          MOV     6,SLOC01                ;SAVE VECTOR
 9154  036370  005067  141412                  CLR     6                       ;INIT VECTOR
 9155  036374  012746  030000                  MOV     #30000,-(SP)            ;PUSH A KNOWN PSW ON THE STACK
 9156  036400  012746  036407                  MOV     #1$+1,-(SP)             ;PUSH AN ODD NUMBER ON THE STACK
 9157  036404  000002                          RTI                             ;POP ODD ADDRESS OFF STACK INTO PC
 9158                                                                          ;SHOULD TRAP HERE
 9159  036406                          1$:
 9160  036406  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9161  036410  001123                          .WORD   1123                    ;UNIQUE ERROR NUMBER
 9162  036412  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9163  036414  022767  000100  141344  2$:     CMP     #BIT06,CPEREG           ;IS CPU ERROR REGISTER CORRECT?
 9164  036422  001403                          BEQ     3$
 9165  036424  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9166  036426  001124                          .WORD   1124                    ;UNIQUE ERROR NUMBER
 9167  036430  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9168  036432  022726  036407          3$:     CMP     #1$+1,(SP)+             ;IS STACK CONTENTS CORRECT?
 9169  036436  001403                          BEQ     4$                      ;
 9170  036440  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9171  036442  001125                          .WORD   1125                    ;UNIQUE ERROR NUMBER
 9172  036444  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9173  036446  022726  030000          4$:     CMP     #30000,(SP)+            ;IS PSW CORRECT ON STACK?
 9174  036452  001403                          BEQ     5$                      ;
 9175  036454  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9176  036456  001126                          .WORD   1126                    ;UNIQUE ERROR NUMBER
 9177  036460  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9178  036462  005067  141300          5$:     CLR     CPEREG                  ;CLEAR CPU ERROR REG
 9179                                          ;
 9180                                          ;NOW WE'LL TRY TO FETCH AN INSTRUCTION FROM AN INTERNAL REGISTER.
 9181                                          ;THIS SHOULD CAUSE A TRAP TO ADDR 4 AND SET BIT 6 IN THE CPU
 9182                                          ;ERROR REGISTER.
 9183                                          ;
 9184  036466  012767  036520  141310          MOV     #7$,4                   ;LOAD VECTOR WITH TRAP HANDLER ADDR
 9185  036474  012767  030340  141304          MOV     #30340,6                ;LOAD VEC WITH PSW VALUE ON TRAP
 9186  036502  005067  141270                  CLR     PS                      ;CLEAR THE PSW
 9187  036506  000167  141264                  JMP     PS                      ;********TEST INSTRUCTION********
 9188                                                                          ;TRY INSTRUCTION FETCH FROM INTERNAL
 9189                                                                          ;REGISTER-- SHOULD TRAP VIA ADDR 4
 9190  036512                          6$:
 9191  036512  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9192  036514  001127                          .WORD   1127                    ;UNIQUE ERROR NUMBER
 9193  036516  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9194  036520  016701  141252          7$:     MOV     PS,R1                   ;SAVE CONTENTS OF PSW IN R1
 9195  036524  022767  000100  141234          CMP     #BIT06,CPEREG           ;IS CPU ERROR REGISTER CORRECT?
 9196  036532  001403                          BEQ     8$                      ;
 9197                                                                          ;ERROR! CPU ERROR REG NOT CORRECT
 9198  036534  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9199  036536  001130                          .WORD   1130                    ;UNIQUE ERROR NUMBER
 9200  036540  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9201  036542  022726  177776          8$:     CMP     #PS,(SP)+               ;IS STACK CONTENTS CORRECT?
 9202  036546  001403                          BEQ     9$                      ;
 9203  036550  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9204  036552  001131                          .WORD   1131                    ;UNIQUE ERROR NUMBER
 9205  036554  001127                          .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9206  036556  022726  000000          9$:     CMP     #0,(SP)+                ;IS STACK CONTENTS CORRECT?
```

```
 9207  036562  001403                    BEQ     10$                     ;
 9208  036564  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9209  036566  001132                    .WORD   1132                    ;UNIQUE ERROR NUMBER
 9210  036570  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9211  036572  022701  000340      10$:  CMP     #340,R1                 ;WAS PSW LOADED PROPERLY ON TRAP?
 9212  036576  001403                    BEQ     11$                     ;
 9213  036600  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9214  036602  001133                    .WORD   1133                    ;UNIQUE ERROR NUMBER
 9215  036604  001127                    .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9216  036606  005067  141154      11$:  CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 9217  036612  016767  142212  141164    MOV     SLOC00,4                ;RESTORE VECTOR
 9218  036620  016767  142206  141160    MOV     SLOC01,6                ;       "
 9219
 9220
 9221                              ;;*****************************************************************
 9222                              ;*TEST 255      RED ZONE TRAP TEST
 9223                              ;;*****************************************************************
 9224  036626                      TST255:
 9225  036626  005267  142152            INC     $TESTN                  ;INCREMENT TEST NUMBER
 9226  036632  013767  000004  142170    MOV     @#4,SLOC00              ;SAVE VECTOR
 9227  036640  012737  036722  000004    MOV     #21$,@#4                ;SET UP VECTOR
 9228  036646  005001                    CLR     R1                      ;CLEAR R1 FOR USE AS A COUNTER
 9229  036650  012706  000777      10$:  MOV     #777,R6                 ;SET UP THE STACK WITH ODD ADDRESS.
 9230  036654  005067  141106            CLR     CPEREG                  ;CLEAR THE CPU ERROR REGISTER
 9231  036660  005067  141112            CLR     PSW                     ;CLEAR THE PSW
 9232  036664  005737  177700            TST     @#177700                ;ACCESS NON-EXISTANT I/O ADDRESS
 9233  036670  012706  001000      1$:   MOV     #STBOT,R6               ;FIX STACK BEFORE ERROR
 9234  036674  122737  000001  001020    CMPB    #APTENV,@#ENV           ;ARE WE IN APT MODE?
 9235  036702  001004                    BNE     11$                     ;NO GO TO ERROR
 9236  036704  005701                    TST     R1                      ;HAVE WE BEEN THIS WAY BEFORE?
 9237  036706  001002                    BNE     11$                     ;GO TO ERROR IF R1 NOT= 0
 9238  036710  005201                    INC     R1                      ;NO, GIVE IT ONE MORE CHANCE IN CASE
 9239  036712  000756                    BR      10$                     ;APT MONITORED AND SCREWED THINGS UP
 9240  036714                      11$:
 9241  036714  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9242  036716  001134                    .WORD   1134                    ;UNIQUE ERROR NUMBER
 9243  036720  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9244  036722  022706  000000      2$:   CMP     #0,SP                   ;IS R6 CORRECT?
 9245  036726  001405                    BEQ     3$                      ;BRANCH IF YES
 9246  036730  012706  001000            MOV     #STBOT,R6               ;RESTORE R6 BEFORE ERROR
 9247  036734  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9248  036736  001135                    .WORD   1135                    ;UNIQUE ERROR NUMBER
 9249  036740  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9250  036742  022726  036670      3$:   CMP     #1$,(SP)+               ;IS DATA AT ADDR 0 CORRECT?
 9251  036746  001405                    BEQ     4$                      ;BRANCH IF YES
 9252  036750  012706  001000            MOV     #STBOT,R6               ;RESTORE R6 BEFORE ERROR
 9253  036754  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9254  036756  001136                    .WORD   1136                    ;UNIQUE ERROR NUMBER
 9255  036760  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9256  036762  022716  000000      4$:   CMP     #0,(SP)                 ;IS PSW DATA IN ADDR 2 CORRECT?
 9257  036766  001405                    BEQ     5$                      ;BRANCH IF YES
 9258  036770  012706  001000            MOV     #STBOT,R6               ;RESTORE R6 BEFORE ERROR
 9259  036774  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9260  036776  001137                    .WORD   1137                    ;UNIQUE ERROR NUMBER
 9261  037000  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9262  037002  022767  000124  140756  5$:   CMP     #124,CPEREG             ;IS CPU ERROR REGISTER CORRECT?
```

```
9263  037010  001403                        BEQ     6$                      ;BRANCH IF YES
9264  037012  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9265  037014  001140                        .WORD   1140                    ;UNIQUE ERROR NUMBER
9266  037016  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9267  037020  005067  140742        6$:     CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
9268  037024  012706  001000              MOV     #STBOT,SP               ;RESTORE STACK
9269  037030  016737  141774  000004      MOV     SLOC00,@#4              ;RESTORE VECTOR
9270  037036  005037  000000              CLR     @#0                     ;RESTORE ADDR 0
9271  037042  005037  000002              CLR     @#2                     ;RESTORE ADDR 2
9272
9273
9274
9275                                  ;;*****************************************************************
9276                                  ;*TEST 256       TEST PIRQ REGISTER RESPONSE
9277                                  ;;*****************************************************************
9278  037046                          TST256:
9279  037046  005267  141732                INC     $TESTN                  ;INCREMENT TEST NUMBER
9280  037052  016767  140726  141750        MOV     4,SLOC00                ;SAVE CONTENTS OF VECTORS
9281  037060  012767  037106  140716        MOV     #PIRQNX,4               ;SETUP INTERRUPT VECTOR
9282  037066  005067  140674              CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
9283  037072  005737  177772              TST     @#PIRQ                  ;LOOK FOR REPLY FROM PIRQ
9284  037076  016767  141726  140700        MOV     SLOC00,4                ;RESTORE VECTORS
9285  037104  000403                        BR      PIRTEX                  ;IF IT RESPONDS, CONTINUE TESTING.
9286                                                                        ;ERROR! NO RESPONSE FROM PIRQ REG
9287  037106                          PIRQNX:
9288  037106  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9289  037110  001141                        .WORD   1141                    ;UNIQUE ERROR NUMBER
9290  037112  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9291  037114                          PIRTEX:
9292
9293
9294  037114                          PIR1:
9295                                  ;;*****************************************************************
9296                                  ;*TEST 257       TEST . .RQ REGISTER DATA
9297                                  ;;*****************************************************************
9298  037114                          TST257:
9299  037114  005267  141664                INC     $TESTN                  ;INCREMENT TEST NUMBER
9300  037120  013767  000240  141702        MOV     @#PIRQVEC,SLOC00        ;SAVE PIRQ VECTORS
9301  037126  013767  000242  141676        MOV     @#PIRQVEC+2,SLOC01      ;       "
9302  037134  012737  037346  000240        MOV     #UNXPIR,@#PIRQVEC       ;SET UP PIRQ VECTOR FOR UNEXPECTED INTERRUPT
9303  037142  012737  000340  000242        MOV     #PR7,@#PIRQVEC+2        ;
9304  037150  012703  001000              MOV     #1000,R3                ;PUT 1000 IN R3: START TESTING
9305                                                                        ;BITS IN PIRQ REG BY FLOATING
9306                                                                        ;A BIT THROUGH BITS 9-15.
9307  037154  012704  037230              MOV     #PIRTBL,R4              ;SET UP R4 AS A POINTER TO EXPECTED
9308                                                                        ;ENCODED PRIORITY LEVELS IN PIRTBL
9309  037160  000237                1$:     SPL     7                       ;DON'T ALLOW INTERRUPTS.
9310  037162  005037  177772              CLR     @#PIRQ                  ;CLEAR OUT THE PIRQ
9311  037166  023724  177772              CMP     @#PIRQ,(R4)+            ;IS PIRQ OK??
9312  037172  001403                        BEQ     2$                      ;BRANCH IF OK
9313                                                                        ;ERROR; PIRQ REG WAS NOT CLEAR
9314  037174  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9315  037176  001142                        .WORD   1142                    ;UNIQUE ERROR NUMBER
9316  037200  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9317  037202  010337  177772        2$:     MOV     R3,@#PIRQ               ;SET A BIT IN PIRQ REGISTER
9318  037206  023724  177772              CMP     @#PIRQ,(R4)+            ;COMPARE THE ENCODED PRIORITY BITS
```

```
                                                                ;WITH DATA IN THE TABLE (PIRTBL)
037212  001403                          BEQ     3$              ;BRANCH IF ITS OK
                                                                ;ERROR; ENCODED PRIORITY LEVELS ARE
                                                                ;NOT CORRECT
037214  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
037216  001143                          .WORD   1143            ;UNIQUE ERROR NUMBER
037220  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
037222  006303                  3$:     ASL     R3              ;FLOAT A "1" THRU BITS 9-15
037224  103366                          BCC     2$              ;IF CARRY BIT ISN'T SET, DO AGAIN.
037226  000410                          BR      EXPIR1          ;GO TO EXIT TEST.

037230  000000                  PIRTBL: .WORD   0
037232  001042                          .WORD   1042
037234  002104                          .WORD   2104
037236  004146                          .WORD   4146
037240  010210                          .WORD   10210
037242  020252                          .WORD   20252
037244  040314                          .WORD   40314
037246  100356                          .WORD   100356

037250                          EXPIR1:


037250                          PIR2:
                                ;;*****************************************************************
                                ;*TEST 260      TEST PIRQ REGISTER LEVEL ENCODING
                                ;;*****************************************************************
                                ;THIS TEST IS TO CHECK THAT THE HIGHEST PRIORITY LEVEL SET IN THE
                                ;PROGRAM INTERRUPT REQUEST BITS IS REFLECTED IN THE ENCODED PROGRAM
                                ;INTERRUPT ACTIVE BITS.
                                ;;*****************************************************************
037250                  TST260:
037250  005267  141530                 INC     $TESTN          ;INCREMENT TEST NUMBER
037254  000237                         SPL     7               ;SHUT OFF INTERRUPTS
037256  005037  177772                 CLR     @#PIRQ          ;CLEAR PIRQ REGISTER
037262  012703  177000                 MOV     #177000,R3      ;SET UP DESIRED PATTERN IN R3
037266  012704  037326                 MOV     #PITBL1,R4      ;SETUP R4 AS A TABLE POINTER
037272  010337  177772         1$:     MOV     R3,@#PIRQ       ;SET PATERN IN PIRQ REGISTER

037276  023714  177772                 CMP     @#PIRQ,(R4)     ;COMPARE PATTERN IN PIRQ WITH PATTERN IN
                                                                ;EXPECTED PATTERN TABLE.
037302  001403                         BEQ     2$              ;GO TO ERROR IF NOT THE SAME
                                                                ;ERROR; PATTERNS WERE NOT THE SAME
037304  104000                         ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
037306  001144                         .WORD   1144            ;UNIQUE ERROR NUMBER
037310  001160                         .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
037312  006003                 2$:     ROR     R3              ;SHIFT PATTERN TO RIGHT FOR NEXT TEST
037314  042703  000777                 BIC     #777,R3         ;STRIP OFF BITS  8-0
037320  005724                         TST     (R4)+           ;WAS THE LAST PATTERN ZEROS?
037322  001363                         BNE     1$              ;IF NOT = 0 GO DO THE NEXT PATTERN
037324  000413                         BR      PIR2EX          ;BRANCH IF DONE

037326  177356  077314  037252 PITBL1: .WORD   177356,77314,37252,17210,7146,3104,1042,0
037334  017210  007146  003104
037342  001042  000000
```

```
9375
9376  037346                          UNXPIR:                         ;UNEXPECTED PIRQ INTERRUPT
9377  037346  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9378  037350  001145                          .WORD   1145            ;UNIQUE ERROR NUMBER
9379  037352  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
9380
9381  037354                          PIR2EX:
9382
9383
9384  037354                          PIR3:
9385                                  ;;*****************************************************************
9386                                  ;*TEST 261      TEST PIRQ INTERRUPTS
9387                                  ;;*****************************************************************
9388                                  ;THIS TEST CHECKS THAT EACH PROGRAM INTERRUPT OCCURS PROPERLY
9389                                  ;;*****************************************************************
9390  037354                          TST261:
9391  037354  005267  141424                 INC     $TESTN          ;INCREMENT TEST NUMBER
9392  037360  012703  001000                 MOV     #1000,R3        ;SETUP R3 AS A WORKING REGISTER
9393  037364  012737  037432  000240         MOV     #PIRRTN,@#PIRQVEC       ;SET UP INTERRUPT ROUTINE AT PIR VECTOR
9394  037372  012737  000340  000242         MOV     #340,@#PIRQVEC+2        ;       "       "       "       "
9395  037400  005004                         CLR     R4              ;INITIALIZE R4 AS EXPECTED DATA HOLDER.
9396  037402  005724                 PI1:    TST     (R4)+           ;INCREMENT R4 BY 2
9397  037404  050337  177772                 BIS     R3,@#PIRQ       ;SET PIRQ TO INTERRUPT
9398  037410  000230                         SPL     0               ;ENABLE INTERRUPT TO OCCUR
9399                                                                 ;ERROR! INTERRUPT DID NOT OCCUR
9400  037412  104000                         ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9401  037414  001146                         .WORD   1146            ;UNIQUE ERROR NUMBER
9402  037416  001160                         .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
9403  037420  062706  000004         PI3:    ADD     #4,SP           ;CLEAN UP THE STACK
9404  037424  006303                         ASL     R3              ;SHIFT R3 TO LEFT FOR NEXT INTERRUPT
9405  037426  103365                         BCC     PI1             ;END IF CARRY BIT IS SET
9406  037430  000415                         BR      PIR3EX          ;ON TO THE NEXT TEST
9407
9408  037432  013705  177772         PIRRTN: MOV     @#PIRQ,R5       ;MOVE THE CONTENTS OF PIRQ REG TO R5
9409  037436  005037  177772                 CLR     @#PIRQ          ;KILL PIRQ INTERRUPT.
9410  037442  042705  177761                 BIC     #177761,R5      ;MASK OFF ALL BITS EXCEPT 1-4.
9411  037446  020405                         CMP     R4,R5           ;DID THE CORRECT LEVEL INTERRUPT OCCUR?
9412  037450  001403                         BEQ     PI2             ;IF YES RETURN FROM SUCCESSFUL
9413                                                                 ;INTERRUPT,GET READY FOR THE NEXT ONE.
9414                                                                 ;ERROR! INTERRUPT OCCURRED IN WRONG SEQUENCE
9415  037452  104000                         ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
9416  037454  001147                         .WORD   1147            ;UNIQUE ERROR NUMBER
9417  037456  001160                         .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
9418  037460  000167  177734         PI2:    JMP     PI3             ;GET NEXT INTERRUPT
9419
9420  037464                          PIR3EX:
9421
9422
9423
9424  037464                          PIR4:
9425                                  ;;*****************************************************************
9426                                  ;*TEST 262      TEST PIRQ VS PSW INTERRUPT LEVEL
9427                                  ;;*****************************************************************
9428                                  ;THIS TEST IS TO ENSURE THAT PIRQ CANNOT INTERRUPT WHEN PSW INTERRUPT
9429                                  ;LEVEL IS SET TO BLOCK THEM OUT.
9430                                  ;;*****************************************************************
```

```
9431  037464                          TST262:
9432  037464  005267  141314                  INC     #TESTN                  ;INCREMENT TEST NUMBER
9433  037470  005037  177772                  CLR     @#PIRQ                  ;CLEAR THE PIRQ
9434  037474  005037  177776                  CLR     @#PSW                   ;CLEAR THE PSW.
9435  037500  000237                          SPL     7                       ;BLOCK INTERRUPTS FROM BEING SERVICED.
9436  037502  012703  001000                  MOV     #1000,R3                ;USE R3 AS A WORKING REGISTER.
9437  037506  012737  037540  000240          MOV     #2$,@#PIRQVEC           ;SETUP INTERRUPT VECTORS
9438  037514  012737  000340  000242          MOV     #340,@#PIRQVEC+2        ;
9439  037522  010337  177772          1$:     MOV     R3,@#PIRQ               ;SET INTERRUPT LEVEL IN PIRQ.
9440  037526  006303                          ASL     R3                      ;SHIFT A "1" LEFT TO INCREASE INTERRUPT
9441                                                                          ;PRIORITY LEVEL.
9442  037530  103374                          BCC     1$                      ;IF C BIT NOT SET THEN DO IT AGAIN.
9443  037532  005037  177772                  CLR     @#PIRQ                  ;ELSE CLEAR THE PIRQ
9444  037536  000405                          BR      3$                      ;EXIT TEST.
9445
9446  037540  005037  177772          2$:     CLR     @#PIRQ                  ;STOP PIRQ FROM INTERRUPTING.
9447                                                                          ;ERROR! NO INTERRUPTS SHOULD OCCUR.
9448  037544  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9449  037546  001150                          .WORD   1150                    ;UNIQUE ERROR NUMBER
9450  037550  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9451  037552                          3$:
9452
9453
9454
9455  037552                          PIRS:
9456                                  ;;*****************************************************************
9457                                  ;*TEST 263      TEST PIRQ INTERRUPTS OCCUR AT PROPER LEVEL
9458                                  ;;*****************************************************************
9459                                  ;THIS TEST ENSURES THAT INTERRUPTS OCCUR AT THE PROPER LEVEL
9460                                  ;THE PRIORITY LEVEL IS INITIALLY SET TO PRI6. THE PIRQ THEN STARTS INTERRUPTING
9461                                  ;AT PRI1. NO INTERRUPTS SHOULD OCCUR UNTIL THE INTERRUPTING LEVEL EXCEEDS THE
9462                                  ;PRIORITY LEVEL IN THE PSW. AFTER EACH LEVEL OF INTERRUPT HAS BEEN TRIED; THE
9463                                  ;PSW PRIORITY LEVEL IS LOWERED ONE NOTCH, AND THE CYCLE REPEATS UNTIL PSW
9464                                  ;PRIORITY LEVEL 0 IS REACHED. INTERRUPTS AT PSW PRIORITY LEVEL 0 HAVE BEEN DONE
9465                                  ;PREVIOUSLY.
9466                                  ;;*****************************************************************
9467  037552                          TST263:
9468  037552  005267  141226                  INC     #TESTN                  ;INCREMENT TEST NUMBER
9469  037556  005037  177772                  CLR     @#PIRQ                  ;CLR THE PIRQ
9470  037562  012737  037700  000240          MOV     #10$,@#PIRQVEC          ;SET UP INTERRUPT VECTORS
9471  037570  012737  000340  000242          MOV     #PR7,@#PIRQVEC+2        ;
9472  037576  012705  037766                  MOV     #PITBL2,R5              ;SETUP R5 AS A TABLE POINTER.
9473  037602  012737  000006  001054          MOV     #6,@#DCOUNT             ;INIT LOCATION DCOUNT:
9474  037610  005004                  1$:     CLR     R4                      ;INITIALIZE R4 AS A COUNTER.
9475  037612  012703  001000                  MOV     #1000,R3                ;USE R3 AS A WORKING REGISTER.
9476  037616  012567  140154                  MOV     (R5)+,PS                ;MOVE PRIORITY LEVEL TO PSW
9477  037622  005724                  3$:     TST     (R4)+                   ;INCREMENT R4 BY 2
9478  037624  010337  177772                  MOV     R3,@#PIRQ               ;SET INTERRUPT LEVEL IN PIRQ.
9479                                  ;*******INTERRUPTS WILL HAPPEN HERE*********
9480  037630  013701  177776                  MOV     @#PS,R1                 ;SAVE PS IN R1          !ONLY EXECUTED
9481  037634  013702  177772                  MOV     @#PIRQ,R2               ;SAVE PIRQ IN R2        !   IF NO
9482  037640  042701  177437                  BIC     #177437,R1              ;CLEAR EXTRANEOUS BITS  ! INTERRUPT
9483  037644  042702  177437                  BIC     #177437,R2              ;                       !   HAS
9484  037650  020102                          CMP     R1,R2                   ;R1 SHOULD BE >= R2     !  OCCURRED
9485  037652  002003                          BGE     4$                      ;IF IT IS GO ON         !--- ---
9486                                                                          ;ERROR! SHOULD HAVE INTERRUPTED.
```

```
9487  037654  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9488  037656  001151                    .WORD   1151                    ;UNIQUE ERROR NUMBER
9489  037660  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9490  037662  006303            4$:     ASL     R3                      ;SHIFT A "1" LEFT UNTIL INTERRUPT LEVEL
9491                                                                    ;IS REACHED.
9492  037664  103356                    BCC     3$                      ;BRANCH BACK IF CARRY IS NOT SET.
9493  037666  005337  001054            DEC     @#DCOUNT                ;LOWER INTERRUPT PRIORITY LEVEL
9494  037672  001346                    BNE     1$                      ;IF DCOUNT= 0 , WE'RE DONE.
9495  037674  000167  000102            JMP     PIR5EX                  ;JUMP TO END OF THIS TEST.
9496
9497                                    ;PIRQ INTERRUPT SERVICE ROUTINE
9498                                    ;
9499
9500  037700  013746  177772    10$:    MOV     @#PIRQ,-(SP)            ;SAVE PIRQ DATA ON STACK
9501  037704  005037  177772            CLR     @#PIRQ                  ;SHUT OFF PIRQ INTERRUPTS
9502  037710  016601  000004            MOV     4(SP),R1                ;GET OLD PSW. SAVE IN R1.
9503  037714  011602                    MOV     (SP),R2                 ;GET PIRQ FROM STACK.
9504  037716  042702  177437            BIC     #177437,R2              ;CLEAR UNWANTED BITS FROM R2
9505  037722  042701  177437            BIC     #177437,R1              ;CLEAR UNWANTED BITS FROM R1
9506  037726  020102                    CMP     R1,R2                   ;R2 SHOULD BE > R1.
9507  037730  100403                    BMI     20$                     ;GO CHECK SEQUENCE OF INTERRUPT.
9508                                                                    ;ERROR! PRIORITY OF INTERRUPT WAS NOT
9509                                                                    ;HIGH ENOUGH. SHOULDN'T HAVE OCCURRED.
9510  037732  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9511  037734  001152                    .WORD   1152                    ;UNIQUE ERROR NUMBER
9512  037736  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9513  037740  012602            20$:    MOV     (SP)+,R2                ;POP OLD PIRQ OFF THE STACK.
9514  037742  042702  177761            BIC     #177761,R2              ;CLEAR OFF EXTRANEOUS BITS.
9515  037746  020402                    CMP     R4,R2                   ;SHOULD BE EQUAL.
9516  037750  001403                    BEQ     21$                     ;IF THEY ARE EQUAL, CLEAN UP STACK AND
9517                                                                    ;GET READY FOR THE NEXT INTERRUPT
9518                                                                    ;ELSE
9519                                                                    ;ERROR! INTERRUPT OCCURRED OUT OF SEQUENCE.
9520  037752  104000                    ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9521  037754  001153                    .WORD   1153                    ;UNIQUE ERROR NUMBER
9522  037756  001160                    .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9523  037760  012716  037662    21$:    MOV     #4$,(SP)                ;PUT RETURN ADDRESS ON THE STACK.
9524  037764  000002                    RTI                             ;RETURN FROM INTERRUPT. RESTORE PSW.
9525
9526  037766  000300            PITBL2: .WORD   300             ;PRIORITY LEVEL 6
9527  037770  000240                    .WORD   240             ;PRIORITY LEVEL 5
9528  037772  000200                    .WORD   200             ;PRIORITY LEVEL 4
9529  037774  000140                    .WORD   140             ;PRIORITY LEVEL 3
9530  037776  000100                    .WORD   100             ;PRIORITY LEVEL 2
9531  040000  000040                    .WORD   40              ;PRIORITY LEVEL 1
9532
9533  040002                    PIR5EX:
9534
9535
9536
9537  040002                    PIR6:
9538                                    ;;*****************************************************************
9539                                    ;*TEST 264      TEST THAT PIRQS ARE SERVICED IN CORRECT ORDER
9540                                    ;;*****************************************************************
9541                                    ;THIS TEST CHECKS THAT ALL PIRQ INTERRUPTS ARE SERVICED
9542                                    ;IN THE CORRECT DECENDING ORDER. I.E. IRQ6 IS NOT SERVICED
```

```
                                ;BEFORE IRQ7 ETC. THE PIRQ IS LOADED WITH ALL INTERRUPTS SIMULTANEOUSLY
                                ;TURNED ON.  THE PSW PRIORITY LEVEL IS THEN LOWERED TO 0. EACH INTERRUPT
                                ;SHOULD BE SERVICED IN DECENDING ORDER. EACH TIME AN INTERRUPT OCCURRS, THE PSW
                                ;IS LOADED WITH PRIORITY LEVEL 7 WHICH STOPS THE PIRQ FROM FURTHER INTERRUPTS.
                                ;AFTER A CORRECT INTERRUPT, AN RTI IS EXECUTED, AND THE PSW PRIORITY LEVEL
                                ;RETRUNS TO ZERO ALLOWING THE NEXT LOWER INTERRUPT TO OCCUR.
                                ;;*****************************************************************
040002                          TST264:
040002  005267  140776                  INC     $TESTN                  ;INCREMENT TEST NUMBER
040006  005037  177772                  CLR     @#PIRQ                  ;CLEAR OUT THE PIRQ
040012  000237                          SPL     7                       ;NO INTERRUPTS WILL BE SERVICED.
040014  012737  040060  000240          MOV     #10$,@#PIRQVEC          ;SET UP VECTORS
040022  012737  000340  000242          MOV     #PR7,@#PIRQVEC+2        ;
040030  012703  177000                  MOV     #177000,R3              ;SETUP DESIRED PATTERN IN R3
040034  010337  177772                  MOV     R3,@#PIRQ               ;MOVE PATTERN IN R3 TO PIRQ.
040040  012704  000016                  MOV     #16,R4                  ;PRELOAD R4 AS A DECREMENTING COUNTER.
040044  000230                          SPL     0                       ;LET THE PIRQ INTERRUPT
                                ;*********INTERRUPTS OCCUR HERE'!!*********************
040046  005704                          TST     R4                      ;IS R4 ZERO? IT SHOULD BE. THIS
                                                                        ;INSTRUCTION SHOULDN'T BE EXECUTED
                                                                        ;UNTIL ALL INTERRUPTS HAVE OCCURRED.
040050  001423                          BEQ     PIR6EX                  ;GO TO NEXT TEST.
                                                                        ;ERROR! ALL INTERRUPTS DID NOT OCCUR.
040052  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
040054  001154                          .WORD   1154                    ;UNIQUE ERROR NUMBER
040056  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
040060  013702  177772          10$:    MOV     @#PIRQ,R2               ;SAVE THE PIRQ IN R2
040064  042702  177761                  BIC     #177761,R2              ;STRIP OFF EXTRANEOUS BITS.
040070  020402                          CMP     R4,R2                   ;SHOULD BE EQUAL.
040072  001403                          BEQ     15$                     ;SETUP FOR NEXT INTERRUPT.
                                                                        ;ERROR! INTERRUPT WAS SERVICED OUT OF ORDER
040074  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
040076  001155                          .WORD   1155                    ;UNIQUE ERROR NUMBER
040100  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
040102  005744                  15$:    TST     -(R4)                   ;DECREMENT R4 BY 2
040104  006003                          ROR     R3                      ;CHANGE PATTERN IN R3; LOWER INTERRUPT PRIORITY
040106  042703  000777                  BIC     #777,R3                 ;STRIP OFF UNNEEDED BITS
040112  010337  177772                  MOV     R3,@#PIRQ               ;LOWER INTERRUPT PRIORITY LEVEL.
040116  000002                          RTI                             ;
                                
040120  016737  140704  000240  PIR6EX: MOV     SLOC00,@#PIRQVEC        ;RESTORE VECTORS
040126  016737  140700  000242          MOV     SLOC01,@#PIRQVEC+2              ;       "
                                
                                
                                
                                ;;*****************************************************************
                                ;*TEST 265      SERIAL LINE UNIT INTERRUPT TEST
                                ;;*****************************************************************
040134                          TST265:
040134  005267  140644                  INC     $TESTN                  ;INCREMENT TEST NUMBER
040140  122767  000001  140652  1$:     CMPB    @APTENV,$ENV                    ;ARE WE IN APT MODE
040146  001003                          BNE     2$                              ;IF NOT THEN DO THIS TEST
040150  005767  140632                  TST     $PASS                           ;ELSE:SEE IF THIS IS THE FIRST PASS
040154  001057                          BNE     NOINTERRUPT                     ;IF NOT; SKIP THIS TEST
040156  012767  000340  137612  2$:     MOV     @PR7,PS                         ;SET PRIORITY LEVEL 7
```

```
 9599  040164  013767  000064  140636          MOV     @#TPVEC,SLOC00          ;SAVE TPVEC
 9600  040172  013767  000066  140632          MOV     @#TPVEC+2,SLOC01        ;       "
 9601  040200  012767  040236  137656          MOV     #4$,TPVEC               ;LOAD TTY PRINTER INTERRUPT VEC
 9602  040206  012767  000340  137652          MOV     #PR7,TPVEC+2            ;LOAD TTY PRINTER INTERRUPT VEC
 9603  040214  012767  000100  137342          MOV     #100,XCSR               ;ENABLE XMIT CSR INTERRUPT
 9604  040222  012737  000000  177776          MOV     #0,@#PSW                ;CLEAR CONDITION CODES
 9605                                                                          ;SET PRIORITY LEVEL TO 0
 9606                                                                          ;ERROR! NO INTERRUPT OCCURRED
 9607  040230                          3$:
 9608  040230  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 9609  040232  001156                          .WORD   1156            ;UNIQUE ERROR NUMBER
 9610  040234  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
 9611  040236  005067  137322          4$:     CLR     XCSR                    ;DON'T ALLOW ANY MORE TTY INTERRUPTS
 9612  040242  022716  040230                  CMP     #3$,(SP)                ;IS OLD PC CORRECT  IN SP?
 9613  040246  001403                          BEQ     5$                      ;BRANCH IF YES
 9614                                                                          ;ERROR!INCORRECT PC ON STACK
 9615  040250  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 9616  040252  001157                          .WORD   1157            ;UNIQUE ERROR NUMBER
 9617  040254  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
 9618  040256  022766  000000  000002  5$:     CMP     #0,2(SP)                ;IS OLD PSW CORRECT ON STACK?
 9619  040264  001403                          BEQ     6$                      ;BRANCH IF YES
 9620                                                                          ;ERROR! INCORRECT PSW ON STACK
 9621  040266  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 9622  040270  001160                          .WORD   1160            ;UNIQUE ERROR NUMBER
 9623  040272  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
 9624  040274  062706  000004          6$:     ADD     #4,R6                   ;RESET SP
 9625  040300  016737  140524  000064          MOV     SLOC00,@#TPVEC          ;RESTORE VECTORS
 9626  040306  016737  140520  000066          MOV     SLOC01,@#TPVEC+2        ;       "
 9627
 9628  040314                          NOINTERRUPT:
 9629
 9630
 9631
 9632  040314                          EVENT:
 9633                                  ;;*****************************************************************
 9634                                  ;*TEST 266       TEST BEVENT REGISTER RESPONSE
 9635                                  ;;*****************************************************************
 9636                                  ;THIS TEST LOOKS FOR A REPLY FROM THE BEVENT CONTROL REGISTER.
 9637                                  ;IF NO REPLY IS RECEIVED A TIME OUT TRAP OCCURS THRU LOC 000004
 9638                                  ;;*****************************************************************
 9639  040314                          TST266:
 9640  040314  005267  140464                  INC     $TESTN                  ;INCREMENT TEST NUMBER
 9641  040320  013701  000004          1$:     MOV     @#4,R1                  ;SAVE OLD VECTOR IN R1
 9642  040324  013702  000006                  MOV     @#6,R2                  ;SAVE LOC 6 IN R2
 9643  040330  012737  040366  000004          MOV     #2$,@#4                 ;SETUP TRAP THRU LOC 4
 9644  040336  012737  000340  000006          MOV     #340,@#6                ;IF BEVENT CTRL REG TIMES OUT
 9645  040344  005067  137416                  CLR     CPEREG                  ;CLEAR CPU ERROR REGISTER
 9646  040350  005737  177546                  TST     @#BEVENT                ;TEST FOR REPLY FROM BEVENT REG
 9647                                                                          ;WILL TRAP THRU LOC 4 IF NO REPLY
 9648  040354  010137  000004                  MOV     R1,@#4                  ;RESTORE VECTORS
 9649  040360  010237  000006                  MOV     R2,@#6                  ;
 9650  040364  000403                          BR      3$                      ;GO TO NEXT TEST.
 9651                                                                          ;ERROR! NO REPLY FROM BEVENT REGISTER.
 9652  040366                          2$:
 9653  040366  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
 9654  040370  001161                          .WORD   1161            ;UNIQUE ERROR NUMBER
```

```
9655  040372  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9656  040374                          3$:
9657
9658
9659                                  ;;*****************************************************************
9660                                  ;*TEST 267       TEST BIT 06 IN LKS
9661                                  ;;*****************************************************************
9662                                  ;THIS TEST CHECKS TO SEE THAT BIT06 IN THE BEVENT CONTROL REGISTER
9663                                  ;CAN BE SET. PSW IS SET TO PRIORITY 7 SO THAT NO INTERRUPT OCCURS.
9664                                  ;;*****************************************************************
9665  040374                          TST267:
9666  040374  005267  140404                 INC     $TESTN                  ;INCREMENT TEST NUMBER
9667  040400  032767  000100  137140         BIT     #BIT06,BEVENT           ;TEST BIT06 TO SEE IF CLEAR
9668  040406  001411                         BEQ     1$
9669  040410  005067  137132                 CLR     BEVENT                  ;CLEAR BEVENT REGISTER
9670  040414  032767  000100  137124         BIT     #BIT06,BEVENT           ;IS IT CLEARED NOW?
9671  040422  001403                         BEQ     1$                      ;BRANCH IF IT IS
9672                                                                          ;ERROR! BIT06 SET AFTER BEING CLEARED
9673  040424  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9674  040426  001162                         .WORD   1162                    ;UNIQUE ERROR NUMBER
9675  040430  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9676
9677  040432  000237                  1$:    SPL     7                       ;SET PSW TO PR7 TO BLOCK INTERRUPTS
9678  040434  013767  000100  140366         MOV     @#100,SLOC00            ;SAVE BEVENT VECTORS
9679  040442  013767  000102  140362         MOV     @#102,SLOC01            ;       "
9680  040450  012737  040534  000100         MOV     #3$,@#100               ;SET UP VECTOR IN CASE WE GET AN
9681  040456  012737  000340  000102         MOV     #PR7,@#102              ;UNEXPECTED INTERRUPT
9682  040464  052767  000100  137054         BIS     #BIT06,BEVENT           ;SET BIT06 IN BEVENT CTRL REG TO ONE
9683  040472  032767  000100  137046         BIT     #BIT06,BEVENT           ;TEST BIT06 TO BE SURE IT IS SET
9684  040500  001003                         BNE     2$                      ;
9685                                                                          ;ERROR! BIT06 WAS SUPPOSED TO BE SET
9686                                                                          ;BUT WASN'T
9687  040502  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9688  040504  001163                         .WORD   1163                    ;UNIQUE ERROR NUMBER
9689  040506  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9690  040510  005067  137032          2$:    CLR     BEVENT                  ;CLEAR BEVENT REGISTER
9691  040514  032767  000100  137024         BIT     #BIT06,BEVENT           ;IS IT CLEAR?
9692  040522  001407                         BEQ     4$                      ;BRANCH IF IT IS
9693                                                                          ;ERROR! BIT06 WOULDN'T CLEAR OUT
9694  040524  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9695  040526  001164                         .WORD   1164                    ;UNIQUE ERROR NUMBER
9696  040530  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9697  040532  000403                         BR      4$                      ;RECOVER FROM ERROR
9698                                                                          ;ERROR! UNEXPECTED BEVENT INTERRUPT OCCURRED
9699  040534                          3$:
9700  040534  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9701  040536  001165                         .WORD   1165                    ;UNIQUE ERROR NUMBER
9702  040540  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9703  040542  013737  001030  000100  4$:    MOV     @#SLOC00,@#100          ;RESTORE VECTORS
9704  040550  013737  001032  000102         MOV     @#SLOC01,@#102          ;       "
9705
9706
9707
9708                                  ;;*****************************************************************
9709                                  ;*TEST 270       TEST BEVENT INTERRUPT
9710                                  ;;*****************************************************************
```

```
                                ;THIS TEST LOOKS FOR BEVENT TO INTERRUPT WHEN BIT6 IN THE BEVENT
                                ;CONTROL REGISTER IS SET AND INTERRUPT PRIORITY LEVEL IS SET TO 5
                                ;;*****************************************************************
040556                          TST270:
040556  005267  140222                  INC     $TESTN                  ;INCREMENT TEST NUMBER
040562  032777  002000  140256          BIT     #BIT10,@SWR             ;IF BIT 10 IN SWR = 1
040570  001405                          BEQ     BEVINT                  ;THEN DON'T DO BEVENT INTERRUPT TESTS
040572  062737  000005  001004          ADD     #5,@#$TESTN             ;ELSE: BUMP $TESTN AND
040600  000167  000744                  JMP     NOBEVENT                ;SKIP OVER BEVENT INTERRUPT TESTS
040604  005067  136736          BEVINT: CLR     BEVENT                  ;CLEAR BIT06 IN BEVENT CNTRL REG
040610  000237                          SPL     7                       ;SET INTERRUPT LEVEL TO PRIORITY 7
040612  013737  000100  001030          MOV     @#100,@#SLOC00          ;SAVE BEVENT VECTORS
040620  013737  000102  001032          MOV     @#102,@#SLOC01          ;       "       "
040626  012737  040666  000100          MOV     #2$,@#100               ;SETUP BEVENT INTERRUPT VECTOR
040634  012737  000340  000102          MOV     #340,@#102              ;       "       "       "
040642  013701  001074                  MOV     @#WAITIN,R1             ;SET UP A TIMER TO WAIT FOR INTERRUPT
                                                                        ;APPROX. 20 MILLISECS. WORST CASE 50HZ
040646  052767  000100  136672          BIS     #BIT06,BEVENT           ;ENABLE BEVENT TO INTERRUPT
040654  000235                          SPL     5                       ;SET INTERRUPT LEVEL TO PRIORITY 5
040656  077101          1$:     SOB     R1,1$                   ;DO OUR WAITING HERE
                                                                ;INTERRUPT DIDN'T COME. IS LTC ON??
040660  104000                          ERROR                   ;ALL ERRORS TO TRAP TO EMT VECTOR
040662  001166                          .WORD   1166            ;UNIQUE ERROR NUMBER
040664  001160                          .WORD   BRDERR          ;ADDRESS OF ERROR MESSAGE
                                                                ;
040666  005067  136654          2$:     CLR     BEVENT          ;DISABLE BEVENT INTERRUPTS
040672  062706  000004                  ADD     #4,SP           ;CLEAN UP STACK AFTER INTERRUPT
040676  013737  001030  000100          MOV     @#SLOC00,@#100  ;RESTORE VECTORS
040704  013737  001032  000102          MOV     @#SLOC01,@#102  ;       "       "


                                ;;*****************************************************************
                                ;*TEST 271      TEST THAT BIT06 IN LKS CAN BE CLEARED
                                ;;*****************************************************************
                                ;THIS TEST CHECKS THAT BIT06 OF THE BEVENT CONTROL REGISTER CAN BE
                                ;CLEARED. NO BEVENT INTERRUPTS SHOULD OCCUR AFTER BIT06 IS CLEARED
                                ;;*****************************************************************
040712                          TST271:
040712  005267  140066                  INC     $TESTN                  ;INCREMENT TEST NUMBER
040716  000237                          SPL     7                       ;SHUT OFF INTERRUPTS
040720  052767  000100  136620          BIS     #BIT06,BEVENT           ;SET BIT06 OF BEVENT CNTRL REG
040726  005067  136614                  CLR     BEVENT                  ;CLEAR BIT06 OF BEVENT CTRL REG
040732  032767  000100  136606          BIT     #BIT06,BEVENT           ;TEST TO SEE THAT IT CAN BE CLEARED
040740  001403                          BEQ     1$                      ;RESULT OF BIT TEST SHOULD BE ZERO
                                                                        ;BIT06 OF BEVENT CNTRL REG WASN'T CLR
040742  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
040744  001167                          .WORD   1167                    ;UNIQUE ERROR NUMBER
040746  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
040750                          1$:


                                ;;*****************************************************************
                                ;*TEST 272      TEST THAT LKS CAN BLOCK BEVENT INTERRUPTS
                                ;;*****************************************************************
                                ;THIS TEST IS DESIGNED TO CHECK THAT BEVENT CANNOT INTERRUPT AFTER
                                ;BIT06 IN THE BEVENT CNTRL REG HAS BEEN CLEARED.
```

```
 9767                                   ;;*****************************************************************
 9768  040750                           TST272:
 9769  040750  005267  140030                 INC     @#TESTN                 ;INCREMENT TEST NUMBER
 9770  040754  000237                         SPL     7                       ;SHUT OFF INTERRUPTS
 9771  040756  005067  136564                 CLR     BEVENT                  ;DISABLE BEVENT INTERRUPT
 9772  040762  013737  000100  001030         MOV     @#100,@#SLOC00          ;SAVE BEVENT VECTORS
 9773  040770  013737  000102  001032         MOV     @#102,@#SLOC01          ;       "       "
 9774  040776  012737  041024  000100         MOV     #2$,@#100               ;SET UP BEVENT INTERRUPT VECTOR IN
 9775  041004  012737  000340  000102         MOV     #340,@#102              ;CASE WE GET AN UNWANTED INTERRUPT
 9776  041012  012701  001074                 MOV     #WAITIN,R1              ;SET UP A DELAY TO WAIT FOR POSSIBLE
 9777                                                                         ;UNWANTED INTERRUPT.
 9778  041016  000235                         SPL     5                       ;NOW LET'S SEE IF BEVENT CAN INTERRUPT.
 9779                                                                         ;IT SHOULDN'T BE ABLE TO.
 9780  041020  077101                 1$:     SOB     R1,1$                   ;WE'LL WAIT ABOUT 20 MILLISECONDS
 9781  041022  000403                         BR      3$                      ;THEN GO ON TO NEXT TEST.
 9782                                                                         ;ERROR! INTERRUPT SHOULDN'T HAVE OCCURRED
 9783  041024                           2$:
 9784  041024  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9785  041026  001170                         .WORD   1170                    ;UNIQUE ERROR NUMBER
 9786  041030  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9787  041032  013737  001030  000100  3$:     MOV     @#SLOC00,@#100          ;RESTORE VECTORS
 9788  041040  013737  001032  000102         MOV     @#SLOC01,@#102          ;       "
 9789
 9790
 9791                                   ;;*****************************************************************
 9792                                   ;*TEST 273      TEST THAT OLD BEVENT INTERRUPTS NOT SERVICED
 9793                                   ;;*****************************************************************
 9794                                   ;THIS TEST CHECKS THAT BEVENT INTERRUPTS WHICH OCCUR WHILE THE
 9795                                   ;PROCESSOR PRIORITY LEVEL IS SET TO SEVEN WILL NOT BE SERVICED WHEN
 9796                                   ;BIT06 IN THE BEVENT CONTROL REGISTER IS CLEARED, AND THE PRIORITY LEVEL
 9797                                   ;IS LOWERED. THIS IS DONE BY: FIRST, ENABLING BEVENT INTERRUPT WITH THE
 9798                                   ;INTERRUPT PRIORITY LEVEL SET TO 7, ALLOWING TIME FOR BEVENT TO OCCUR,
 9799                                   ;THEN DISABLEING BEVENT INTERRUPT AND DROPPING THE INTERRUPT
 9800                                   ;PRIORITY LEVEL TO 5. BEVENT INTERRUPT SHOULD NOT OCCUR.
 9801                                   ;;*****************************************************************
 9802  041046                           TST273:
 9803  041046  005267  137732                 INC     @#TESTN                 ;INCREMENT TEST NUMBER
 9804  041052  000237                         SPL     7                       ;SET INTERRUPT LEVEL TO 7
 9805  041054  013737  000100  001030         MOV     @#100,@#SLOC00          ;SAVE BEVENT VECTORS
 9806  041062  013737  000102  001032         MOV     @#102,@#SLOC01          ;       "       "
 9807  041070  012737  041122  000100         MOV     #2$,@#100               ;SET UP BEVENT VECTOR TO HANDLE
 9808                                                                         ;UNEXPECTED INTERRUPT.
 9809  041076  013701  001074                 MOV     @#WAITIN,R1             ;SET UP TIMER TO ENSURE
 9810                                                                         ;THAT THERE IS ENOUGH TIME TO
 9811                                                                         ;ALLOW BEVENT TO INTERRUPT
 9812  041102  052767  000100  136436         BIS     #BIT06,BEVENT           ;ENABLE BEVENT INTERRUPT
 9813  041110  077101                 1$:     SOB     R1,1$                   ;WAIT HERE
 9814  041112  005067  136430                 CLR     BEVENT                  ;DISABLE BEVENT INTERRUPT
 9815  041116  000235                         SPL     5                       ;DROP INTERRUPT LEVEL TO PRI 5
 9816                                                                         ;INTERRUPT SHOULD NOT OCCUR
 9817  041120  000403                         BR      3$                      ;GO TO END OF TEST
 9818                                                                         ;ERROR! BEVENT INTERRUPTED
 9819  041122                           2$:
 9820  041122  104000                         ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9821  041124  001171                         .WORD   1171                    ;UNIQUE ERROR NUMBER
 9822  041126  001160                         .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
```

```
9823  041130  013737  001030  000100  3$:     MOV     @#SLOC00,@#100          ;RESTORE VECTORS
9824  041136  013737  001032  000102          MOV     @#SLOC01,@#102          ;       "
9825
9826
9827                                  ;;*****************************************************************
9828                                  ;*TEST 274       TEST BEVENT INTERRUPT VS PSW PRIORITY LEVEL
9829                                  ;;*****************************************************************
9830  041144                          TST274:
9831  041144  005267  137634                  INC     $TESTN                  ;INCREMENT TEST NUMBER
9832  041150  005037  177776                  CLR     @#PS                    ;CLEAR THE PSW.
9833  041154  013737  000100  001030          MOV     @#100,@#SLOC00          ;SAVE BEVENT VECTORS
9834  041162  013737  000102  001032          MOV     @#102,@#SLOC01          ;       "       "
9835  041170  012737  041230  000100          MOV     #INT4,@#100             ;SET UP INTERRUPT VECTORS
9836  041176  012737  000340  000102          MOV     #340,@#102              ;
9837  041204  013701  001074                  MOV     @#WAITIN,R1             ;SET UP R1 AS A COUNTER
9838  041210  000234                          SPL     4                       ;SET INTERRUPT PRIORITY LEVEL=4
9839  041212  052767  000100  136326          BIS     #BIT06,BEVENT           ;ENABLE BEVENT INTERRUPT
9840  041220  077101                  1$:     SOB     R1,1$                   ;WAIT HERE FOR INTERRUPT TO OCCUR.
9841                                                                          ;ERROR! INTERRUPT DIDN'T OCCUR AT PR4
9842  041222  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9843  041224  001172                          .WORD   1172                    ;UNIQUE ERROR NUMBER
9844  041226  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9845  041230  005067  136312          INT4:   CLR     BEVENT                  ;DISABLE BEVENT INTERRUPT.
9846  041234  062706  000004                  ADD     #4,SP                   ;CLEAN UP THE STACK AFTER INTERRUPT.
9847  041240  012737  041272  000100  BEV5:   MOV     #INT5,@#100             ;SET UP BEVENT INTERRUPT VECTOR.
9848  041246  013701  001074                  MOV     @#WAITIN,R1             ;SETUP R1 AS A COUNTER.
9849  041252  000235                          SPL     5                       ;SET INTERRUPT PRIORITY LEVEL=5
9850  041254  052767  000100  136264          BIS     #BIT06,BEVENT           ;ENABLE BEVENT INTERRUPT
9851  041262  077101                  2$:     SOB     R1,2$                   ;WAIT HERE FOR INTERRUPT TO OCCUR.
9852                                                                          ;ERROR! INTERRUPT DIDN'T OCCUR AT PR5
9853  041264  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9854  041266  001173                          .WORD   1173                    ;UNIQUE ERROR NUMBER
9855  041270  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9856  041272  005067  136250          INT5:   CLR     BEVENT                  ;DISABLE BEVENT INTERRUPT.
9857  041276  062706  000004                  ADD     #4,SP                   ;CLEAN UP THE STACK AFTER INTERRUPT.
9858  041302  012737  041330  000100  BEV6:   MOV     #INT6,@#100             ;SET UP INTERRUPT VECTOR
9859  041310  013701  001074                  MOV     @#WAITIN,R1             ;SET UP R1 AS A COUNTER.
9860  041314  000236                          SPL     6                       ;SET INTERRUPT PRIORITY LEVEL=6
9861  041316  052767  000100  136222          BIS     #BIT06,BEVENT           ;ENABLE BEVENT INTERRUPT.
9862  041324  077101                  3$:     SOB     R1,3$                   ;WAIT HERE FOR POSSIBLE INTERRUPT.
9863  041326  000403                          BR      BEV7                    ;GOOD! IT DIDN'T INTERRUPT. GO ON.
9864                                                                          ;ERROR! BEVENT SHOULDN'T INTERRUPT IF
9865                                                                          ;PRIORITY LEVEL=6 OR GREATER.
9866  041330                          INT6:
9867  041330  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9868  041332  001174                          .WORD   1174                    ;UNIQUE ERROR NUMBER
9869  041334  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9870  041336  005067  136204          BEV7:   CLR     BEVENT                  ;DISABLE BEVENT INTERRUPT.
9871  041342  012737  041370  000100          MOV     #INT7,@#100             ;SETUP INTERRUPT VECTOR.
9872  041350  013701  001074                  MOV     @#WAITIN,R1             ;SETUP R1 AS A COUNTER.
9873  041354  000237                          SPL     7                       ;SET INTERRUPT PRIORITY LEVEL=7
9874  041356  052767  000100  136162          BIS     #BIT06,BEVENT           ;ENABLE BEVENT INTERRUPT
9875  041364  077101                  4$:     SOB     R1,4$                   ;WAIT HERE FOR POSSIBLE INTERRUPT
9876  041366  000403                          BR      INTDN                   ;GOOD! IT DIDN'T INTERRUPT. GO TO DONE.
9877                                                                          ;ERROR! BEVENT SHOULDN'T INTERRUPT IF
9878                                                                          ;PRIORITY LEVEL=7.
```

```
 9879  041370                          INT7:
 9880  041370  104000                          ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9881  041372  001175                          .WORD   1175                    ;UNIQUE ERROR NUMBER
 9882  041374  001160                          .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9883  041376  005067  136144          INTDN:  CLR     BEVENT                  ;DISABLE BEVENT INTERRUPTS.
 9884  041402  013737  001030  000100        MOV     @#SLOC00,@#100          ;RESTORE VECTORS
 9885  041410  013737  001032  000102        MOV     @#SLOC01,@#102          ;       "
 9886
 9887
 9888                                  ;;**********************************************************************
 9889                                  ;*TEST 275       TEST WAIT INSTRUCTION
 9890                                  ;;**********************************************************************
 9891  041416                          TST275:
 9892  041416  005267  137362                  INC     #TESTN                  ;INCREMENT TEST NUMBER
 9893  041422  013737  000100  001030        MOV     @#100,@#SLOC00          ;SAVE BEVENT VECTORS
 9894  041430  013737  000102  001032        MOV     @#102,@#SLOC01          ;       "       "
 9895  041436  012737  041476  000100        MOV     #2$,@#100               ;SET UP BEVENT VECTOR
 9896  041444  012737  000240  000102        MOV     #240,@#102              ;       "       "
 9897  041452  012701  001074                MOV     #WAITIN,R1              ;SET UP R1 FOR DELAY TO BEVENT TIME
 9898  041456  052767  000100  136062        BIS     #BIT06,BEVENT           ;TURN ON BEVENT
 9899  041464  000235                        SPL     5                       ;ALLOW INTERRUPTS > PRI 5
 9900  041466  077101                  1$:   SOB     R1,1$                   ;WAIT HERE FOR FIRST BEVENT
 9901  041470  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9902  041472  001176                        .WORD   1176                    ;UNIQUE ERROR NUMBER
 9903  041474  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
 9904  041476  062706  000004          2$:   ADD     #4,SP                   ;VECTOR HERE ON 1ST BEVENT. CLEAN UP THE STACK
 9905  041502  012737  041520  000100        MOV     #3$,@#100               ;SET UP VECTOR FOR TEST OF WAIT INST
 9906  041510  000001                        WAIT                            ;******TEST INSTRUCTION******
 9907
 9908                                  ;HOLD HERE FOR SECOND BEVENT. IF IT DOESN'T COME WE LL BE STUCK HERE.
 9909
 9910                                                                          ;ERROR!
 9911                                                                          ;SOME THING GOT SCREWED UP WITH WAIT
 9912                                                                          ;IN ORDER TO GET HERE.
 9913  041512  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
 9914  041514  001177                        .WORD   1177                    ;UNIQUE ERROR NUMBER
 9915  041516  001127                        .WORD   CPUERR                  ;ADDRESS OF ERROR MESSAGE
 9916  041520  005067  136022          3$:   CLR     BEVENT                  ;VECTOR HERE ON 2ND BEVENT. TURN OFF LTC
 9917  041524  005067  136246                CLR     PS                      ;CLEAR THE PSW
 9918  041530  062706  000004                ADD     #4,SP                   ;CLEAN UP THE STACK
 9919  041534  016737  137270  000100        MOV     SLOC00,@#100            ;RESTORE VECTORS
 9920  041542  016737  137264  000102        MOV     SLOC01,@#102            ;       "
 9921  041550                          NOBEVENT:
 9922
 9923
 9924
 9925  041550                          MAINTR:
 9926                                  ;;**********************************************************************
 9927                                  ;*TEST 276       MAINTENANCE REGISTER TEST
 9928                                  ;;**********************************************************************
 9929  041550                          TST276:
 9930  041550  005267  137230                  INC     #TESTN                  ;INCREMENT TEST NUMBER
 9931  041554  013767  000004  137246        MOV     @#4,SLOC00              ;SAVE VECTOR
 9932  041562  013767  000006  137242        MOV     @#6,SLOC01              ;
 9933  041570  012737  041604  000004        MOV     #1$,@#4                 ;SET UP FOR NON-EXISTANT MEMORY TRAP
 9934  041576  013701  177750                MOV     @#177750,R1             ;READ MAINT. REG
```

```
9935  041602  000403                        BR      2$                      ;BRANCH AROUND NXM ERROR CALL
9936                                                                          ;ERROR! NO RESPONSE FROM MAINT REG
9937  041604                          1$:
9938  041604  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9939  041606  001200                        .WORD   1200                    ;UNIQUE ERROR NUMBER
9940  041610  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9941  041612  030127  000021          2$:   BIT     R1,#21                  ;BITS 0 AND 4 SHOULD BE SET
9942  041616  001003                        BNE     3$                      ;BRANCH IF OK
9943  041620  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9944  041622  001201                        .WORD   1201                    ;UNIQUE ERROR NUMBER
9945  041624  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9946                                                          ;ERROR! BIT4 OR BIT0 (BPOK) NOT SET
9947  041626  032737  000010  177750  3$:   BIT     #BIT03,@#177750         ;IS THE HALT TRAP OPTION JUMPER (W9) OUT?
9948  041634  001427                        BEQ     4$                      ;IF NOT THEN SKIP OVER THE FOLLOWING TEST
9949  041636  012737  041712  000004        MOV     #5$,@#4                 ;SET UP VECTOR FOR HALT TRAP
9950  041644  005037  177766                CLR     @#177766                ;CLEAR THE CPU ERROR REGISTER
9951  041650  005067  136122                CLR     PS                      ;CLEAR THE PSW
9952  041654  000000                        HALT                            ;****TEST HALT TRAP OPTION****
9953  041656  032737  000200  177766        BIT     #BIT07,@#177766         ;IS ILLEGAL HALT BIT SET IN CPU ERR REG?
9954  041664  001013                        BNE     4$                      ;BRANCH IF IT IS
9955  041666  012737  000006  000004        MOV     #6,@#4                  ;SET UP TRAP CATCHER
9956  041674  012737  000777  000006        MOV     #777,@#6                ;BRANCH AT ADDRESS 6 AFTER ERROR HALT TRAP
9957                                                                        ;ERROR! BIT7 IN CPU ERR REG NOT SET
9958  041702  104000                        ERROR                           ;ALL ERRORS TO TRAP TO EMT VECTOR
9959  041704  001202                        .WORD   1202                    ;UNIQUE ERROR NUMBER
9960  041706  001160                        .WORD   BRDERR                  ;ADDRESS OF ERROR MESSAGE
9961  041710  000401                        BR      4$                      ;
9962  041712  000002                  5$:   RTI
9963  041714  013737  001030  000004  4$:   MOV     @#SLOC00,@#4            ;RESTORE VECTOR
9964  041722  013737  001032  000006        MOV     @#SLOC01,@#6            ;
9965
9966
9967
```

```
                                        .MCALL  IDMSG,ENDPAS
                                        .SBTTL  END OF PASS ROUTINE

                                        ;;**********************************************************************
                                        ;*INCREMENT THE PASS NUMBER ($PASS)
                                        ;*INDICATE END-OF-PROGRAM AFTER 1 PASSES THRU THE PROGRAM
                                        ;*IF THERES A MONITOR GO TO IT
                                        ;*IF THERE ISN'T JUMP TO RESTART

041730                                  $EOP:
041730  005767  137052                          TST     $PASS                   ;ONLY TYPE MESSAGE AT END OF FIRST PASS
041734  001002                                  BNE     SKIPID                  ;IF >0 THEN SKIP THE ID MESSAGE
041736  104401  042036                          TYPE    .MSG1                   ;ELSE TYPE THE ID MESSAGE
041742                                  SKIPID:
041742  005267  137040                          INC     $PASS           ;;INCREMENT THE PASS NUMBER
041746  042767  100000  137032                  BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
041754  005327                                  DEC     (PC)+           ;;LOOP?
041756  000001                          $EOPCT: .WORD   1
041760  003022                                  BGT     $DOAGN          ;;YES
041762  012737                                  MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
041764  000001                          $ENDCT: .WORD   1
041766  041756                                  $EOPCT
041770  104401  042077                          TYPE    .MSG2
041774  016746  137006                          MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
042000  104405                                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
042002  104401  042032                          TYPE    .$ENULL
042006  013700  000042                  $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
042012  001405                                  BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
042014  000005                                  RESET                   ;;CLEAR THE WORLD
042016  004710                          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
042020  000240                                  NOP                     ;;SAVE ROOM
042022  000240                                  NOP                     ;;FOR
042024  000240                                  NOP                     ;;ACT11
042026                                  $DOAGN:
042026  000137                                  JMP     @(PC)+          ;;RETURN
042030  001476                          $RTNAD: .WORD   RESTART
042032     377     377     000         $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
042036                                          .EVEN
042036  005015  055103  042113          MSG1:   .ASCIZ  <CR><LF>/CZKDJ-B-0 KDJ11 CPU DIAGNOSTIC/
042044  026512  026502  020060
042052  042113  030512  020061
042060  050103  020125  044504
042066  043501  047516  052123
042074  041511     000
042077     015  041412  045532          MSG2:   .ASCIZ  <CR><LF>/CZKDJB END PASS @/
042104  045104  020102  047105
042112  020104  040520  051523
042120  021440     000
042124                                  .EVEN
                                        .SBTTL  TYPE ROUTINE

                                        ;;**********************************************************************
                                        ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
                                        ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
                                        ;*NOTE1:         $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
                                        ;*NOTE2:         $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
```

```
10024                                   ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
10025                                   ;*
10026                                   ;*CALL:
10027                                   ;*1) USING A TRAP INSTRUCTION
10028                                   ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
10029                                   ;*OR
10030                                   ;*      TYPE
10031                                   ;*      MESADR
10032                                   ;*
10033
10034  042124  105767  000343           $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
10035  042130  100002                           BPL     1$              ;;BR IF YES
10036  042132  000000                           HALT                    ;;HALT HERE IF NO TERMINAL
10037  042134  000430                           BR      3$              ;;LEAVE
10038  042136  010046                   1$:     MOV     R0,-(SP)        ;;SAVE R0
10039  042140  017600  000002                   MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
10040  042144  122767  000001  136646           CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
10041  042152  001011                           BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
10042  042154  132767  000100  136637           BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
10043  042162  001405                           BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
10044  042164  010067  000004                   MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
10045  042170  004767  001034                   JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
10046  042174  000000                   61$:    .WORD   0               ;;MESSAGE ADDRESS
10047  042176  132767  000040  136615   62$:    BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
10048  042204  001003                           BNE     60$             ;;YES,SKIP TYPE OUT
10049  042206  112046                   2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
10050  042210  001005                           BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
10051  042212  005726                           TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
10052  042214  012600                   60$:    MOV     (SP)+,R0        ;;RESTORE R0
10053  042216  062716  000002           3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
10054  042222  000002                           RTI                     ;;RETURN
10055  042224  122716  000011           4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
10056  042230  001430                           BEQ     8$
10057  042232  122716  000200                   CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
10058  042236  001006                           BNE     5$
10059  042240  005726                           TST     (SP)+           ;;POP  <CR><LF> EQUIV
10060  042242  104401                           TYPE                    ;;TYPE A CR AND LF
10061  042244  001257                           $CRLF
10062  042246  105067  000202                   CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
10063  042252  000755                           BR      2$              ;;GET NEXT CHARACTER
10064  042254  004767  000056           5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
10065  042260  126726  000206           6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
10066  042264  001350                           BNE     2$              ;;IF NO GO GET NEXT CHAR.
10067  042266  016746  000176                   MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
10068                                           ;;AND THE NULL CHAR.
10069  042272  105366  000001           7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
10070  042276  002770                           BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
10071  042300  004767  000032                   JSR     PC,$TYPEC       ;;GO TYPE A NULL
10072  042304  105367  000144                   DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
10073  042310  000770                           BR      7$              ;;LOOP
10074
10075                                   ;HORIZONTAL TAB PROCESSOR
10076
10077  042312  112716  000040           8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
10078  042316  004767  000014           9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
10079  042322  132767  000007  000124           BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
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10080  042330  001372                        BNE     9$              ;;TAB STOP
10081  042332  005726                        TST     (SP)+           ;;POP SPACE OFF STACK
10082  042334  000724                        BR      2$              ;;GET NEXT CHARACTER
10083  042336                          $TYPEC:
10084  042336  105777  000116                TSTB    @$TKS           ;;CHAR IN KYBD BUFFER?          ;MJD001
10085  042342  100022                        BPL     10$             ;;BR IF NOT                     ;MJD001
10086  042344  017746  000112                MOV     @$TKB,-(SP)     ;;GET CHAR                      ;MJD001
10087  042350  042716  177600                BIC     #177600,(SP)    ;;STRIP EXTRANEOUS BITS         ;MJD001
10088  042354  122716  000023                CMPB    #$XOFF,(SP)     ;;WAS CHAR XOFF                 ;MJD001
10089  042360  001012                        BNE     102$            ;;BR IF NOT                     ;MJD001
10090  042362                          101$:                                                           ;MJD001
10091  042362  105777  000072                TSTB    @$TKS           ;;WAIT FOR CHAR                 ;MJD001
10092  042366  100375                        BPL     101$                                            ;MJD001
10093  042370  117716  000066                MOVB    @$TKB,(SP)      ;;GET CHAR                      ;MJD001
10094  042374  042716  177600                BIC     #177600,(SP)    ;;STRIP IT                      ;MJD001
10095  042400  122716  000021                CMPB    #$XON,(SP)      ;;WAS IT XON?                   ;MJD001
10096  042404  001366                        BNE     101$            ;;BR IF NOT                     ;MJD001
10097  042406                          102$:                                                           ;MJD001
10098  042406  005726                        TST     (SP)+           ;;FIX STACK                     ;MJD001
10099  042410                          10$:                                                            ;MJD001
10100  042410  105777  000050                TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
10101  042414  100375                        BPL     10$                                             ;MJD001
10102  042416  116677  000002  000042        MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
10103  042424  122766  000015  000002        CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
10104  042432  001003                        BNE     1$              ;;BRANCH IF NO
10105  042434  105067  000014                CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
10106  042440  000406                        BR      $TYPEX          ;;EXIT
10107  042442  122766  000012  000002  1$:   CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
10108  042450  001402                        BEQ     $TYPEX          ;;BRANCH IF YES
10109  042452  105227                        INCB    (PC)+           ;;COUNT THE CHARACTER
10110  042454  000000                $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
10111  042456  000207                $TYPEX: RTS     PC
10112
10113  042460  177560                $TKS:   .WORD   177560          ;;TTY KDB STATUS                ;MJD001
10114  042462  177562                $TKB:   .WORD   177562          ;;TTY KBD BUFFER                ;MJD001
10115  042464  177564                $TPS:   .WORD   177564          ;;TTY PRINTER STATUS REG. ADDRESS
10116  042466  177566                $TPB:   .WORD   177566          ;;TTY PRINTER BUFFER REG. ADDRESS
10117  042470     000                $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
10118  042471     002                $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
10119  042472     012                $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A "LINE FEED"
10120  042473     000                $TPFLG: .BYTE   0               ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
10121  042474     077                $QUES:  .ASCII  "?"             ;;QUESTION MARK
10122  042475     012     000        $LF:    .ASCIZ  <12>            ;;LINEFEED
10123          042500                         .EVEN
10124                                 .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
10125
10126                                 ;;**********************************************************************
10127                                 ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
10128                                 ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
10129                                 ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
10130                                 ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
10131                                 ;*REPLACED WITH SPACES.
10132                                 ;*CALL:
10133                                 ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
10134                                 ;*      TYPDS                   ;;GO TO THE ROUTINE
10135
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10136  042500                          $TYPDS:
10137  042500  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
10138  042502  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
10139  042504  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
10140  042506  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
10141  042510  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
10142  042512  012746  020200                  MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
10143  042516  016605  000020                  MOV     20(SP),R5       ;;GET THE INPUT NUMBER
10144  042522  100004                          BPL     1$              ;;BR IF INPUT IS POS.
10145  042524  005405                          NEG     R5              ;;MAKE THE BINARY NUMBER POS.
10146  042526  112766  000055  000001          MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
10147  042534  005000                  1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
10148  042536  012703  042714                  MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
10149  042542  112723  000040                  MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
10150  042546  005002                  2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
10151  042550  016001  042704                  MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
10152  042554  160105                  3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
10153  042556  002402                          BLT     4$              ;;BR IF DONE
10154  042560  005202                          INC     R2              ;;INCREASE THE BCD DIGIT BY 1
10155  042562  000774                          BR      3$
10156  042564  060105                  4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
10157  042566  005702                          TST     R2              ;;CHECK IF BCD DIGIT=0
10158  042570  001002                          BNE     5$              ;;FALL THROUGH IF 0
10159  042572  105716                          TSTB    (SP)            ;;STILL DOING LEADING 0'S?
10160  042574  100407                          BMI     7$              ;;BR IF YES
10161  042576  106316                  5$:     ASLB    (SP)            ;;MSD?
10162  042600  103003                          BCC     6$              ;;BR IF NO
10163  042602  116663  000001  177777          MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
10164  042610  052702  000060          6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
10165  042614  052702  000040          7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
10166  042620  110223                          MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
10167  042622  005720                          TST     (R0)+           ;;JUST INCREMENTING
10168  042624  020027  000010                  CMP     R0,#10          ;;CHECK THE TABLE INDEX
10169  042630  002746                          BLT     2$              ;;GO DO THE NEXT DIGIT
10170  042632  003002                          BGT     8$              ;;GO TO EXIT
10171  042634  010502                          MOV     R5,R2           ;;GET THE LSD
10172  042636  000764                          BR      6$              ;;GO CHANGE TO ASCII
10173  042640  105726                  8$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
10174  042642  100003                          BPL     9$              ;;BR IF NO
10175  042644  116663  177777  177776          MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
10176  042652  105013                  9$:     CLRB    (R3)            ;;SET THE TERMINATOR
10177  042654  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
10178  042656  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
10179  042660  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
10180  042662  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
10181  042664  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
10182  042666  104401  042714                  TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
10183  042672  016666  000002  000004          MOV     2(SP),4(SP)     ;;ADJUST THE STACK
10184  042700  012616                          MOV     (SP)+,(SP)
10185  042702  000002                          RTI                     ;;RETURN TO USER
10186  042704  023420                  $DTBL:  10000.
10187  042706  001750                          1000.
10188  042710  000144                          100.
10189  042712  000012                          10.
10190  042714  000004                  $DBLK:  .BLKW   4
10191                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
```

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10192
10193                                   ;;*********************************************************************
10194                                   ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
10195                                   ;*OCTAL (ASCII) NUMBER AND TYPE IT.
10196                                   ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
10197                                   ;*CALL:
10198                                   ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
10199                                   ;*      TYPOS                   ;;CALL FOR TYPEOUT
10200                                   ;*      .BYTE   N               ;;N=# TO 6 FOR NUMBER OF DIGITS TO TYPE
10201                                   ;*      .BYTE   M               ;;M=1 OR 0
10202                                   ;*                                      ;;1=TYPE LEADING ZEROS
10203                                   ;*                                      ;;0=SUPPRESS LEADING ZEROS
10204                                   ;*
10205                                   ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
10206                                   ;*$TYPOS OR $TYPOC
10207                                   ;*CALL:
10208                                   ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
10209                                   ;*      TYPON                   ;;CALL FOR TYPEOUT
10210                                   ;*
10211                                   ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
10212                                   ;*CALL:
10213                                   ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
10214                                   ;*      TYPOC                   ;;CALL FOR TYPEOUT
10215
10216  042724  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
10217  042730  116667  000001  000211          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
10218  042736  112667  000207                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
10219  042742  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
10220  042746  000406                          BR      $TYPON
10221  042750  112767  000001  000171  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
10222  042756  112767  000006  000165          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
10223  042764  112767  000005  000154  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
10224  042772  010346                          MOV     R3,-(SP)        ;;SAVE R3
10225  042774  010446                          MOV     R4,-(SP)        ;;SAVE R4
10226  042776  010546                          MOV     R5,-(SP)        ;;SAVE R5
10227  043000  116704  000145                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
10228  043004  005404                          NEG     R4
10229  043006  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
10230  043012  110467  000132                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
10231  043016  116704  000125                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
10232  043022  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
10233  043026  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
10234  043030  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
10235  043032  000404                          BR      3$              ;;GO DO MSB
10236  043034  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
10237  043036  006105                          ROL     R5
10238  043040  006105                          ROL     R5
10239  043042  010503                          MOV     R5,R3
10240  043044  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
10241  043046  105367  000076                  DECB    $OMODE          ;;TYPE THIS DIGIT?
10242  043052  100016                          BPL     7$              ;;BR IF NO
10243  043054  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
10244  043060  001002                          BNE     4$              ;;TEST FOR 0
10245  043062  005704                          TST     R4              ;;SUPPRESS THIS 0?
10246  043064  001403                          BEQ     5$              ;;BR IF YES
10247  043066  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
```

```
10248  043070  052703  000060            BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
10249  043074  052703  000040     5$:    BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
10250  043100  110367  000040            MOVB    R3,8$           ;;SAVE FOR TYPING
10251  043104  104401  043144            TYPE    ,8$             ;;GO TYPE THIS DIGIT
10252  043110  105367  000032     7$:    DECB    $OCNT           ;;COUNT BY 1
10253  043114  003347                     BGT     2$              ;;BR IF MORE TO DO
10254  043116  002402                     BLT     6$              ;;BR IF DONE
10255  043120  005204                     INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
10256  043122  000744                     BR      2$              ;;GO DO THE LAST DIGIT
10257  043124  012605             6$:     MOV     (SP)+,R5        ;;RESTORE R5
10258  043126  012604                     MOV     (SP)+,R4        ;;RESTORE R4
10259  043130  012603                     MOV     (SP)+,R3        ;;RESTORE R3
10260  043132  016666  000002  000004    MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
10261  043140  012616                     MOV     (SP)+,(SP)
10262  043142  000002                     RTI                     ;;RETURN
10263  043144     000             8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
10264  043145     000                     .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
10265  043146     000             $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
10266  043147     000             $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
10267  043150  000000             $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
10268                              .SBTTL  TRAP DECODER
10269
10270                              ;;*************************************************************************
10271                              ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
10272                              ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
10273                              ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
10274                              ;*GO TO THAT ROUTINE.
10275
10276  043152  010046             $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
10277  043154  016600  000002             MOV     2(SP),R0        ;;GET TRAP ADDRESS
10278  043160  005740                     TST     -(R0)           ;;BACKUP BY 2
10279  043162  111000                     MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
10280  043164  006300                     ASL     R0              ;;POSITION FOR INDEXING
10281  043166  016000  043206            MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
10282  043172  000200                     RTS     R0              ;;GO TO ROUTINE
10283
10284
10285                              ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
10286
10287  043174  011646             $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
10288  043176  016666  000004  000002     MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
10289  043204  000002                     RTI                     ;;RESTORE THE PSW
10290
10291                              .MACRO  SETTRAP A,B,MSG
10292                                      $$SET   A,B,\<TRAP+$TRP>,\$TRP,<MSG>
10293                              .NLIST
10294                              $TRP=$TRP+1
10295                              .LIST
10296                              .ENDM   SETTRAP
10297                              .MACRO  $$SET   A,B,C,D,COMNT
10298                              .IF EQ $TRP-1
10299                              .SBTTL  TRAP TABLE
10300
10301                              ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
10302                              ;*BY THE "TRAP" INSTRUCTION.
10303
```

```
10304                                   ;       ROUTINE
10305                                   ;       -------
10306                                   $TRPAD: .WORD   $TRAP2
10307                                   .ENDC
10308                                   .IIF NDF GNS,.NLIST
10309                                           A=      C
10310                                   .IIF NDF GNS,.LIST
10311                                           B       ;;CALL=A        TRAP+D(C)       COMMT
10312                                   .ENDM   $$SET
10313                                   .MACRO  TRMTRP
10314                                   $TERM=.-$TRPAD
10315                                   .ENDM   TRMTRP
10316                                   .SBTTL  TRAP TABLE
10317
10318                                   ;+THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
10319                                   ;+BY THE "TRAP" INSTRUCTION.
10320
10321                                   ;       ROUTINE
10322                                   ;       -------
10323  043206  043174                  $TRPAD: .WORD   $TRAP2
10324  043210  042124                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
10325  043212  042750                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
10326  043214  042724                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
10327  043216  042764                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
10328  043220  042500                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)
10329
10330
10331                                   .SBTTL  APT COMMUNICATIONS ROUTINE
10332
10333                                   ;;*****************************************************************
10334  043222  112767  000001  000236  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
10335  043230  112767  000001  000226  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
10336  043236  000403                          BR      $ATYC
10337  043240  112767  000001  000220  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
10338  043246                          $ATYC:
10339  043246  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
10340  043250  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
10341  043252  105767  000206                  TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
10342  043256  001450                          BEQ     5$              ;;IF NOT:  BR
10343  043260  122767  000001  135532          CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
10344  043266  001031                          BNE     3$              ;;IF NOT:  BR
10345  043270  132767  000100  135523          BITB    #APTSPOOL,$ENVM ;SHOULD SPOOL MESSAGES?
10346  043276  001425                          BEQ     3$              ;;IF NOT:  BR
10347  043300  017600  000004                  MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
10348  043304  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
10349  043312  005767  135462          1$:     TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
10350  043316  001375                          BNE     1$              ;;IF NOT:  WAIT
10351  043320  010067  135470                  MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
10352  043324  105720                  2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
10353  043326  001376                          BNE     2$
10354  043330  166700  135460                  SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
10355  043334  006200                          ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
10356  043336  010067  135454                  MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
10357  043342  012767  000004  135430          MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
10358  043350  000413                          BR      5$
10359  043352  017667  000004  000016  3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
```

```
10360  043360  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
10361  043366  016746  134404                  MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
10362  043372  004767  176526                  JSR     PC,$TYPE        ;;CALL TYPE MACRO
10363  043376  000000                  4$:     .WORD   0
10364  043400                          5$:
10365  043400  105767  000062          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
10366  043404  001416                          BEQ     12$             ;;IF NOT:  BR
10367  043406  005767  135406                  TST     $ENV            ;;RUNNING UNDER APT?
10368  043412  001413                          BEQ     12$             ;;IF NOT:  BR
10369  043414  005767  135360          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
10370  043420  001375                          BNE     11$             ;;IF NOT:  WAIT
10371  043422  017667  000004  135352          MOV     @4(SP),$FATAL   ;;GET ERROR #
10372  043430  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
10373  043436  005267  135336                  INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
10374  043442  105067  000020          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
10375  043446  105067  000013                  CLRB    $LFLG           ;;CLEAR LOG FLAG
10376  043452  105067  000006                  CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
10377  043456  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
10378  043460  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
10379  043462  000207                          RTS     PC              ;;RETURN
10380  043464     000          $MFLG:  .BYTE   0               ;;MESSG. FLAG
10381  043465     000          $LFLG:  .BYTE   0               ;;LOG FLAG
10382  043466     000          $FFLG:  .BYTE   0               ;;FATAL FLAG
10383          043470                  .EVEN
10384          000200          APTSIZE=200
10385          000001          APTENV=001
10386          000100          APTSPOOL=100
10387          000040          APTCSUP=040
10388                          ;;**************************************************************
10389                          ;THIS ROUTINE WILL INCREMENT THE ERROR COUNT AND THEN PASS THE UNIQUE
10390                          ;ERROR NUMBER TO THE APT ERROR ROUTINE TO BE REPORTED TO THE APT SYSTEM.
10391
10392  043470  005267  135356  $ERROR: INC     $ERFLG                  ;INCREMENT ERROR FLAG
10393  043474  001775                  BEQ     $ERROR                  ;DON'T LET IT GO TO ZERO
10394  043476  005267  135342                  INC     ERRCNT          ;INCREMENT THE ERROR COUNT
10395  043502  021627  001002                  CMP     (SP),   #1002   ;IS ERROR FROM VECTOR AREA
10396  043506  101010                          BHI     1$              ;IF YES THEN
10397  043510  012767  007777  000106          MOV     #7777,  3$      ;REPORT AN UNEXPECTED TRAP
10398  043516  012637  001062                  MOV     (SP)+,@#SAVSP1  ;SAVE UNEXPECTED TRAP DATA
10399  043522  012637  001064                  MOV     (SP)+,@#SAVSP2  ;AND RESTORE SP
10400  043526  000430                          BR      2$              ;ELSE
10401  043530  017667  000000  000066  1$:     MOV     @(SP),  3$      ;REPORT UNIQUE ERROR NUMBER TO APT
10402  043536  011667  000072                  MOV     (SP),101$       ;SAVE ERROR PC
10403  043542  062716  000002                  ADD     #2,     (SP)    ;GET OVER UNIQUE ERROR NUMBER FOR RETURN
10404  043546  017637  000000  043556  100$:   MOV     @(SP),@#102$
10405  043554  104401                          TYPE                    ;TYPE ERROR MESSAGE
10406  043556  000000                  102$:   .WORD   0
10407  043560  062716  000002                  ADD     #2,(SP)         ;GET OVER ERROR MESSAGE
10408  043564  104401  001226                  TYPE    ,ERR1           ;
10409  043570  016746  000030                  MOV     3$,-(SP)        ;PUSH UNIQUE ERROR NUMBER ON THE STACK
10410  043574  104402                          TYPOC                   ;TYPE OCTAL ERROR NUMBER
10411  043576  104401  001242                  TYPE    ,ERR2           ;
10412  043602  016746  000026                  MOV     101$,-(SP)      ;PUSH ERROR PC ON THE STACK
10413  043606  104402                          TYPOC                   ;TYPE THE ERROR PC
10414  043610  122767  000001  135202  2$:     CMPB    #APTENV,$ENV    ;CHECK TO MAKE SURE WE'RE IN APT MODE
10415  043616  001004                          BNE     5$              ;IF YES THEN
```

```
10416  043620  004767  177414          JSR     PC,     $ATY4           ;GO REPORT ERROR TO APT
10417  043624  000000                  3$:     .WORD   0               ;STORAGE FOR ERROR NUMBER
10418  043626  000777                  4$:     BR      4$              ;LOOP HERE AFTER REPORTING ERROR TO APT
10419  043630  000000                  5$:     HALT                    ;IF NOT APT THEN HALT
10420  043632  000002                          RTI                     ;ALLOW RECOVERY FROM HALT
10421  043634  000000                  101$:   .WORD   0
10422  043636                          $PATCH::
10423  043636  000010                          .BLKW   10
10424           000001                  .END
```

```
ABASE = 000000            584
ACCC  = ****** U         4592
ACDW1 = 000000            584
ACDW2 = 000000            584
ACPUOP= 000000            584     599
ADCC  = ****** U         4548
ADDW0 = 000000            584
ADDW1 = 000000            584
ADDW10= 000000            584
ADDW11= 000000            584
ADDW12= 000000            584
ADDW13= 000000            584
ADDW14= 000000            584
ADDW15= 000000            584
ADDW2 = 000000            584
ADDW3 = 000000            584
ADDW4 = 000000            584
ADDW5 = 000000            584
ADDW6 = 000000            584
ADDW7 = 000000            584
ADDW8 = 000000            584
ADDW9 = 000000            584
ADEVCT= 000000            584     590
ADEVM = 000000            584
AENV  = 000000            584     595
AENVM = 000000            584     596
AFATAL= 000000            584     587
ALCC  = ****** U         4932
ALLCTR  001056            626#
ALROTS  022236           6071#
ALR1TS  022340           6108#
ALR2TS  022442           6145#
ALR3TS  022544           6182#
ALR4TS  022646           6219#
ALR5TS  022750           6256#
ALTREG= ****** U         5950
ALTR1 = ****** U         6108
ALTR2 = ****** U         6145
ALTR3 = ****** U         6182
ALTR4 = ****** U         6219
ALTR5 = ****** U         6256
AMADR1= 000000            584
AMADR2= 000000            584
AMADR3= 000000            584
AMADR4= 000000            584
AMAMS1= 000000            584
AMAMS2= 000000            584
AMAMS3= 000000            584
AMAMS4= 000000            584
AMSGAD= 000000            584     592
AMSGLG= 000000            584     593
AMSGTY= 000000            584     586
AMTYP1= 000000            584
AMTYP2= 000000            584
AMTYP3= 000000            584
AMTYP4= 000000            584
```

```
APASS = 000000           584     589
APRIOR= 000000           584
APTCSU= 000040         10047   10387#
APTENV= 000001          6632    9234    9594   10040   10343   10385#  10414
APTSIZ= 000200           731   10384#
APTSPO= 000100         10042   10345   10386#
ARCC  = ****** U        4984
ASWREG= 000000           584     597
ATESTN= 000000           584     588
AUNIT = 000000           584     591
AUSWR = 002000           503#    584     598
AVECT1= 000000           584
AVECT2= 000000           584
A11   = ****** U        2682
A126    026560          7228#   7242
A55   = ****** U        3049
BB11  = ****** U        2730
BB22  = ****** U        2884
BCCC  = ****** U        4383
BC00  = ****** U        2579
BC11  = ****** U        2775
BC22  = ****** U        2925
BEVENT= 177546           495#    9646    9667    9669*   9670    9682*   9683    9690*   9691    9720*   9728*   9736*   9751*
                        9752*   9753    9771*   9812*   9814*   9839*   9845*   9850*   9856*   9861*   9870*   9874*   9883*
                        9898*   9916*
BEVINT  040604          9717    9720#
BEV5    041240          9847#
BEV6    041302          9858#
BEV7    041336          9863    9870#
BIT0  = 000001           316#
BIT00 = 000001           306#     316
BIT01 = 000002           305#     315
BIT02 = 000004           304#     314
BIT03 = 000010           303#     313    8093    9947
BIT04 = 000020           302#     312    9124
BIT05 = 000040           301#     311
BIT06 = 000100           300#     310    9163    9195    9667    9670    9682    9683    9691    9728    9751    9753    9812
                        9839    9850    9861    9874    9898
BIT07 = 000200           299#     309    9953
BIT08 = 000400           298#     308
BIT09 = 001000           297#     307
BIT1  = 000002           315#
BIT10 = 002000           296#    9716
BIT11 = 004000           295#    5962    5975    5976    6018    6025    6032    6290
BIT12 = 010000           294#
BIT13 = 020000           293#
BIT14 = 040000           292#
BIT15 = 100000           291#
BIT2  = 000004           314#
BIT3  = 000010           313#
BIT4  = 000020           312#
BIT5  = 000040           311#
BIT6  = 000100           310#
BIT7  = 000200           309#
BIT8  = 000400           308#
BIT9  = 001000           307#
```

```
BIOO  - ****** U      2537
BOARDT- ****** U         1    546    641    667    674   9587
BPTO  - ****** U      8268
BPTOA   032614        8277  8283#
BPTOB   032632        8279  8289#
BPTVEC- 000014         323#
BRDERR  001160         667#   9243   9249   9255   9261   9266   9290   9316   9325   9365   9379   9402   9417
                      9450   9489   9512   9522   9568   9576   9610   9617   9623   9655   9675   9689   9696
                      9702   9734   9758   9786   9822   9844   9855   9869   9882   9903   9940   9945   9960
BSCC  - ****** U      4421
BT    - ****** U      8874
BTCC  - ****** U      4346
BTO   - ****** U      8906
BVENT - ****** U      9631
B66   - ****** U      3081
CACHET- 000001           1#    193    196    214    546    631    645    658    674    695    738   9967  10016
                     10268
CBIT  - ****** U      4892
CB44  - ****** U      3008
CCR   - 177746         489#    696*   739*
CHECK   014474        4195  4226#
CHECK1  014566        4227  4255#
CHECK2  014660        4256  4284#
COUNT   001040         618#   8023*  8031*  8032*  8040*  8047*  8048*
CPEREG- 177766         492#   6621*  8077*  8093   8104*  8119*  8131*  8142*  8151*  8163*  8179*  8191*  8206*
                      8219*  8236*  8245*  8263*  8274*  8290*  8303*  8321*  8344*  9112*  9124   9139*  9150*
                      9163   9178*  9195   9216*  9230*  9262   9267*  9282*  9645*
CPUERR  001127         662#    767    776    793    800    820    838    854    871    887    894    901    908
                       924    931    938    945    961    968    975    982    998   1005   1012   1019   1035
                      1042   1049   1056   1072   1079   1086   1093   1109   1116   1123   1130   1146   1153
                      1160   1167   1186   1194   1212   1221   1240   1250   1270   1282   1301   1315   1335
                      1348   1368   1379   1400   1413   1432   1445   1471   1483   1497   1509   1531   1544
                      1569   1581   1588   1607   1623   1650   1661   1668   1679   1685   1713   1724   1731
                      1761   1768   1774   1784   1791   1818   1825   1833   1856   1867   1887   1909   1922
                      1945   1953   1976   1988   2013   2025   2051   2061   2086   2098   2125   2142   2170
                      2179   2209   2217   2242   2249   2275   2282   2304   2311   2337   2345   2370   2379
                      2407   2416   2438   2461   2468   2490   2499   2517   2525   2532   2557   2564   2572
                      2595   2604   2614   2624   2652   2662   2678   2702   2725   2747   2754   2763   2771
                      2793   2803   2812   2839   2848   2871   2880   2904   2914   2921   2944   2952   2961
                      2970   2995   3002   3025   3036   3045   3069   3077   3106   3114   3138   3145   3168
                      3181   3203   3218   3239   3255   3278   3289   3315   3341   3365   3389   3411   3431
                      3453   3473   3481   3493   3504   3512   3524   3532   3545   3553   3567   3580   3693
                      3719   3733   3743   3759   3767   3798   3810   3826   3838   3853   3865   3882   3894
                      3910   3922   3938   3950   3965   3977   4008   4028   4049   4068   4087   4095   4107
                      4113   4129   4137   4145   4153   4163   4171   4179   4187   4202   4210   4218   4233
                      4241   4249   4262   4270   4278   4289   4297   4305   4328   4341   4365   4378   4402
                      4416   4439   4452   4475   4495   4519   4532   4543   4566   4577   4587   4609   4623
                      4634   4656   4669   4683   4695   4704   4727   4740   4765   4784   4805   4815   4826
                      4836   4857   4867   4877   4887   4909   4914   4923   4928   4948   4958   4969   4979
                      5000   5011   5021   5033   5056   5071   5094   5107   5120   5150   5166   5178   5187
                      5211   5224   5250   5256   5262   5281   5290   5295   5302   5317   5326   5333   5339
                      5355   5372   5389   5406   5423   5440   5457   5474   5491   5508   5526   5534   5543
                      5552   5561   5570   5579   5588   5597   5606   5624   5633   5642   5651   5660   5669
                      5678   5687   5696   5705   5721   5727   5735   5743   5750   5758   5766   5772   5780
                      5788   5796   5802   5810   5818   5826   5832   5840   5848   5877   5890   5902   5910
                      5917   5924   5931   5938   5945   5967   5981   5987   5993   5999   6005   6011   6017
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                    6038    6044    6050    6056    6062    6067    6083    6090    6097    6104    6120    6127    6134
                    6141    6157    6164    6171    6178    6194    6201    6208    6215    6231    6238    6245    6252
                    6268    6275    6282    6289    6311    6318    6335    6342    6359    6366    6373    6444    6456
                    6463    6475    6482    6489    6532    6538    6548    6555    6565    6589    6599    6606    6613
                    6619    6645    6653    6661    6670    6679    6686    6693    6715    6725    6733    6741    6768
                    6782    6865    6872    6881    6889    6900    6919    6959    6966    6975    6982    6993    7012
                    7038    7045    7052    7059    7083    7090    7098    7106    7113    7232    7240    7250    7264
                    7271    7278    7289    7296    7303    7316    7324    7331    7338    7349    7356    7363    7381
                    7388    7395    7402    7410    7558    7565    7576    7583    7590    7603    7610    7617    7625
                    7754    7761    7768    7775    7787    7794    7801    7808    7823    7830    7837    7844    7852
                    8029    8038    8045    8053    8060    8067    8091    8102    8129    8140    8150    8175    8204
                    8232    8259    8288    8317    8343    8374    8395    8400    8406    8412    8433    8440    8446
                    8452    8474    8479    8485    8496    8501    8507    8527    8533    8539    8562    8568    8579
                    8585    8606    8612    8618    8641    8647    8657    8663    8688    8697    8732    8738    8744
                    8764    8770    8780    8786    8808    8814    8820    8844    8850    8860    8866    8888    8894
                    8900    8922    8928    8938    8944    8966    8972    8978    8999    9005    9015    9021    9043
                    9049    9055    9078    9084    9094    9100    9123    9128    9133    9138    9162    9167    9172
                    9177    9193    9200    9205    9210    9215    9915
CPUTST= ****** U       1     203     546     635     662     741   10006
CR    = 000015      2310     658     662     667     674     676     679   10006   10012   10103   10115
CRLF  = 000200      2320   10057   10115
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C121A   024346      6641    6647#
C121B   024372      6649    6655#
C121C   024416      6657    6663#
DATRAM= 000001        1#     738
DAO   = ****** U    2443
DCCC  = ****** U    4457
DCOUNT  001054      6250#   9473*   9493*
DDISP = 177570      2380#    622     712
DISPLA  001050      6220#    712*    720*
DISPRE  000174      5320#    720
DMO   = ****** U    2421
DM27  = ****** U    2503
DSWR  = 177570      2370#    621     711
DSO   = ****** U    2472
EMTO  = ****** U    8213
EMTOA   032374      8222    8228#
EMTOB   032406      8224    8233#
EMTVEC= 000030      3260#    700*    701*
ERRCNT  001044      6200#   10394*
ERRMSG  001102 G    6580#
ERRNUM= 001203      5020#    764    7680    773    7770    790    7940    797    8010    817    8210    835    8390
                     851    8550    868    8720    885    8880    892    8950    899    9020    906    9090    922
                    9250    929    9320    936    9390    943    9460    959    9620    966    9690    973    9760
                     980    9830    996    9990   1003   10060   1010   10130   1017   10200   1033   10360   1040
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                    1107   11100   1114   11170   1121   11240   1128   11310   1144   11470   1151   11540   1158
                   11610   1165   11680   1183   11870   1191   11950   1209   12130   1218   12220   1237   12410
                    1247   12510   1267   12710   1279   12830   1299   13020   1312   13160   1333   13360   1345
                   13490   1366   13690   1376   13800   1398   14010   1410   14140   1430   14330   1442   14460
                    1469   14720   1480   14840   1494   14980   1506   15100   1529   15320   1541   15450   1566
                   15700   1578   15820   1585   15890   1605   16080   1620   16240   1647   16510   1658   16620
                    1665   16690   1676   16800   1682   16860   1710   17140   1721   17250   1728   17320   1758
                   17620   1765   17690   1772   17750   1781   17850   1788   17920   1815   18190   1822   18260
                    1830   18340   1853   18570   1864   18680   1884   18880   1906   19100   1919   19230   1942
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1946#	1950	1954#	1973	1977#	1985	1989#	2010	2014#	2022	2026#	2048	2052#
2058	2062#	2083	2087#	2095	2099#	2122	2126#	2139	2143#	2167	2171#	2176
2180#	2206	2210#	2214	2218#	2239	2243#	2246	2250#	2272	2276#	2279	2283#
2301	2305#	2308	2312#	2334	2338#	2342	2346#	2367	2371#	2376	2380#	2404
2408#	2413	2417#	2435	2439#	2458	2462#	2465	2469#	2487	2491#	2496	2500#
2514	2518#	2522	2526#	2529	2533#	2554	2558#	2561	2565#	2569	2573#	2592
2596#	2601	2605#	2611	2615#	2621	2625#	2649	2653#	2659	2663#	2675	2679#
2699	2703#	2722	2726#	2744	2748#	2751	2755#	2760	2764#	2768	2772#	2790
2794#	2800	2804#	2809	2813#	2836	2840#	2845	2849#	2868	2872#	2877	2881#
2901	2905#	2911	2915#	2918	2922#	2941	2945#	2949	2953#	2958	2962#	2967
2971#	2992	2996#	2999	3003#	3022	3026#	3033	3037#	3042	3046#	3066	3070#
3074	3078#	3103	3107#	3111	3115#	3135	3139#	3142	3146#	3165	3169#	3178
3182#	3200	3204#	3215	3219#	3236	3240#	3252	3256#	3275	3279#	3286	3290#
3312	3316#	3338	3342#	3362	3366#	3386	3390#	3408	3412#	3428	3432#	3450
3454#	3470	3474#	3478	3482#	3490	3494#	3501	3505#	3509	3513#	3521	3525#
3529	3533#	3542	3546#	3550	3554#	3564	3568#	3577	3581#	3691	3694#	3716
3720#	3730	3734#	3740	3744#	3756	3760#	3764	3768#	3795	3799#	3807	3811#
3823	3827#	3835	3839#	3850	3854#	3862	3866#	3879	3883#	3891	3895#	3907
3911#	3919	3923#	3935	3939#	3947	3951#	3962	3966#	3974	3978#	4005	4009#
4025	4029#	4046	4050#	4065	4069#	4085	4088#	4093	4096#	4105	4108#	4111
4114#	4127	4130#	4135	4138#	4143	4146#	4151	4154#	4161	4164#	4169	4172#
4177	4180#	4185	4188#	4200	4203#	4208	4211#	4216	4219#	4231	4234#	4239
4242#	4247	4250#	4260	4263#	4268	4271#	4276	4279#	4287	4290#	4295	4298#
4303	4306#	4325	4329#	4338	4342#	4362	4366#	4375	4379#	4399	4403#	4413
4417#	4436	4440#	4449	4453#	4472	4476#	4492	4496#	4516	4520#	4529	4533#
4540	4544#	4563	4567#	4574	4578#	4584	4588#	4606	4610#	4620	4624#	4631
4635#	4653	4657#	4666	4670#	4680	4684#	4692	4696#	4701	4705#	4724	4728#
4737	4741#	4762	4766#	4781	4785#	4802	4806#	4812	4816#	4823	4827#	4833
4837#	4854	4858#	4864	4868#	4874	4878#	4884	4888#	4907	4910#	4912	4915#
4921	4924#	4926	4929#	4945	4949#	4955	4959#	4966	4970#	4976	4980#	4997
5001#	5008	5012#	5018	5022#	5030	5034#	5053	5057#	5068	5072#	5091	5095#
5104	5108#	5117	5121#	5147	5151#	5163	5167#	5176	5179#	5185	5188#	5208
52[illegible]#	5221	5225#	5247	5251#	5253	5257#	5260	5263#	5279	5282#	5287	5291#
5293	5296#	5300	5303#	5315	5318#	53[illegible]#	5327#	5331	5334#	5337	5340#	5353
5356#	5370	5373#	5387	5390#	5404	540[illegible]#	5421	5424#	5438	5441#	5455	5458#
5472	5475#	5489	5492#	5506	5509#	5524	5527#	5532	5535#	5541	5544#	5550
5553#	5559	5562#	5568	5571#	5577	5580#	5586	5589#	5595	5598#	5604	5607#
5622	5625#	5631	5634#	5640	5643#	5649	5652#	5658	5661#	5667	5670#	5676
5679#	5685	5688#	5694	5697#	5703	5706#	5719	5722#	5725	5728#	5732	5736#
5740	5744#	5748	5751#	5755	5759#	5764	5767#	5770	5773#	5777	5781#	5785
5789#	5794	5797#	5800	5803#	5807	5811#	5815	5819#	5824	5827#	5830	5833#
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6039#	6042	6045#	6048	6051#	6054	6057#	6060	6063#	6065	6068#	6081	6084#
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6142#	6155	6158#	6162	6165#	6169	6172#	6176	6179#	6192	6195#	6199	6202#
6206	6209#	6213	6216#	6229	6232#	6236	6239#	6243	6246#	6250	6253#	6266
6269#	6273	6276#	6280	6283#	6287	6290#	6309	6312#	6316	6319#	6333	6336#
6340	6343#	6357	6360#	6364	6367#	6371	6374#	6442	6445#	6454	6457#	6461
6464#	6473	6476#	6480	6483#	6487	6490#	6530	6533#	6536	6539#	6546	6549#
6553	6556#	6562	6566#	6586	6590#	6597	6600#	6604	6607#	6611	6614#	6617
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6691	6694#	6713	6716#	6723	6726#	6731	6734#	6739	6742#	6766	6769#	6780
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                    7272#   7276    7279#   7287    7290#   7294    7297#   7301    7304#   7314    7317#   7322    7325#
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                    7755#   7759    7762#   7766    7769#   7773    7776#   7785    7788#   7792    7795#   7799    7802#
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                    8099    8103#   8127    8130#   8138    8141#   8148    8151#   8173    8176#   8202    8205#   8230
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                    8586#   8603    8607#   8610    8613#   8616    8619#   8638    8642#   8645    8648#   8654    8658#
                    8661    8664#   8686    8689#   8694    8698#   8729    8733#   8736    8739#   8742    8745#   8761
                    8765#   8768    8771#   8777    8781#   8784    8787#   8805    8809#   8812    8815#   8818    8821#
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                    9050#   9053    9056#   9075    9079#   9082    9085#   9091    9095#   9098    9101#   9120    9124#
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                    9178#   9190    9194#   9198    9201#   9203    9206#   9208    9211#   9213    9216#   9240    9244#
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                    9510    9513#   9520    9523#   9566    9569#   9574    9577#   9607    9611#   9615    9618#   9621
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                    9756    9759#   9783    9787#   9819    9823#   9842    9845#   9853    9856#   9866    9870#   9879
                    9883#   9901    9904#   9913    9916#   9937    9941#   9943    9946#   9958    9961#
ERRTN = 000000       500#
ERRVEC= 000004       319#     709     710#    721#
ERR1    001226       674#   10408
ERR2    001242       676#   10411
ET    = ****** U     8792
ETO   = ****** U     8826
EVENT   040314       9632#
EXPDAT  001034       616#    5866#   5879#   5896    6350#   6351    6361    6368    7027#   7028#   7054    7370#   7397
                     7404
EXPIR1  037250       9328    9339#
FINNOP  021664       5894    5949#
FIN116  023732       6447    6514#
FIN117  024076       6559    6568#
FIN120  024245       6591    6615    6621#
FIN121  024730       6634    6749#
FIN122  025214       6787    6836#
FIN125  026514       7062    7116    7120    7212#
FIN126  027704       7418    7541#
FIN127  030414       7628    7632    7735#
FIN130  031372       7855    7859    8015#
FLAG    001042       619#
FPPTST= 000001         1#     193     203     214     546     633     645     646     667     674     695    9966   10006
                    10016
FPVEC = 000244       486#
FRSTST  001510       747#
GNS   = ****** U      531   10324   10325   10326   10327   10328
GPROTS  001742       875#
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GPR2TS  002146            949#
GPR3TS  002250            986#
GPR4TS  002352           1023#
GPR5TS  002454           1060#
GPR6TS  002556           1097#
HITMIS- 177752            491#
HT    - 000011           2291#  10055   10113
HYBRID- 000001              1#    508     639     738    9978    9994   10006   10017   10268   10331
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IL    - ****** U          8951
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ILBOB   032742            8308    8318#
ILLA  - ****** U          8297
ILLB  - ****** U          8325
ILLBCA  033034            8333    8339#
ILLBOB  033046            8335    8344#
ILLO  - ****** U          8157
ILO   - ****** U          8982
INTDN   041376            9876    9883#
INTRPT- ****** U          9588
INT4    041230            9835    9845#
INT5    041272            9847    9856#
INT6    041330            9858    9866#
INT7    041370            9871    9879#
IOT   - ****** U          8718
IOTIME- ****** U          9107
IOTO  - ****** U          8185
IOTOA   032266            8194    8200#
IOTOB   032300            8196    8205#
IOTVEC- 000020             324#    735*    736*
ITO   - ****** U          8748
JMP   - ****** U          3458
JP    - ****** U          3704
JSI   - ****** U          9061
JSRA  - ****** U          3777    3983
KDPAR0- 172360             467#
KDPAR1- 172362             468#
KDPAR2- 172364             469#
KDPAR3- 172366             470#
KDPAR4- 172370             471#
KDPAR5- 172372             472#
KDPAR6- 172374             473#
KDPAR7- 172376             474#
KDPDR0- 172320             445#
KDPDR1- 172322             446#
KDPDR2- 172324             447#
KDPDR3- 172326             448#
KDPDR4- 172330             449#
KDPDR5- 172332             450#
KDPDR6- 172334             451#
KDPDR7- 172336             452#
KIPAR0- 172340             456#
KIPAR1- 172342             457#
KIPAR2- 172344             458#
KIPAR3- 172346             459#
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KIPAR4= 172350            460#
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KIPAR6= 172354            462#
KIPAR7= 172356            463#
KIPDR0= 172300            434#
KIPDR1= 172302            435#
KIPDR2= 172304            436#
KIPDR3= 172306            437#
KIPDR4= 172310            438#
KIPDR5= 172312            439#
KIPDR6= 172314            440#
KIPDR7= 172316            441#
LF    = 000012            230#  658   662   667   674   676   679  10006  10012  10107  10115
LOOPIN  001060            627#
MACCC   015550           4592#
MADCC   015454           4548#
MAINT = ****** U          9924
MAINTR  041550            9925#
MALCC   016516            4932#
MARCC   016622            4984#
MARKIT= ****** U          5266
MA11    007152            2682#
MA55    010272            3049#
MBB11   007270            2730#
MBB22   007646            2884#
MBCCC   015112            4383#
MBC00   006710            2579#
MBC11   007374            2775#
MBC22   007754            2925#
MBI00   006610            2537#
MBPTO   032544            8268#
MBSCC   015200            4421#
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MBTOC   035420            8924   8929#
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MBTOE   035452            8930   8939#
MBTOF   035470            8940   8945#
MB66    010362            3089#
MCB44   010172            3008#
MCTSCC  015360            4500#
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MD2   = ****** U           779
MD3   = ****** U           803
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MD5    = ****** U          842
MD6    = ****** U          858
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MET     034736             8792#
META    035000             8805#   8815
METB    035006             8800    8809#
METD    035022             8810    8815#
METF    035036             8816    8821#
METO    035056             8826#
METOA   035126             8841#
METOB   035134             8834    8845#
METOC   035152             8846    8851#
METOD   035176             8857#
METOE   035204             8852    8861#
METOF   035222             8862    8867#
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ME101  = ****** U          5360
ME102  = ****** U          5376
ME103  = ****** U          5393
ME104  = ****** U          5410
ME105  = ****** U          5427
ME106  = ****** U          5444
ME107  = ****** U          5461
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ME111  = ****** U          5495
ME112  = ****** U          5512
ME113  = ****** U          5611
ME113A= ****** U           5710
ME114  = ****** U          5852
ME115  = ****** U          6293
ME116  = ****** U          6396
ME117  = ****** U          6516
ME120  = ****** U          6570
ME121  = ****** U          6626
ME122  = ****** U          6752
ME123  = ****** U          6838
ME124  = ****** U          6926
ME125  = ****** U          7018
ME126  = ****** U          7214
ME127  = ****** U          7543
ME130  = ****** U          7737
MIALL   035746             9028#
MIALLA  035776             9040#   9050
MIALLB  036004             9036    9044#
MIALLD  036020             9045    9050#
MIALLF  036034             9051    9056#
MIL     035502             8951#
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MILAO   032656             8297#
MILB    035540             8959    8967#
MILD    035554             8968    8973#
MILF    035570             8974    8979#
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MILLOA  032160             8166    8171#
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MILOD   035710           9012#
MILOE   035716           9007    9016#
MILOF   035734           901     9022#
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MIOTA   034524           8729#   8739
MIOTB   034532           8726    8733#
MIOTD   034546           8734    8739#
MIOTF   034562           8740    8745#
MIOTO   032216           8185#
MITO    034574           8748#
MITOA   034630           8761#
MITOB   034636           8756    8765#
MITOC   034654           8766    8771#
MITOD   034700           8777#
MITOE   034706           8772    8781#
MITOF   034724           8782    8787#
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MJP27A  012514           3728    3735#
MJP37   012576           3736    3761#
MJP37A  012614           3762    3769#
MJP67   012524           3737#   3770
MJP67A  012542           3738    3745#
MJP67B  012556           3747    3751#
MJP77   012560           3751    3753#
MJP77E  012624           3754    3773#
MJRA    013476           3983#
MJR27   013536           3996#   4002
MJR27A  013576           4003    4010#
MJR27B  013616           4014#   4043
MJR37   013704           4013    4037#
MJR37A  013744           4044    4051#
MJR6A   013700           4034#   4062
MJR6B   013702           4033    4035#
MJR67   013620           4016#   4054
MJR67A  013660           4023    4030#
MJR77   013764           4022    4035    4056#
MJR77A  014024           4063    4070#
MJSI    036046           9061#
MJSIA   036104           9075#
MJSIB   036112           9069    9079#
MJSIC   036130           9080    9085#
MJSID   036154           9091#
MJSIE   036162           9086    9095#
MJSIF   036200           9096    9101#
MJSR    012624           3777#
MJSRA   012756           3814    3818#   3888
MJSRB   013142           387C    3873#   3944
MJSRC   013330           3927    3929#
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MJSR1   012750          3787    3820#
MJSR1A  012776          3821    3828#
MJSR1B  013026          3833    3840#
MJSR2   012666          3792#   3832    3843
MJSR2A  012704          3795    3800#
MJSR2B  012734          3805    3812#
MJSR3   013144          3818    3876#
MJSR3A  013162          3877    3884#
MJSR3B  013212          3889    3896#
MJSR4   013050          3804    3847#   3899
MJSR4A  013066          3848    3855#
MJSR4B  013116          3860    3867#
MJSR5   013332          3873    3932#   3971
MJSR5A  013350          3933    3940#
MJSR5B  013400          3945    3952#
MJSR6   013236          3859    3904#   3955
MJSR6A  013254          3905    3912#
MJSR6B  013304          3917    3924#
MJSR7   013424          3916    3929    3959#
MJSR7A  013442          3960    3967#
MJSR7E  013472          3972    3979#
MJU1    011600          3465    3487#
MJU1A   011616          3488    3495#
MJU2    011532          3467#   3475    3496
MJU2A   011550          3468    3475#
MJU2B   011564          3476    3483#
MJU3    011630          3486    3498#
MJU3A   011646          3499    3506#
MJU3B   011662          3507    3514#
MJU4    011744          3515    3538#   3539
MJU4A   011762          3540    3547#
MJU4B   012000          3548    3555#
MJU5    011674          3517#   3559
MJU5A   011712          3519    3526#
MJU5B   011730          3527    3534#
MJU6    012014          3535    3561#
MJU6A   012032          3562    3569#
MJU7    012052          3572    3574#
MJU7E   012070          3575    3582#
MJ2     011576          3484    3486#   3506
MJ5     012012          3518    3556    3559#
MJ7     012046          3570    3572#
MMARK   017466          5266#
MMRL5   011164          3319#
MMUTST= 000001            1#     193     203     214     546     632     658     667     674     695     738    9966   10006
                        10016   10268
MMUTSO= ****** U          4116
MMVCC   014746          4311#
MMVEC = 000250           335#
MM11    007022          2628#
MM22    007474          2816#
MNCCCC  015652          4639#
MRLB1   010636          3185#
MRLCC   016204          4789#
MRL0    010550          3151#
MRL2    010732          3222#
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MRL3    011024            3259#
MRL4    011114            3293#
MRL5  - ****** U          3319
MRL6    011236            3345#
MRL7    011304            3369#
MRRB1   011454            3435#
MRRCC   016310            4841#
MRRO    011422            3415#
MRT     033630            8513#
MRTA    033656            8524#   8534
MRTB    033664            8521    8528#
MRTE    033700            8529    8534#
MRTF    033714            8535    8540#
MRTO    033726            8546#
MRTOA   033762            8559#
MRTOB   033770            8554    8563#
MRTOC   034006            8564    8569#
MRTOD   034032            8576#
MRTOE   034040            8570    8580#
MRTOF   034056            8581    8586#
MRTS    014030            4075#
MSBCC   016020            4709#
MSBCCC  016104            4745#
MSER  - 177744             490#
MSG1    042036            9980   10006#
MSG2    042077            9990   10012#
MSOB    017372            5228#
MSPAA   005462            2103#
MSPAU   031372            8016#
MSPB    003044            1198#
MSPBB   005562            2146#
MSPC    003104            1225#
MSPD    003150            1254#
MSPEO   003222            1286#
MSPF    003300            1319#
MSPG    003356            1352#
MSPH    003430            1383#
MSPI    003510            1417#
MSPJ    003564            1449#
MSPL    003730            1513#
MSPM    004012            1548#
MSPN    004110            1592#
MSPO    004172            1627#
MSPP    004326            1690^
MSPQ    004444            1737#
MSPR    004602            1795#
MSPS    004710            1838#
MSPT    004772            1872#
MSPU    005020            1892#
MSPV    005150            1958#
MSPVO   005100            1927#
MSPX    005230            1993#
MSPY    005314            2030#
MSPZ    005376            2066#
MSPO    003006            1171#
MSTB3   005646            2183#
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MSTO    033072          8351#
MSTOE   033152          8358    8370#
MSTOEE  033164          8369    8375#
MST4    005734          2221#
MST4B   006006          2253#
MST5    006062          2285#
MST5B   006130          2315#
MST6    006206          2349#
MST7    006270          2383#
MSW37   011356          3393#
MSXT    017134          5126#
MSXTCC  016736          5038#
MS11    007220          2706#
MS22    007562          2852#
MS33    010072          2974#
MS77    010446          3118#
MTP     034070          8590#
MTPA    034336          8670#
MTPAA   034426          8681    8682    8691    8700#
MTPAE   034456          8705    8709#
MTPAH   034420          8680    8694#
MTPAL   034404          8684#   8706*   8707*   8708
MTPB    034132          8598    8607#
MTPF    034162          8614    8619#
MTPO    034174          8625#
MTPOA   034230          8638#
MTPOB   034236          8633    8642#
MTPOC   034254          8643    8648#
MTPOD   034300          8654#
MTPOE   034306          8649    8658#
MTPOF   034324          8659    8664#
MTPQ    034146          8608    8613#
MTPR    034124          8603#   8613
MTRPO   032432          8239#
MTRY    031570          8071#
MTRYA   031654          8081    8092#
MTRYB   031700          8096    8103#
MTRYM   031732          8113#
MTSO    014746          4222    4310#
MTT     033176          8380#
MTTA    033242          8389    8397#   8407
MTTB    033250          8390    8401#
MTTD    033264          8402    8407#
MTTE    033300          8408    8413#
MTTR    033430          8457#
MTTRA   033504          8466    8476#
MTTRB   033512          8467    8480#
MTTRC   033530          8481    8486#
MTTRD   033572          8488    8498#
MTTRE   033600          8489    8502#
MTTRF   033616          8503    8508#
MTTS    033312          8418#
MTTSA   033356          8427    8434#
MTTSB   033366          8428    8441#
MTTSD   033402          8442    8447#
MTTSE   033416          8448    8453#
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MTTSQ   033360          8437#   8447
MVCC  - ****** U        4311
MXOR    017276          5191#
MXRCC   017022          5076#
MXVDEL= 000001             1#
M11   - ****** U        2628
M2      001550           779#
M22   - ****** U        2816
M3      001600           803#
M4      001630           823#
M5      001660           842#
M6      001710           858#
NCCCC - ****** U        4639
NOBEVE  041550          9719    9921#
NOINTE  040314          9597    9628#
ODDADR= ****** U        9142
PARRAM= 000001             1#
PIRQ  - 177772           236#   9283    9310*   9311    9317*   9318    9354*   9357*   9359    9397*   9408    9409*   9433*
                        9439*   9443*   9446*   9469*   9478*   9481    9500    9501*   9552*   9557*   9569    9580*
PIRQNX  037106          9281    9287#
PIRQVE= 000240           330#   9300    9301    9302*   9303*   9393*   9394*   9437*   9438*   9470*   9471*   9554*   9555*
                        9583*   9584*
PIRRTN  037432          9393    9408#
PIRTBL  037230          9307    9330#
PIRTEX  037114          9285    9291#
PIRTST= ****** U        9274
PIR1    037114          9294#
PIR2    037250          9343#
PIR2EX  037354          9370    9381#
PIR3    037354          9384#
PIR3EX  037464          9406    9420#
PIR4    037464          9424#
PIR5    037552          9455#
PIR5EX  040002          9495    9533#
PIR6    040002          9537#
PIR6EX  040120          9564    9583#
PITBL1  037326          9356    9372#
PITBL2  037766          9472    9526#
PI1     037402          9396#   9405
PI2     037460          9412    9418#
PI3     037420          9403#   9418
PROCNT  024150          6586#   6608
PR0   - 000000           253#
PR1   - 000040           254#
PR2   - 000100           255#
PR3   - 000140           256#
PR4   - 000200           257#
PR5   - 000240           258#
PR6   - 000300           259#
PR7   - 000340           260#   9303    9471    9555    9598    9602    9681
PS    - 177776           233#    234    5961*   5962    5975*   5976    6018*   6025*   6032*   6290*   6582*   8468*   8490*
                        8555*   8571*   8599*   8634*   8650*   8757*   8773*   8837*   8853*   8915*   8931*   8991*   9008*
                        9070*   9087*   9115*   9186*   9187    9194    9201    9476*   9480    9598*   9832*   9917*   9951*
PSW   - 177776           234#   9231*   9434*   9604*
PSWBTS  002664          1134#
PWRVEC= 000024           325#
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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
SMMOD = 000001              1#    573   10006
SIPAR0= 172240            412#
SIPAR1= 172242            413#
SIPAR2= 172244            414#
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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
SOPVO   = ****** 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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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
TSMMUO  014130            41164
TSPSWB= ****** U          1134
TSTLOC  001076             644#
TST1    001510             753#
TST10   002044             916#
TST100  010072            29784
TST101  010172            30124
TST102  010272            30534
TST103  010362            30934
TST104  010446            31224
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TST107  010732            32264
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TST111  011114            32974
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TST116  011422            34194
TST117  011454            34394
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TST122  012434            37084
TST123  012624            37814
TST124  013476            39874
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TST131  015112            4387#
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TST140  016020            4713#
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TST143  016310            4845#
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TST157  017756            5380#
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TST20   003044            1202#
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TST64   006530            2507#
TST65   006610            2541#
TST66   006710            2583#
TST67   007022            2632#
TST7    001742             879#
TST70   007152            2686#
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TST74   007474            2820#
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TTR   = ****** U          8457
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TYPON = 104404         10327#
TYPOS = 104403         10326#
T114    021524          5871    5884    5896#
T116    023556          6407    6416    6449#   6466
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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#
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T124E   025746          6988    7013#
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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          6418    9726    9776    9809    9837    9848    9859    9872    9897
XBUF  = 177566          4990
XCSR  = 177564          4980    9603#   9611#
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XRCC   = ****** U          5076
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$ASTAT= ****** U          10365   10380
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$ATY1   043222            10334#
$ATY3   043230            10045   10335#
$ATY4   043240            10337#  10416
$CHARC  042454            10062*  10072*  10079   10105*  10110#
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$CMTAG= ****** U            698     704     706
$CPUOP  001026              599#
$CRLF   001257              679#  10061   10122
$DBLK   042714            10148   10182   10190#
$DEVCT  001010              590#
$DGAGN  042026             9986    9995   10001#
$DTBL   042704            10151   10186#
$ENDAD  042016              542    9997#
$ENDCT  041764              705    9988#
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$ENVM   001021              596#    731   10042   10047   10345
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$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#
$GET42  042006             9994#
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$HD    = 000003              212     213
$HIBTS  000204              562#
$LF     042475            10122#
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$MAIL   001000              563     567     585#    723   10040
$MBADR  000206              563#
$MFLG   043464            10335*  10341   10376*  10380#
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$MSGLG  001016              593#  10356*
$MSGTY  001000              586#  10349   10357*  10369   10373*
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                           1450#   1514#   1549#   1593#   1628#   1691#   1738#   1796#   1839#   1873#   1893#   1928#   1959#
                           1994#   2031#   2067#   2104#   2147#   2184#   2222#   2254#   2286#   2316#   2350#   2384#   2422#
                           2444#   2473#   2504#   2538#   2580#   2629#   2683#   2707#   2731#   2776#   2817#   2853#   2885#
                           2926#   2975#   3009#   3050#   3090#   3119#   3152#   3186#   3223#   3260#   3294#   3320#   3346#
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                           4895    4933#   4985#   5039#   5077#   5127#   5129    5192#   5229#   5267#   5343#   5360#   53??#
                           5394#   5411#   5428#   5445#   5462#   5479#   5496#   5513#   5612#   5711#   5853#   5950#   6072#
                           6109#   6146#   6183#   6220#   6257#   6294#   6397#   6517#   6571#   6627#   6753#   6839#   692?#
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                    8827#  8875#  8907#  8952#  8983#  9029#  9062#  9107#  9142#  9144   9221#  9275#  9295#
                    9344#  9346   9385#  9387   9425#  9427   9456#  9458   9538#  9540   9589#  9633#  9635
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$OMODE  043150      10218*10222*10227   10230*10241*10267#
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$SVPC = 000204       540#   545
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                    1455   1519   1554   1598   1633   1696   1743  1801  1844  1878  1898  1933  1964
                    1999   2036   2072   2109   2152   2189   2227  2259  2291  2321  2355  2389  2427
                    2449   2478   2509   2543   2585   2634   2688  2712  2736  2781  2822  2858  2890
                    2931   2980   3014   3055   3095   3124   3157  3191  3228  3265  3299  3325  3351
                    3375   3399   3421   3441   3464   3590   3710  3783  3989  4081  4122  4317  4352
                    4389   4427   4463   4508   4554   4598   4645  4715  4751  4795  4847  4901  4938
                    4990   5044   5082   5136   5197   5234   5272  5348  5365  5382  5399  5416  5433
                    5450   5467   5484   5501   5518   5617   5716  5858  5955  6077  6114  6151  6188
                    6225   6262   6299   6402   6522   6576   6632  6758  6844  6932  7024  7220  7549
                    7743   8022   8077   8119   8163   8191   8219  8245  8274  8303  8331  8357  8386
                    8424   8463   8519   8552   8596   8631   8676  8724  8754  8798  8832  8880  8912
                    8957   8988   9034   9067   9112   9150   9226  9280  9300  9353  9392  9433  9469
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$SWREG  001022       597#   733
$TESTN  001004       588#   738*   754*   786*   808*   828*   847*  863*  880*  917*  954*  991*  1028*
                    1065*  1102*  1139*  1178*  1203*  1230*  1259* 1291* 1324* 1357* 1388* 1422* 1454*
                    1518*  1553*  1597*  1632*  1695*  1742*  1800* 1843* 1877* 1897* 1932* 1963* 1998*
                    2035*  2071*  2108*  2151*  2188*  2226*  2258* 2290* 2320* 2354* 2388* 2426* 2448*
                    2477*  2508*  2542*  2584*  2633*  2687*  2711* 2735* 2780* 2821* 2857* 2889* 2930*
                    2979*  3013*  3054*  3094*  3123*  3156*  3190* 3227* 3264* 3298* 3324* 3350* 3374*
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$TPFLG   042473          10034   10120#
$TPS     042464          10100   10115#
$TRAP    043152            702   10276#
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$TSTNU= 000001            501#
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        9277    9295    9297    9344    9346    9350    9385    9387    9389    9425    9427    9430    9456    9458    9466
        9538    9540    9549    9589    9591    9633    9635    9638    9659    9661    9664    9708    9710    9713    9742
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       10019   10126   10193   10270   10333   10388
SWRSU    331#     707#
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TSO1MS   747#     750
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F2


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TYPNAM    3310#
TYPNUM    3310#
TYPOCS    3310#
TYPOCT    3310#
TYPTXT    3310#
$$ESCA    3310#
$$NEWT    3310#    748    780    804    824    843    859    876    913    950    987   1024   1061   1098   1135
          1172    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   4549   4593   4640   4710   4746   4790   4842   4893   4933   4985   5039   5077
          5127    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   6927   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   9221   9275   9295   9344   9385   9425   9456
          9538    9589   9633   9659   9708   9742   9762   9791   9827   9888   9926
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$$SETM    7230#    730
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.HEADE    1980#    203
.KT11     1960#    331
.SETUP    1980#    508
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.$APTB    1960#    581
.$APTH    1980#    546
.$APTY    1990#  10331
.$EOP     1960#   9969
.$ERRO    1990#
.$READ    1990#
.$TRAP    1980#  10268
.$TYPD    1970#  10124
.$TYPE    1970#  10017
.$TYPO    1990#  10191
.$40CA    1960#    509


. ABS.  043656      000


 ERRORS DETECTED:  0

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 RUN-TIME:  939 192 16 SECONDS
 RUN TIME RATIO: 1549/1148=1.3
 CORE USED:  55K  (109 PAGES)

 DOCUMENT PAGES:  225
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