```
                        .REM    %


                                IDENTIFICATION
                                --------------

PRODUCT CODE:   AC-8218B-MC

PRODUCT NAME:   CVKAJB0 DIS DECMAL INSTR TST

PRODUCT DATE:   JANUARY 1982

MAINTAINER:     DIAGNOSTIC ENGINEERING
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1.0 GENERAL INFORMATION

1.1 ABSTRACT

THIS DIAGNOSTIC VERIFIES THE OPERATION OF THE DIBOL DECIMAL
INSTRUCTIONS OF THE LSI-11 [ADDN,SUBN,CMPN,CVTNL].
THE PROGRAM CHECKS THAT EACH INSTRUCTION IS INTERRUPTABLE
USING THE CONSOLE SLU INTERFACE(SEE PARA 2.3.4) AND RUNS ALTERNATE
PASSES WITH THE TRACE TRAP ENABLED, UNLESS INHIBITED
BY THE SWITCH REGISTER (2.3.1).
THE PROGRAM IS DESIGNED TO RUN ON AN LSI-11 WITH 4K OF MEMORY AND
THE DIS MICROMS. IT CAN BE RUN UNDER XXDP+, APT, AND ACT MONITORS.
THE SOFTWARE SWITCH REGISTER IS AT LOCATION 176.

TO FULLY TEST THE LSI-11 DIBOL INSTRUCTION SET MICROMS, THE
FOLLOWING DIAGNOSTICS MUST BE RUN:

CVKAI* DIS MOVE & STRING INSTRUCTION TEST
CVKAJ* [THIS DIAGNOSTIC]
CVKAB* LSI-11 EIS INSTRUCTION TEST

WHERE "*" IS THE LASTED REVISION

1.2 SYSTEM REQUIREMENTS

1.2.1 EQUIPMENT

LSI-11(KD11-P) WITH A SERIAL LINE INTERFACE AND
4K OF MEMORY

1.2.2 STORAGE

THE PROGRAM USES MEMORY FROM 000000 TO 017104.

1.2.3 PRELIMINARY PROGRAMS

IT IS ASSUMED THAT THE FOLLOWING DIAGNOSTICS HAVE BEEN RUN:

LSI-11 BASIC CPU TEST	CVKAA*
LSI-11 TRAPS TEST	CVKAD*

WHERE "*" IS THE LASTED REVISION

2.0 OPERATING INSTRUCTIONS

2.1 LOADING PROCEDURES

CAN BE LOADED UNDER XXDP+ OR
USE STANDARD PROCEDURE FOR PDP-11 ABSOLUTE BINARY FORMATTED TAPES

2.2 STARTING PROCEDURE

LOAD THE SWITCH REGISTER WITH THE DESIRED SETTING
(SOFTWARE SWITCH REGISTER LOCATION = 176)

THE PROGRAM SHOULD ALWAYS BE STARTED AT 200.
STARTING AT 200, THE PROGRAM CLEARS ALL PROGRAM PARAMETERS AND
THEN PRINTS ITS MAINDEC IDENTIFICATION. "END PASS" IS PRINTED
AT THE END OF EACH FULL PASS OF THE DIAGNOSTIC.

2.3 OPERATING PROCEDURES

2.3.1 OPERATIONAL SWITCH REGISTER

LOCATION 176 IS USED FOR THE SOFTWARE SWITCH REGISTER AND
THE FOLLOWING OPTIONS MAY BE SELECTED BY INSERTING A 1 IN THEIR
RESPECTIVE BIT POSITIONS.

BIT15	- HALT ON ERROR
BIT14	- SCOPE LOOP
BIT13	- INHIBIT ERROR TYPEOUT
BIT12	- INHIBIT TRACE TRAP
BIT11	- UNUSED
BIT10	- UNUSED
BIT09	- LOOP ON ERROR
BIT08	- LOOP ON TEST IN SWR<05:00>
BIT07	- INHIBIT INTERRUPTABILITY TESTS

NOTE: ALL TYPEOUTS CAN BE SUPPRESSED BY MAKING BIT5 OF BYTE $ENVM
HIGH.

2.3.2 RUNNING UNDER APT

THE APT MAILBOX-ETABLE IS LOCATED AT LOCATION 566.

USING THE CONSOLE INTERFACE AS THE INTERRUPTING DEVICE,
THE INTERRUPTABILTIY TESTS WILL BE RUN ON ONLY THE FIRST PASS TO
AVOID INTERFERENCE WITH THE APT INTERFACE. IF INTERRUPTABILITY
TESTS ARE DESIRED ON ALL PASSES, ANOTHER SLU MUST BE SUPPLIED
AND ITS RECEIVER STATUS REGISTER ADDRESS & ITS INTERRUPT VECTOR MUST
BE PLACED IN THE APT E-TABLE AT LOCATIONS "$BASE" & "$VECT1" RESPECTIVELY.

2.3.3 RUN WITH ALTERNATE CONSOLE ADDRESS

TO USE A CONSOLE ADDRESS OTHER THAN 177560, THE OPERATOR
MUST SUPPLY THE PROGRAM WITH THE CORRECT ADDRESSES BY INSERTING THEM
AT THE LOCATIONS LABELED:

$TKS:	RCSR ADDRESS
$TKB:	RBUF ADDRESS
$TPS:	TCSR ADDRESS
$TPB:	TBUF ADDRESS

2.3.4 RUN INTERRUPT TESTS WITH ALTERNATE SLU

TO USE A SERIAL LINE INTERFACE ADDRESS OTHER THAN THE STANDARD
CONSOLE ADDRESS (177560), THE OPERATOR MUST SUPPLY THE CORRECT ADDRESS
AND INTERRUPT VECTOR BY INSERTING THEM IN THE LOCATIONS LABELED:

$BASE:	*RCSR ADDRESS*
$VECT1:	*RECEIVER INTERRUPT VECTOR*

2.4 EXECUTION TIMES

THE GIVEN EXECUTION TIMES TAKE INTO ACCOUNT THE RANDOM CHARACTERISTIC OF THE INTERRUPT TESTS. THE EXECUTION TIME OF THE FIRST PASS IS APPROXIMATELY 10 SECONDS; BUT SUBSEQUENT PASSES WITH INTERRUPT TESTS ENABLED COULD TAKE AS LONG AS 32 SECONDS. THEREFORE THE 32 SECOND EXECUTION TIME IS USED. THE PASS TIME WITHOUT INTERRUPTS IS APPROXIMATELY 2 SECONDS.

3.0 ERROR REPORTING

IF A ROUTINE FAILS AND THE INHIBIT ERROR TYPEOUT (BIT13) OF THE SWR IS NOT SET, THE PC OF THE ERROR IS PRINTED. THE OPERATOR CAN FIND THE ERROR REPORT IN THE COMMENT FIELD OF THAT PC LOCATION IN THE PROGRAM LISTING. IF HALT ON ERROR (BIT15) OF THE SWR IS SET THE PROGRAM WILL HALT AFTER PRINTING THE ERROR PC AND ENTER THE MACHINE ODT.

```
        E.G.    XXXXXX          <--PC OF THE ERROR

                XXXXXX          <--PC+2 OF THE HALT ON ERROR LOCATION
               @                <--ODT ENTERED

        WHERE "XXXXXX" IS AN OCTAL VALUE
```

4.0 SUBROJTINE ABSTRACTS

4.1 TRAPCATCHER

A ".+2 - HALT" SEQUENCE IS REPEATED FROM 0-776 TO CATCH ALL UNEXPECTED TRAPS. THUS ALL UNEXPECTED TRAPS OR INTERRUPTS WILL HALT AT THE VECTOR+2, EXCEPT TRAPS TO LOCATION 0,4, & 10 WHICH GO TO THEIR RESPECTIVE REPORTING ROUTINES "TZERO","TIMTRP", & "ILLTRP". THE OTHER EXCEPTION IS LOCATION 100 (RTC INTERRUPT VECTOR) WHICH CONTAINS A ".+2 - RTI" SEQUENCE (RETURNS FROM THE INTERRUPT).

4.2 SCOPE

THIS ROUTINE CALL IS PLACED BETWEEN EACH SUBTEST. IT RECORDS THE STARTING ADDRESS OF EACH SUBTEST AS IT IS BEING ENTERED & UPDATES THE TEST NUMBER. IF A SCOPE LOOP IS REQUESTED IT WILL JUMP TO THE START OF THE SUBTEST AT WHICH THE SCOPE LOOP IS REQUESTED.

4.3 ERROR

THIS ROUTINE CALL IS PLACED WHEREEVER AN ERROR REPORT IS DESIRED. THE LOWER BYTE OF THIS CALL IS USED AS THE ERROR NUMBER. THIS ROUTINE REPORTS ERRORS TO APT USING "$APTYPE". TYPES ERRORS TO THE CONSOLE USING THE "$TYPE" & "$TYPOCT" ROUTINES, AND HANDLES ERROR RESPONSES VIA SWR SETTINGS.

4.4 $POWER

THIS ROUTINE SAVES ALL GENERAL REGISTERS DURING POWER-DOWN AND RESTORES THEM AT POWER-UP. IF A POWER FAILURE OCCURS "POWER" IS PRINTED AT THE CONSOLE AFTER POWER IS RESTORED AND THE PROGRAM IS RESTARTED AT TEST# 1.

4.5 NPREP

THIS ROUTINE IS USED TO STORE A COPY OF THE INSTRUCTION TEST ARGUMENTS TO BE STORED IN R0-->R5.

4.6 GENR

THIS ROUTINE IS USED TO TRANSFER INSTRUCTION TEST ARGUMENTS TO THE GENERAL REGISTERS AND TO COPY THE STACK POINTER BEFORE THE TEST INSTRUCTION EXECUTION.

4.7 XPSW

THIS ROUTINE IS USED TO STORED THE EXPECTED PSW OF THE INSTRUCTION TEST AND TO SET THE T-BIT IN THE EXPECTED PSW ON PASSES USING THE TRACE TRAP.

4.8 INTR

THIS ROUTINE IS USED TO DETECT WHEN THE TEST INSTRUCTION HAS BEEN INTERRUPTED AND TO CONTINUE THE INTERRUPT STREAM UNTIL THE INSTRUCTION IS INTERRUPTED.

```
                        5.0     MISCELLANEOUS
                                -------------


                        5.1     STACK POINTER
                                -------------
                                STACK POINTER IS INITIALLY SET TO 500 (OCTAL).


                        5.2     PASS COUNT
                                ----------
                                A 16 BIT LOCATION "$PASS" IS USED TO KEEP THE PASS COUNT. IT IS
                                CLEARED BY STARTING AT 200.


                        5.3     TEST NUMBER
                                -----------
                                A 16 BIT LOCATION "$TSTNM" IS USED TO KEEP TRACK OF THE SUBTEST
                                NUMBER. THIS NUMBER IS ALSO PLACED IN THE APT E-TABLE AT "$TESTN"
                                WHEN UNDER APT.


                        5.4     POWER FAIL
                                ----------
                                THE DIAGNOSTIC CAN BE POWER FAILED WITH NO ERRORS. AFTER POWERING
                                DOWN AND THEN UP AGAIN, THE PROGRAM WILL RESTAR FROM TEST# 1
                                (I.E., RESTARTS THE PASS THAT WAS INTERRUPTED) AFTER TYPING "POWER"
                                TO THE CONSOLE.  HOWEVER IF THE PROGRAM IS STORED IN MOS MEMORY
                                THAT CAN NOT HOLD DATA WITH POWER DOWN, THEN THE PROGRAM WILL NOT
                                RECOVER FROM A POWER FAIL.


                        5.5     EVENT INTERRUPTS
                                ----------------
                                THIS DIAGNOSTIC CAN BE RUN WITH THE REAL TIME CLOCK ACTIVE
                                (INTERRUPT = 100). LOCATION 100 POINTS TO LOCATION 102
                                WHICH CONTAINS AN "RTI" INSTRUCTION. THUS ON CLOCK INTERRUPTS,
                                AN RTI IS EXECUTED TO HANDLED IT.


                        %

                        .ENABLE ABS
                        .LIST   ME
                        .NLIST  MC,MD,CND
```

```
                        .SBTTL  BASIC DEFINITIONS

                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                  STACK=  1100
                        .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
```

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

                        ;*"SWITCH REGISTER" SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
000400                  SW08=   400
000200                  SW07=   200
000100                  SW06=   100
000040                  SW05=   40
000020                  SW04=   20
000010                  SW03=   10
000004                  SW02=   4
000002                  SW01=   2
000001                  SW00=   1
                        .EQUIV  SW09,SW9
                        .EQUIV  SW08,SW8
                        .EQUIV  SW07,SW7
                        .EQUIV  SW06,SW6
                        .EQUIV  SW05,SW5
                        .EQUIV  SW04,SW4
                        .EQUIV  SW03,SW3
                        .EQUIV  SW02,SW2
                        .EQUIV  SW01,SW1
                        .EQUIV  SW00,SW0

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

```
                                .EQUIV  BIT06,BIT6
                                .EQUIV  BIT05,BIT5
                                .EQUIV  BIT04,BIT4
                                .EQUIV  BIT03,BIT3
                                .EQUIV  BIT02,BIT2
                                .EQUIV  BIT01,BIT1
                                .EQUIV  BIT00,BIT0

                                ;*BASIC ''CPU'' TRAP VECTOR ADDRESSES
000004                          ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                          RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                          TBITVEC=14              ;;''T'' BIT
000014                          TRTVEC= 14              ;;TRACE TRAP
000014                          BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
000020                          IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
000024                          PWRVEC= 24              ;;POWER FAIL
000030                          EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
000034                          TRAPVEC=34              ;;''TRAP'' TRAP
000060                          TKVEC=  60              ;;TTY KEYBOARD VECTOR
000064                          TPVEC=  64              ;;TTY PRINTER VECTOR
000240                          PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
000200                                  APTSIZE=        200
000001                                  APTENV= 001
000100                                  APTSPOOL=       100
000040                                  APTCSUP=        040
171400                                  $SWR=   171400
000300                                  $SWRMK= 300
000020                                  TBIT=   20
000001                                  $TN=    1
000001                                  N=      1
000000                                  X=      $TN-1
177777                                  NXM=    177777
177560                                  ABASE=  177560
000060                                  AVECT1= 60
000000                                  .=0


                                .SBTTL  TRAP CATCHER

000000                                  .=0
                                ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ''.+2,HALT''
                                ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                                ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
000174                                  .=174
000174  000000                  DISPREG: .WORD  0               ;;SOFTWARE DISPLAY REGISTER
000176  000000                  SWREG:  .WORD   0               ;;SOFTWARE SWITCH REGISTER


000000                                  .=0
000000  014702                          TZERO           ;SET LOCATIONS 0,4,6 TO ERROR REPORTS
000002  000340                          340
000004  014712                          TIMTRP
000006  000340                          340
000010  014722                          ILLTRP
```

```
000012  000340                           340


        000100                           .=100
000100  000102                           .WORD   102            ;HANDLE EVENT LINE INTERRUPTS
000102  000002                           .WORD   2


        000200                           .=200
000200  000167  000512                   JMP     START          ;STARTING LOCATION FOR PROGRAM


        000400                           .=400
                                 .SBTTL  ACT11 HOOKS

                                 ;;***************************************************************
                                 ;HOOKS REQUIRED BY ACT11
        000400                           $SVPC=.                ;SAVE PC
        000046                           .=46
000046  014604                           $ENDAD                 ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
        000052                           .=52
000052  000000                           .WORD   0              ;;2)SET LOC.52 TO ZERO
        000400                           .=$SVPC                ;; RESTORE PC
                                 .SBTTL  APT PARAMETER BLOCK

                                 ;;***************************************************************
                                 ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
                                 ;;***************************************************************
        000400                           .$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  000400                           $APTHDR ;;POINT TO APT HEADER BLOCK
        000400                           .=.$X   ;;RESET LOCATION COUNTER
                                 ;;***************************************************************
                                 ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
                                 ;INTERFACE SPEC.

000400                           $APTHD:
000400  000000                   $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
000402  000566                   $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
000404  000030                   $TSTM:  .WORD   30      ;;RUN TIM OF LONGEST TEST
000406  000040                   $PASTM: .WORD   40      ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
000410  000000                   $UNITM: .WORD           ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
000412  000027                           .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
```

```
                        .SBTTL  COMMON TAGS

                        ;;*****************************************************************
                        ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                        ;*USED IN THE PROGRAM.

                                .=500
000500                  $CMTAG:                         ;;START OF COMMON TAGS
000500  000000                  .WORD   0
000502     000          $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
000503     000          $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
000504  000000          $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
000506  000000          $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
000510  000000          $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
000512  000000          $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
000514     000          $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
000515     001          $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
000516  000000          $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
000520  000000          $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
000522  000000          $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
000524  000000          $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
000526  000000          $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
000530  000000                  .WORD   0               ;;RESERVED--NOT TO BE USED
000532  000000                  .WORD   0
000534     000          $AUTOB: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
000535     000          $INTAG: .BYTE   0               ;;INTERRUPT MODE INDICATOR
000536  000000                  .WORD   0
000540  177570          SWR:    .WORD   DSWR            ;;ADDRESS OF SWITCH REGISTER
000542  177570          DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
000544  177560          $TKS:   177560                  ;;TTY KBD STATUS
000546  177562          $TKB:   177562                  ;;TTY KBD BUFFER
000550  177564          $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
000552  177566          $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
000554     000          $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
000555     002          $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
000556     012          $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A 'LINE FEED"
000557     000          $TPFLG: .BYTE   0               ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
000560  000000          $ESCAPE:0                       ;;ESCAPE ON ERROR ADDRESS
000562     077          $QUES:  .ASCII  /?/             ;;QUESTION MARK
000563     015          $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
000564  000012          $LF:    .ASCIZ  <12>            ;;LINE FEED
                        ;;*****************************************************************
                        .SBTTL  APT MAILBOX-ETABLE

                        ;;*****************************************************************
                        .EVEN
000566                  $MAIL:                          ;;APT MAILBOX
000566  00000C          $MSGTY: .WORD   AMSGTY          ;;MESSAGE TYPE CODE
000570  000000          $FATAL: .WORD   AFATAL          ;;FATAL ERROR NUMBER
000572  000000          $TESTN: .WORD   ATESTN          ;;TEST NUMBER
000574  000000          $PASS:  .WORD   APASS           ;;PASS COUNT
000576  000000          $DEVCT: .WORD   ADEVCT          ;;DEVICE COUNT
000600  000000          $UNIT:  .WORD   AUNIT           ;;I/O UNIT NUMBER
000602  000000          $MSGAD: .WORD   AMSGAD          ;;MESSAGE ADDRESS
000604  000000          $MSGLG: .WORD   AMSGLG          ;;MESSAGE LENGTH
000606                  $ETABLE:                        ;;APT ENVIRONMENT TABLE
```

```
   616  000606      000                $ENV:    .BYTE   AENV    ;;ENVIRONMENT BYTE
   617  000607      000                $ENVM:   .BYTE   AENVM   ;;ENVIRONMENT MODE BITS
   618  000610  000000                 $SWREG:  .WORD   ASWREG  ;;APT SWITCH REGISTER
   619  000612  000000                 $USWR:   .WORD   AUSWR   ;;USER SWITCHES
   620  000614  000000                 $CPUOP:  .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
   621                                 ;*                       BITS 15-11=CPU TYPE
   622                                 ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
   623                                 ;*                              11/70=06,PDQ=07,Q=10
   624                                 ;*                       BIT 10=REAL TIME CLOCK
   625                                 ;*                       BIT  9=FLOATING POINT PROCESSOR
   626                                 ;*                       BIT  8=MEMORY MANAGEMENT
   627  000616      000                $MAMS1:  .BYTE   AMAMS1  ;;HIGH ADDRESS,M.S. BYTE
   628  000617      000                $MTYP1:  .BYTE   AMTYP1  ;;MEM. TYPE,BLK#1
   629                                 ;*                       MEM.TYPE BYTE   --  (HIGH BYTE)
   630                                 ;*                              900 NSEC CORE=000
   631                                 ;*                              300 NSEC BIPOLAR 002
   632                                 ;*                              500 NSEC MOS=003
   633  000620  000000                 $MADR1:  .WORD   AMADR1  ;;HIGH ADDRESS,BLK#1
   634                                 ;*                         MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF 'TYPE'' ABOVE
   635  000622      000                $MAMS2:  .BYTE   AMAMS2  ;;HIGH ADDRESS,M.S. BYTE
   636  000623      000                $MTYP2:  .BYTE   AMTYP2  ;;MEM.TYPE,BLK#2
   637  000624  000000                 $MADR2:  .WORD   AMADR2  ;;MEM.LAST ADDRESS,BLK#2
   638  000626      000                $MAMS3:  .BYTE   AMAMS3  ;;HIGH ADDRESS,M.S.BYTE
   639  000627      000                $MTYP3:  .BYTE   AMTYP3  ;;MEM.TYPE,BLK#3
   640  000630  000000                 $MADR3:  .WORD   AMADR3  ;;MEM.LAST ADDRESS,BLK#3
   641  000632      000                $MAMS4:  .BYTE   AMAMS4  ;;HIGH ADDRESS,M.S.BYTE
   642  000633      000                $MTYP4:  .BYTE   AMTYP4  ;;MEM.TYPE,BLK#4
   643  000634  000000                 $MADR4:  .WORD   AMADR4  ;;MEM.LAST ADDRESS,BLK#4
   644  000636  000060                 $VECT1:  .WORD   AVECT1  ;;INTERRUPT VECTOR#1,BUS PRIORITY#1
   645  000640  000000                 $VECT2:  .WORD   AVECT2  ;;INTERRUPT VECTOR#2BUS PRIORITY#2
   646  000642  177560                 $BASE:   .WORD   ABASE   ;;BASE ADDRESS OF EQUIPMENT UNDER TEST
   647  000644                         $ETEND:
   648                                 .MEXIT
```

```
                                .SBTTL  ERROR POINTER TABLE

                                ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                                ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                                ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                                ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
                                ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                                ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                                ;*      DH              ;;POINTS TO THE DATA HEADER
                                ;*      DT              ;;POINTS TO THE DATA
                                ;*      DF              ;;POINTS TO THE DATA FORMAT


000644                          $ERRTB:

000644  000000                  S1LN:   .WORD   0               ;SOURCE1 LENGTH
000646  000000                  S1ADR:  .WORD                   ;SOURCE1 ADDRESS
000650  000000                  S2LN:   .WORD   0               ;SOURDE2 LENGTH
000652  000000                  S2ADR:  .WORD   0               ;SOURCE2 ADDRESS
000654  000000                  DSTLN:  .WORD                   ;DESTINATION LENGTH
000656  017044                  DSTAD:  .WORD   BUF             ;DESTINATION ADDRESS
000660  000000                  FILL:   .WORD                   ;FILL CHARACTER
000662  000000                  TABLE:  .WORD   0               ;TRANSLATION TABLE ADDRESS
000664  177564                  TCSR:   177564                  ;TCSR ADDRESS OF SLU USED FOR INTERRUPTS
000666  177566                  TBUF:   177566                  ;TBUF ADDRESS
000670  000064                  TVECT:  64                      ;TRANSMIT INTERRUPT VECTOR
000672  000066                  TPSW:   66                      ;   AND PSW LOCATION
000674  000000                  PCI:    0                       ;ADDRESS OF TEST INSTRUCTION TO INTERRUPT
000676  000000                  CCODES: 0                       ;CONDITION CODES AFTER EXECUTION OF TEST INSTRUCTION
000700  000000                  EXPPSW: 0                       ;EXPECTED PSW
000702  000000                  SAVR6:  0                       ;STACK POINTER VALUE BEFORE TEST INSTRUCTION EXECUTION
000704  000000                  BADR6:  0                       ;BAD STACK POINTER VALUE
000706  000000                  OLDPC:  0                       ;ADDRESS WHERE UNEXPECTED TRAP OR INTERRUPT OCCURRED
000710  000000                  TEMP:   0
000712  000000                  TEMP1:  0
000714  000000                  TEMP2:  0


000716  005067  177646          START:  CLR     $FATAL          ;CLEAR ERROR NO.
000722  005067  177640                  CLR     $MSGTYP         ;CLEAR MESSAGE TYPE
000726  005067  177640                  CLR     $TESTN          ;CLEAR TEST NO.
                                .SBTTL  INITIALIZE THE COMMON TAGS
                                                                ;CLEAR THE COMMON TAGS ($CMTAG) AREA
000732  012706  000500                  MOV     #$CMTAG,R6      ;FIRST LOCATION TO BE CLEARED
000736  005026                  1$:     CLR     (R6)+           ;CLEAR MEMORY LOCATION
000740  022706  000540                  CMP     #SWR,R6 ;DONE?
000744  001374                          BNE     .-6             ;LOOP BACK IF NO
000746  012706  000500                  MOV     #500,SP         ;SETUP THE STACK POINTER
                                                                ;INITIALIZE A FEW VECTORS
000752  012737  015150  000020          MOV     #$SCOPE,@#IOTVEC ;IOT VECTOR FOR SCOPE ROUTINE
000760  012737  000340  000022          MOV     #340,@#IOTVEC+2 ;LEVEL 7
000766  012737  015546  000030          MOV     #$ERROR,@#EMTVEC ;EMT VECTOR FOR ERROR ROUTINE
000774  012737  000340  000032          MOV     #340,@#EMTVEC+2 ;LEVEL 7
```

```
001002 012737 016764 000034          MOV    #$TRAP,@#TRAPVEC ;TRAP VECTOR FOR TRAP CALLS
001010 012737 000340 000036          MOV    #340,@#TRAPVEC+2;LEVEL 7
001016 012737 015346 000024          MOV    #$PWRDN,@#PWRVEC ;POWER FAILURE VECTOR
001024 012737 000340 000026          MOV    #340,@#PWRVEC+2 ;LEVEL 7
001032 016767 013510 013500          MOV    $ENDCT,$EOPCT   ;SETUP END-OF-PROGRAM COUNTER
001040 005067 177514                 CLR    $ESCAPE         ;CLEAR THE ESCAPE ON ERROR ADDRESS
001044 112767 000001 177443          MOVB   #1,$ERMAX       ;ALLOW ONE ERROR PER TEST
                                                            ;INITIALIZE THE "T-BIT" TRAP VECTOR, THEN LOAD LOCATION
                                                            ;THE "END-OF-PASS" ($EOP) ROUTINE, WITH A 'RTI' OR 'RTT'
001052 012737 014650 000014          MOV    #$RTRN,@#TBITVEC ;SET "T" BIT VECTOR TO $RTRN
001060 012737 000340 000016          MOV    #340,@#TBITVEC+2 ;LEVEL 7
001066 012767 000002 013554          MOV    #RTI,$RTRN      ;SET $RTRN TO A RTI
001074 013767 000010 177606          MOV    @#RESVEC,TEMP   ;SAVE ILLEGAL INSTRUCTION TRAP VECTOR
001102 012737 001130 000010          MOV    #2$,@#RESVEC    ;TRY TO DO A RTT
001110 005046                        CLR    -(SP)           ;DUMMY PS
001112 012746 001120                 MOV    #1$,-(SP)       ;AND PC
001116 000006                        RTT                    ;TRY THE RTT
001120 012767 000006 013522   1$:    MOV    #RTT,$RTRN      ;RTT IS LEGAL--SET $RTRN TO A RTT
001126 000402                        BR     3$
001130 062706 000010          2$:    ADD    #10,SP          ;RTT ILLEGAL--CLEAN OFF THE STACK
001134 016737 177550 000010   3$:    MOV    TEMP,@#RESVEC   ;RESTORE ILLEGAL INSTRUCTION TRAP VECTOR
001142 005067 013510                 CLR    $TBIT           ;CLEAR "T" BIT SWITCH
001146 012767 001146 177332          MOV    #.,$LPADR       ;INITIALIZE THE LOOP ADDRESS FOR SCOPE
001154 012767 001154 177326          MOV    #.,$LPERR       ;SETUP THE ERROR LOOP ADDRESS
                                                            ;SETUP FOR A SOFTWARE SWITCH REGISTER.
001162 012767 000176 177350          MOV    #SWREG,SWR      ;POINT TO SOFTWARE SWR
001170 012767 000174 177344          MOV    #DISPREG,DISPLAY

001176 005067 177372                 CLR    $PASS           ;CLEAR PASS COUNT
001202 132767 000200 177377          BITB   #APTSIZE,$ENVM  ;TEST USER SIZE UNDER APT
001210 001403                        BEQ    4$              ;YES,USE NON-APT SWITCH
001212 012767 000610 177320          MOV    #$SWREG,SWR     ;NO,USE APT SWITCH REGISTER
001220                        4$:
001220 026737 013360 000042          CMP    $ENDAD,@#42     ;UNDER ACT11?
001226 001424                        BEQ    BEGIN           ;BR. IF YES (SKIP PROGRAM ID TYPEOUT WHEN UNDER AACT)
001230 104401 017032                 TYPE,  NAME
                                                            ;SET UP ADDRESSES OF SLU TO USE FOR INTERRUPTABILITY TES
001234 013700 000642                 MOV    @#$BASE,R0      ;GET ADDRESS OF THE SLU
001240 062700 000004                 ADD    #4,R0           ;ADJUST TO TCSR ADDRESS
001244 010037 000664                 MOV    R0,@#TCSR       ;STORE TCSR ADDRESS
001250 005720                        TST    (R0)+           ;ADJUST TO TBUF ADDRESS
001252 010037 000666                 MOV    R0,@#TBUF       ;STORE TBUF ADDRESS
001256 013700 000636                 MOV    @#$VECT1,R0     ;GET SLU INTERRUPT VECTOR
001262 062700 000004                 ADD    #4,R0           ;ADJUST TO TRANSMIT INTERRUPT VECTOR
001266 010037 000670                 MOV    R0,@#TVECT      ;STORE TRANSMIT INTERRUPT VECTOR
001272 005720                        TST    (R0)+           ;ADJUST TO TRANSMIT INTERRUPT PSW
001274 010037 000672                 MOV    R0,@#TPSW       ;STORE TRANSMIT INTERRUPT PSW LOCATION


001300 106427 000200          BEGIN: MTPS   #200            ;SET PRIORITY TO 7




                              ;;*************************************************************
                              ;;*TEST 1       TEST "ADDN" WITH SOURCE1 LENGTH =0 & SOURCE2 STRING VALID
                              ;;*************************************************************
```

```
 761  001304  000004                    TST1:   SCOPE
 762  001306  004567  013420                    JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 763  001312  000000                            0                       ;SOURCE1 LENGTH
 764  001314  001550                            S1T1                    ;SOURCE1 ADDRESS
 765  001316  000001                            1                       ;SOURCE2 LENGTH
 766  001320  001551                            S2T1                    ;SOURCE2 ADDRESS
 767  001322  000000                            0                       ;DESTINATION LENGTH
 768  001324  004767  013474                    JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 769  001330  013767  000010  177354            MOV     @#10,TEMP1      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
 770  001336  013767  000012  177350            MOV     @#12,TEMP2
 771  001344  012737  001402  000010            MOV     #T1CONT,@#10    ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
 772  001352  012737  000340  000012            MOV     #340,@#12
 773  001360  004567  013460                    JSR     R5,XPSW         ;STORE EXPECTED PSW VALUE
 774  001364  000217                            .WORD   217
 775  001366  004767  013366                    JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 776  001372  000277                            SCC
 777
 778  001374  076050                    T1:     ADDN                    ;EXECUTE "ADDN" INSTRUCTION
 779
 780  001376  104001                            ERROR   1               ;****************TEST 1 - ERROR 1***************
 781                                                                    ;DECIMAL INSTRUCTION DID NOT TRAP ON
 782                                                                    ;A ZERO SOURCE1 LENGTH
 783  001400  000464                            BR ENDT1
 784
 785  001402                            T1CONT:
 786  001402  020067  177236                    CMP     R0,S1LN         ;CHECK R0 UNCHANGED
 787  001406  001401                            BEQ     64$
 788  001410  104002                            ERROR   2               ;****************TEST 1 - ERROR 2***************
 789                                                                    ;R0 CHANGED
 790                                                                    ;R0 SHOULD STILL EQUAL CONTENTS OF "S1LN"
 791  001412  020167  177230            64$:    CMP     R1,S1ADR        ;CHECK R1 UNCHANGED
 792  001416  001401                            BEQ     65$
 793  001420  104003                            ERROR   3               ;****************TEST 1 - ERROR 3***************
 794                                                                    ;R1 CHANGED
 795                                                                    ;R1 SHOULD STILL EQUAL CONTENTS OF "S1ADR"
 796  001422  020267  177222            65$:    CMP     R2,S2LN         ;CHECK R2 UNCHANGED
 797  001426  001401                            BEQ     66$
 798  001430  104004                            ERROR   4               ;****************TEST 1 - ERROR 4***************
 799                                                                    ;R2 CHANGED
 800                                                                    ;R2 SHOULD STILL EQUAL THE CONTENTS OF "S2LN"
 801  001432  020367  177214            66$:    CMP     R3,S2ADR        ;CHECK R3 UNCHANGED
 802  001436  001401                            BEQ     67$
 803  001440  104005                            ERROR   5               ;****************TEST 1 - ERROR 5***************
 804                                                                    ;R3 CHANGED
 805                                                                    ;R3 SHOULD STILL EQUAL THE CONTENTS OF "S2ADR"
 806  001442  020467  177212            67$:    CMP     R4,FILL         ;CHECK  R4 UNCHANGED
 807  001446  001401                            BEQ     68$
 808  001450  104006                            ERROR   6               ;****************TEST 1 - ERROR 6***************
 809                                                                    ;R4 CHANGED
 810                                                                    ;R4 SHOULD STILL EQUAL THE CONTENTS OF "FILL"
 811  001452  020567  177200            68$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
 812  001456  001401                            BEQ     69$
 813  001460  104007                            ERROR   7               ;****************TEST 1 - ERROR 7***************
 814                                                                    ;R5 CHANGED
 815                                                                    ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
 816  001462                            69$:
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 19
CVKAJB.P11    22-JAN-82 08:49          T1      TEST "ADDN" WITH SOURCE1 LENGTH =0 & SOURCE2 STRING VALID                SEQ 0018

  817  001462  016600  000002                  MOV     2(SP),R0        ;CHECK PSW AT TIME OF TRAP
  818  001466  042700  177400                  BIC     #177400,R0
  819  001472  020067  177202                  CMP     R0,EXPPSW
  820  001476  001401                          BEQ     1$
  821  001500  104010                          ERROR   10              ;***************TEST 1 - ERROR 10***************
  822                                                                  ;PSW ERROR
  823                                                                  ;EXPECTED PSW IS STORED AT "EXPPSW"
  824                                                                  ;RESULTANT PSW IS IN R0
  825  001502  021627  001376          1$:     CMP     (SP),#T1+2      ;CHECK ADDRESS OF TRAP
  826  001506  001403                          BEQ     2$
  827  001510  011637  000522                  MOV     (SP),@#$BDADR   ;STORE BAD ADDRESS
  828  001514  104011                          ERROR   11              ;***************TEST 1 - ERROR 11***************
  829                                                                  ;TRAP ADDRESS ERROR
  830                                                                  ;EXPECTED ADDRESS IS "T1+2"
  831                                                                  ;RESULTANT ADDRESS IS STORED AT "$BDADR"
  832  001516  010600                  2$:     MOV     SP,R0           ;CHECK SP RESTORATION
  833  001520  062700  000004                  ADD     #4,R0
  834  001524  020037  000702                  CMP     R0,@#SAVR6
  835  001530  001401                          BEQ     3$
  836  001532  104012                          ERROR   12              ;***************TEST 1 - ERROR 12***************
  837                                                                  ;STACK POINTER WAS NOT RESTORED
  838                                                                  ;EXPECTED SP VALUE IS STORED AT "SAVR6"
  839                                                                  ;ERRONEOUS SO VALUE IS AT "BADR6"
  840  001534  012716  001552          3$:     MOV     #ENDT1,(SP)     ;RESTORE SP & PSW
  841  001540  013766  000700  000002          MOV     @#EXPPSW,2(SP)
  842  001546  000002                          RTI
  843
  844  001550                          S1T1.                           ;SOURCE1 STRING
  845  001550      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
  846  001551                          S2T1:                           ;SOURCE2 STRING
  847  001551      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
  848                                          .EVEN
  849
  850  001552  016737  177134  000010  ENDT1:  MOV     TEMP1,@#10      ;RESTORE TIMEOUT VECTOR CONTENTS
  851  001560  016737  177130  000012          MOV     TEMP2,@#12
  852
  853
  854                                  ;;*********************************************************************
  855                                  ;*TEST 2         TEST "ADDN" WITH A POSITIVE LEADING SIGN SOURCE1, & VALID SOURCE2
  856                                  ;;*********************************************************************
  857  001566  000004                  TST2:   SCOPE
  858  001570  004567  013136                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
  859  001574  000001                          1                       ;SOURCE1 LENGTH
  860  001576  002032                          S1T2                    ;SOURCE1 ADDRESS
  861  001600  000001                          1                       ;SOURCE2 LENGTH
  862  001602  002033                          S2T2                    ;SOURCE2 ADDRESS
  863  001604  000000                          0                       ;DESTINATION LENGTH
  864  001606  004767  013212                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
  865  001612  013767  000010  177072          MOV     @#10,TEMP1      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
  866  001620  013767  000012  177066          MOV     @#12,TEMP2
  867  001626  012737  001664  000010          MOV     #T2CONT,@#10    ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
  868  001634  012737  000340  000012          MOV     #340,@#12
  869  001642  004567  013176                  JSR     R5,XPSW         ;STORE EXPECTED PSW VALUE
  870  001646  000217                          .WORD   217
  871  001650  004767  013104                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
  872  001654  000277                          SCC
```

```
                                T2:     ADDN                    ;EXECUTE "ADDN" INSTRUCTION

                                        ERROR   1               ;****************TEST 2 - ERROR 1***************
                                                                ;DECIMAL INSTRUCTION DID NOT TRAP ON
                                                                ;A POSITIVE LEADING SIGN SOURCE1

                                        BR ENDT2

                                T2CONT:
                                        CMP     R0,S1LN         ;CHECK R0 UNCHANGED
                                        BEQ     64$
                                        ERROR   2               ;****************TEST 2 - ERROR 2***************
                                                                ;R0 CHANGED
                                                                ;R0 SHOULD STILL EQUAL CONTENTS OF "S1LN"
                                64$:    CMP     R1,S1ADR        ;CHECK R1 UNCHANGED
                                        BEQ     65$
                                        ERROR   3               ;****************TEST 2 - ERROR 3***************
                                                                ;R1 CHANGED
                                                                ;R1 SHOULD STILL EQUAL CONTENTS OF "S1ADR"
                                65$:    CMP     R2,S2LN         ;CHECK R2 UNCHANGED
                                        BEQ     66$
                                        ERROR   4               ;****************TEST 2 - ERROR 4***************
                                                                ;R2 CHANGED
                                                                ;R2 SHOULD STILL EQUAL THE CONTENTS OF "S2LN"
                                66$:    CMP     R3,S2ADR        ;CHECK R3 UNCHANGED
                                        BEQ     67$
                                        ERROR   5               ;****************TEST 2 - ERROR 5***************
                                                                ;R3 CHANGED
                                                                ;R3 SHOULD STILL EQUAL THE CONTENTS OF "S2ADR"
                                67$:    CMP     R4,FILL         ;CHECK  R4 UNCHANGED
                                        BEQ     68$
                                        ERROR   6               ;****************TEST 2 - ERROR 6***************
                                                                ;R4 CHANGED
                                                                ;R4 SHOULD STILL EQUAL THE CONTENTS OF "FILL"
                                68$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
                                        BEQ     69$
                                        ERROR   7               ;****************TEST 2 - ERROR 7***************
                                                                ;R5 CHANGED
                                                                ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
                                69$:
                                        MOV     2(SP),R0        ;CHECK PSW AT TIME OF TRAP
                                        BIC     #177400,R0
                                        CMP     R0,EXPPSW
                                        BEQ     1$
                                        ERROR   10              ;****************TEST 2 - ERROR 10**************
                                                                ;PSW ERROR
                                                                ;EXPECTED PSW IS STORED AT "EXPPSW"
                                                                ;RESULTANT PSW IS IN R0
                                1$:     CMP     (SP),#T2+2      ;CHECK ADDRESS OF TRAP
                                        BEQ     2$
                                        MOV     (SP),@#$BDADR   ;STORE BAD ADDRESS
                                        ERROR   11              ;****************TEST 2 - ERROR 11**************
                                                                ;TRAP ADDRESS ERROR
                                                                ;EXPECTED ADDRESS IS "T2+2"
                                                                ;RESULTANT ADDRESS IS STORED AT "$BDADR"
                                2$:     MOV     SP,R0           ;CHECK SP RESTORATION
```

```
  929  002002  062700  000004            ADD     #4,R0
  930  002006  020037  000702            CMP     R0,@#SAVR6
  931  002012  001401                     BEQ     3$
  932  002014  104012                     ERROR   12              ;***************TEST 2 - ERROR 12***************
  933                                                             ;STACK POINTER WAS NOT RESTORED
  934                                                             ;EXPECTED SP VALUE IS STORED AT "SAVR6"
  935                                                             ;ERRONEOUS SO VALUE IS AT "BADR6"
  936  002016  012716  002034    3$:      MOV     #ENDT2,(SP)     ;RESTORE SP & PSW
  937  002022  013766  000700  000002    MOV     @#EXPPSW,2(SP)
  938  002030  000002                     RTI
  939
  940  002032                     S1T2:                            ;SOURCE1 STRING
  941  002032      055                    .BYTE   55              ;MOST SIGNIFICANT DIGIT
  942  002033                     S2T2:                            ;SOURCE2 STRING
  943  002033      060                    .BYTE   60              ;MOST SIGNIFICANT DIGIT
  944                                     .EVEN
  945
  946  002034  016737  176652  000010 ENDT2:  MOV     TEMP1,@#10      ;RESTORE TIMEOUT VECTOR CONTENTS
  947  002042  016737  176646  000012        MOV     TEMP2,@#12
  948
  949
  950                                ;;*************************************************************************
  951                                ;*TEST 3         TEST "ADDN" WITH A NEGATIVE LEADING SIGN SOURCE1, & VALID SOURCE2
  952                                ;;*************************************************************************
  953  002050  000004            TST3:   SCOPE
  954  002052  004567  012654            JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
  955  002056  000001                    1                       ;SOURCE1 LENGTH
  956  002060  002314                    S1T3                    ;SOURCE1 ADDRESS
  957  002062  000001                    1                       ;SOURCE2 LENGTH
  958  002064  002315                    S2T3                    ;SOURCE2 ADDRESS
  959  002066  000000                    0                       ;DESTINATION LENGTH
  960  002070  004767  012730            JSR     PC,CLBUF        ;CLEAR BUFFER AREA
  961  002074  013767  000010  176610    MOV     @#10,TEMP1      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
  962  002102  013767  000012  176604    MOV     @#12,TEMP2
  963  002110  012737  002146  000010    MOV     #T3CONT,@#10    ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
  964  002116  012737  000340  000012    MOV     #340,@#12
  965  002124  004567  012714            JSR     R5,XPSW         ;STORE EXPECTED PSW VALUE
  966  002130  000217                    .WORD   217
  967  002132  004767  012622            JSR     PC,GENR         ;SET UP GENERAL REGISTERS
  968  002136  000277                    SCC
  969
  970  002140  076050            T3:     ADDN                    ;EXECUTE "ADDN" INSTRUCTION
  971
  972  002142  104001                    ERROR   1               ;***************TEST 3 - ERROR 1***************
  973                                                             ;DECIMAL INSTRUCTION DID NOT TRAP ON
  974                                                             ;A NEGATIVE LEADING SIGN SOURCE2
  975  002144  000464                    BR ENDT3
  976
  977  002146                     T3CONT:
  978  002146  020067  176472            CMP     R0,S1LN         ;CHECK R0 UNCHANGED
  979  002152  001401                    BEQ     64$
  980  002154  104002                    ERROR   2               ;***************TEST 3 - ERROR 2***************
  981                                                             ;R0 CHANGED
  982                                                             ;R0 SHOULD STILL EQUAL CONTENTS OF "S1LN"
  983  002156  020167  176464    64$:    CMP     R1,S1ADR        ;CHECK R1 UNCHANGED
  984  002162  001401                    BEQ     65$
```

```
                                        ERROR   3               ;***************TEST 3 - ERROR 3***************
                                                                ;R1 CHANGED
                                                                ;R1 SHOULD STILL EQUAL CONTENTS OF "S1ADR"
002166  020267  176456          65$:  CMP     R2,S2LN           ;CHECK R2 UNCHANGED
002172  001401                      BEQ     66$
002174  104004                      ERROR   4               ;***************TEST 3 - ERROR 4***************
                                                                ;R2 CHANGED
                                                                ;R2 SHOULD STILL EQUAL THE CONTENTS OF "S2LN"
002176  020367  176450          66$:  CMP     R3,S2ADR          ;CHECK R3 UNCHANGED
002202  001401                      BEQ     67$
002204  104005                      ERROR   5               ;***************TEST 3 - ERROR 5***************
                                                                ;R3 CHANGED
                                                                ;R3 SHOULD STILL EQUAL THE CONTENTS OF "S2ADR"
002206  020467  176446          67$:  CMP     R4,FILL           ;CHECK  R4 UNCHANGED
002212  001401                      BEQ     68$
002214  104006                      ERROR   6               ;***************TEST 3 - ERROR 6***************
                                                                ;R4 CHANGED
                                                                ;R4 SHOULD STILL EQUAL THE CONTENTS OF "FILL"
002216  020567  176434          68$:  CMP     R5,DSTAD          ;CHECK R5 UNCHANGED
002222  001401                      BEQ     69$
002224  104007                      ERROR   7               ;***************TEST 3 - ERROR 7***************
                                                                ;R5 CHANGED
                                                                ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
002226                          69$:
002226  016600  000002              MOV     2(SP),R0          ;CHECK PSW AT TIME OF TRAP
002232  042700  177400              BIC     #177400,R0
002236  020067  176436              CMP     R0,EXPPSW
002242  001401                      BEQ     1$
002244  104010                      ERROR   10              ;***************TEST 3 - ERROR 10**************
                                                                ;PSW ERROR
                                                                ;EXPECTED PSW IS STORED AT "EXPPSW"
                                                                ;RESULTANT PSW IS IN R0
002246  021627  002142          1$:   CMP     (SP),#T3+2        ;CHECK ADDRESS OF TRAP
002252  001403                      BEQ     2$
002254  011637  000522              MOV     (SP),@#$BDADR     ;STORE BAD ADDRESS
002260  104011                      ERROR   11              ;***************TEST 3 - ERROR 11**************
                                                                ;TRAP ADDRESS ERROR
                                                                ;EXPECTED ADDRESS IS "T3+2"
                                                                ;RESULTANT ADDRESS IS STORED AT "$BDADR"
002262  010600                  2$:   MOV     SP,R0             ;CHECK SP RESTORATION
002264  062700  000004              ADD     #4,R0
002270  020037  000702              CMP     R0,@#SAVR6
002274  001401                      BEQ     3$
002276  104012                      ERROR   12              ;***************TEST 3 - ERROR 12**************
                                                                ;STACK POINTER WAS NOT RESTORED
                                                                ;EXPECTED SP VALUE IS STORED AT "SAVR6"
                                                                ;ERRONEOUS SO VALUE IS AT "BADR6"
002300  012716  002316          3$:   MOV     #ENDT3,(SP)       ;RESTORE SP & PSW
002304  013766  000700  000002      MOV     @#EXPPSW,2(SP)
002312  000002                      RTI

002314                          S1T3:                           ;SOURCE1 STRING
002314      053                       .BYTE   53              ;MOST SIGNIFICANT DIGIT
002315                          S2T3:                           ;SOURCE2 STRING
002315      060                       .BYTE   60              ;MOST SIGNIFICANT DIGIT
                                      .EVEN
```

```
1041
1042  002316  016737  176370  000010  ENDT3:  MOV     TEMP1,@#10      ;RESTORE TIMEOUT VECTOR CONTENTS
1043  002324  016737  176364  000012          MOV     TEMP2,@#12
1044
1045
1046                                  ;;*****************************************************************
1047                                  ;*TEST 4         TEST "ADDN" WITH SOURCE2 LENGTH = 0, & VALID SOURCE1
1048                                  ;;*****************************************************************
1049  002332  000004                  TST4:   SCOPE
1050  002334  004567  012372                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1051  002340  000001                          1                       ;SOURCE1 LENGTH
1052  002342  002576                          S1T4                    ;SOURCE1 ADDRESS
1053  002344  000000                          0                       ;SOURCE2 LENGTH
1054  002346  002577                          S2T4                    ;SOURCE2 ADDRESS
1055  002350  000000                          0                       ;DESTINATION LENGTH
1056  002352  004767  012446                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
1057  002356  013767  000010  176326          MOV     @#10,TEMP1      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
1058  002364  013767  000012  176322          MOV     @#12,TEMP2
1059  002372  012737  002430  000010          MOV     #T4CONT,@#10    ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
1060  002400  012737  000340  000012          MOV     #340,@#12
1061  002406  004567  012432                  JSR     R5,XPSW         ;STORE EXPECTED PSW VALUE
1062  002412  000217                          .WORD   217
1063  002414  004767  012340                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
1064  002420  000277                          SCC
1065
1066  002422  076050                  T4:     ADDN                    ;EXECUTE "ADDN" INSTRUCTION
1067
1068  002424  104001                          ERROR   1               ;****************TEST 4 - ERROR 1***************
1069                                                                  ;DECIMAL INSTRUCTION DID NOT TRAP ON
1070                                                                  ;A ZERO SOURCE2 LENGTH
1071  002426  000464                          BR ENDT4
1072
1073  002430                          T4CONT:
1074  002430  020067  176210                  CMP     R0,S1LN         ;CHECK R0 UNCHANGED
1075  002434  001401                          BEQ     64$
1076  002436  104002                          ERROR   2               ;****************TEST 4 - ERROR 2***************
1077                                                                  ;R0 CHANGED
1078                                                                  ;R0 SHOULD STILL EQUAL CONTENTS OF "S1LN"
1079  002440  020167  176202          64$:    CMP     R1,S1ADR        ;CHECK R1 UNCHANGED
1080  002444  001401                          BEQ     65$
1081  002446  104003                          ERROR   3               ;****************TEST 4 - ERROR 3***************
1082                                                                  ;R1 CHANGED
1083                                                                  ;R1 SHOULD STILL EQUAL CONTENTS OF "S1ADR"
1084  002450  020267  176174          65$:    CMP     R2,S2LN         ;CHECK R2 UNCHANGED
1085  002454  001401                          BEQ     66$
1086  002456  104004                          ERROR   4               ;****************TEST 4 - ERROR 4***************
1087                                                                  ;R2 CHANGED
1088                                                                  ;R2 SHOULD STILL EQUAL THE CONTENTS OF "S2LN"
1089  002460  020367  176166          66$:    CMP     R3,S2ADR        ;CHECK R3 UNCHANGED
1090  002464  001401                          BEQ     67$
1091  002466  104005                          ERROR   5               ;****************TEST 4 - ERROR 5***************
1092                                                                  ;R3 CHANGED
1093                                                                  ;R3 SHOULD STILL EQUAL THE CONTENTS OF "S2ADR"
1094  002470  020467  176164          67$:    CMP     R4,FILL         ;CHECK  R4 UNCHANGED
1095  002474  001401                          BEQ     68$
1096  002476  104006                          ERROR   6               ;****************TEST 4 - ERROR 6***************
```

```
                                                        ;R4 CHANGED
                                                        ;R4 SHOULD STILL EQUAL THE CONTENTS OF 'FILL'
002500 020567 176152        68$:    CMP     R5,DSTAD    ;CHECK R5 UNCHANGED
002504 001401                       BEQ     69$
002506 104007                       ERROR   7           ;***************TEST 4 - ERROR 7***************
                                                        ;R5 CHANGED
                                                        ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
002510                      69$:
002510 016600 000002                MOV     2(SP),R0    ;CHECK PSW AT TIME OF TRAP
002514 042700 177400                BIC     #177400,R0
002520 020067 176154                CMP     R0,EXPPSW
002524 001401                       BEQ     1$
002526 104010                       ERROR   10          ;***************TEST 4 - ERROR 10***************
                                                        ;PSW ERROR
                                                        ;EXPECTED PSW IS STORED AT 'EXPPSW'
                                                        ;RESULTANT PSW IS IN R0
002530 021627 002424        1$:     CMP     (SP),#T4+2  ;CHECK ADDRESS OF TRAP
002534 001403                       BEQ     2$
002536 011637 000522                MOV     (SP),@#$BDADR ;STORE BAD ADDRESS
002542 104011                       ERROR   11          ;***************TEST 4 - ERROR 11***************
                                                        ;TRAP ADDRESS ERROR
                                                        ;EXPECTED ADDRESS IS 'T4+2'
                                                        ;RESULTANT ADDRESS IS STORED AT '$BDADR'
002544 010600               2$:     MOV     SP,R0       ;CHECK SP RESTORATION
002546 062700 000004                ADD     #4,R0
002552 020037 000702                CMP     R0,@#SAVR6
002556 001401                       BEQ     3$
002560 104012                       ERROR   12          ;***************TEST 4 - ERROR 12***************
                                                        ;STACK POINTER WAS NOT RESTORED
                                                        ;EXPECTED SP VALUE IS STORED AT 'SAVR6'
                                                        ;ERRONEOUS SO VALUE IS AT 'BADR6'
002562 012716 002600        3$:     MOV     #ENDT4,(SP) ;RESTORE SP & PSW
002566 013766 000700 000002         MOV     @#EXPPSW,2(SP)
002574 000002                       RTI

002576                      S1T4:                       ;SOURCE1 STRING
002576 060                          .BYTE   60          ;MOST SIGNIFICANT DIGIT
002577                      S2T4:                       ;SOURCE2 STRING
002577 060                          .BYTE   60          ;MOST SIGNIFICANT DIGIT
                                    .EVEN

002600 016737 176106 000010 ENDT4:  MOV     TEMP1,@#10  ;RESTORE TIMEOUT VECTOR CONTENTS
002606 016737 176102 000012         MOV     TEMP2,@#12

;;*********************************************************************
;*TEST 5          TEST "ADDN" BY ADDING TWO ZEROES WITH ZERO DESTINATION LENGTH
;;*********************************************************************
002614 000004               TST5:   SCOPE
002616 004567 012110                JSR     R5,NPREP    ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
002622 000001                       1                   ;SOURCE1 LENGTH
002624 002772                       S1T5                ;SOURCE1 ADDRESS
002626 000001                       1                   ;SOURCE2 LENGTH
002630 002773                       S2T5                ;SOURCE2 ADDRESS
002632 000000                       0                   ;DESTINATION LENGTH
002634 004767 012164                JSR     PC,CLBUF    ;CLEAR BUFFER AREA
```

```
1153  002640  004567  012200                    JSR     R5,XPSW
1154  002644  000204                            .WORD   204
1155  002646  004767  012106                    JSR     PC,GENR         ;SET UP GENERAL REGISTERS
1156  002652  000277                            SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1157  002654  000244                            CLZ
1158  002656  076050                            ADDN
1159
1160  002660  106767  176012                    MFPS    CCODES          ;STORE RESULTANT PSW
1161  002664  042767  177400  176004            BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1162  002672  023767  000700  175776            CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1163  002700  001401                            BEQ     64$             ;BR, IF EQUAL
1164  002702  104001                            ERROR   1               ;****************TEST 5 - ERROR 1***************
1165                                                                    ;PSW ERROR
1166                                                                    ;EXPECTED PSW IS STORED AT "SAVR6"
1167                                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
1168  002704                                64$:
1169  002704  005700                            TST     R0              ;CHECK R0=0
1170  002706  001401                            BEQ     65$
1171  002710  104002                            ERROR   2               ;****************TEST 5 - ERROR 2***************
1172                                                                    ;R0 SHOULD BE ZERO
1173  002712  005701                65$:        TST     R1              ;CHECK R1=0
1174  002714  001401                            BEQ     66$
1175  002716  104003                            ERROR   3               ;****************TEST 5 - ERROR 3***************
1176                                                                    ;R1 SHOULD BE ZERO
1177  002720  005702                66$:        TST     R2              ;CHECK R2=0
1178  002722  001401                            BEQ     67$
1179  002724  104004                            ERROR   4               ;****************TEST 5 - ERROR 4***************
1180                                                                    ;R2 SHOULD BE ZERO
1181  002726  005703                67$:        TST     R3              ;CHECK R3=0
1182  002730  001401                            BEQ     68$
1183  002732  104005                            ERROR   5               ;****************TEST 5 - ERROR 5***************
1184                                                                    ;R3 SHOULD BE ZERO
1185  002734  020467  175714        68$:        CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
1186  002740  001401                            BEQ     69$
1187  002742  104006                            ERROR   6               ;****************TEST 5 - ERROR 6***************
1188                                                                    ;R4 SHOULD STILL BE DESTINATION LENGTH
1189  002744  020567  175706        69$:        CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
1190  002750  001401                            BEQ     70$
1191  002752  104007                            ERROR   7               ;****************TEST 5 - ERROR 7***************
1192                                                                    ;R5 SHOULD STILL BE DESTINATION ADDRESS
1193  002754  023706  000702        70$:        CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
1194  002760  001403                            BEQ     71$             ;BR IF OK
1195  002762  010637  000704                    MOV     SP,@#BADR6      ;COPY BAD SP VALUE
1196  002766  104010                            ERROR   10              ;****************TEST 5 - ERROR 10**************
1197                                                                    ;STACK POINTER NOT RESTORED BY INSTRUCTION
1198                                                                    ;EXPECTED SP IS STORED AT "SAVR6"
1199                                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
1200  002770                                71$:
1201  002770  000401                            BR      TST6            ;BR TO NEXT TEST
1202  002772                                S1T5:
1203  002772     060                             .BYTE   60              ;SOURCE1 STRING
1204  002773                                S2T5:                       ;MOST SIGNIFICANT DIGIT
1205  002773     060                             .BYTE   60              ;SOURCE2 STRING
1206                                                                    ;MOST SIGNIFICANT DIGIT
1207                                             .EVEN
1208
```

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                                ;;*****************************************************************
                                ;*TEST 6         TEST "ADDN" WITH POSITIVE OPERANDS,SRC1 LENGTH .GT. SRC2 LENGTH, DL = NO
                                ;;*****************************************************************
002774  000004                TST6:   SCOPE
002776  004567  011730                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
003002  000004                                4               ;SOURCE1 LENGTH
003004  003176                                S1T6            ;SOURCE1 ADDRESS
003006  000002                                2               ;SOURCE2 LENGTH
003010  003202                                S2T6            ;SOURCE2 ADDRESS
003012  000002                                2               ;DESTINATION LENGTH
003014  004767  012004                JSR     PC,CLBUF        ;CLEAR BUFFER AREA
003020  004567  012020                JSR     R5,XPSW
003024  000200                        .WORD   200
003026  004767  011726                JSR     PC,GENR         ;SET UP GENERAL REGISTERS
003032  000277                        SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
003034  076050                        ADDN

003036  106767  175634                MFPS    CCODES          ;STORE RESULTANT PSW
003042  042767  177400  175626        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
003050  023767  000700  175620        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
003056  001401                        BEQ     64$             ;BR, IF EQUAL
003060  104001                        ERROR   1               ;****************TEST 6 - ERROR 1***************
                                                            ;PSW ERROR
                                                            ;EXPECTED PSW IS STORED AT "SAVR6"
                                                            ;ERRONEOUS SP VALUE IS AT "BADR6"
003062                          64$:
003062  005700                        TST     R0              ;CHECK R0=0
003064  001401                        BEQ     65$
003066  104002                        ERROR   2               ;****************TEST 6 - ERROR 2***************
                                                            ;R0 SHOULD BE ZERO
003070  005701                  65$:  TST     R1              ;CHECK R1=0
003072  001401                        BEQ     66$
003074  104003                        ERROR   3               ;****************TEST 6 - ERROR 3***************
                                                            ;R1 SHOULD BE ZERO
003076  005702                  66$:  TST     R2              ;CHECK R2=0
003100  001401                        BEQ     67$
003102  104004                        ERROR   4               ;****************TEST 6 - ERROR 4***************
                                                            ;R2 SHOULD BE ZERO
003104  005703                  67$:  TST     R3              ;CHECK R3=0
003106  001401                        BEQ     68$
003110  104005                        ERROR   5               ;****************TEST 6 - ERROR 5***************
                                                            ;R3 SHOULD BE ZERO
003112  020467  175536          68$:  CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
003116  001401                        BEQ     69$
003120  104006                        ERROR   6               ;****************TEST 6 - ERROR 6***************
                                                            ;R4 SHOULD STILL BE DESTINATION LENGTH
003122  020567  175530          69$:  CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
003126  001401                        BEQ     70$
003130  104007                        ERROR   7               ;****************TEST 6 - ERROR 7***************
                                                            ;R5 SHOULD STILL BE DESTINATION ADDRESS
003132  023706  000702          70$:  CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
003136  001403                        BEQ     71$             ;BR IF OK
003140  010637  000704                MOV     SP,@#BADR6      ;COPY BAD SP VALUE
003144  104010                        ERROR   10              ;****************TEST 6 - ERROR 10**************
```

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                                                        ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                        ;EXPECTED SP IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
003146                          71$:
                                                        ;CHECK ANSWER
003146  012700  003204                  MOV     #ANS6,R0        ;POINT R0 TO EXPECTED ANSWER
003152  016701  175500                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
003156  016702  175472                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
003162  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
003164  001401                          BEQ     73$             ;BR IF EQUAL
003166  104011                          ERROR   11              ;***************TEST 6 - ERROR 11***************
                                                        ;ERRONEOUS ANSWER
                                                        ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
                                                        ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
003170  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
003172  001373                          BNE     72$             ;BR IF NOT FINISHED
003174  000404                          BR      TST7            ;BR TO NEXT TEST
003176                          S1T6:                           ;SOURCE1 STRING
003176      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
003177      060                         .BYTE   60
003200      062                         .BYTE   62
003201      061                         .BYTE   61
003202                          S2T6:                           ;SOURCE2 STRING
003202      067                         .BYTE   67              ;MOST SIGNIFICANT DIGIT
003203      070                         .BYTE   70
003204                          ANS6:                           ;EXPECTED ANSWER
003204      071                         .BYTE   71
003205      071                         .BYTE   71

                                        .EVEN


                                ;;*******************************************************************
                                ;*TEST 7         TEST "ADDN" WITH NEGATIVE OPERANDS, S2L .GT. S1L, NO OVERFLOW
                                ;;*******************************************************************
003206  000004                  TST7:   SCOPE
003210  004567  011516                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
003214  000002                          2                       ;SOURCE1 LENGTH
003216  003412                          S1T7                    ;SOURCE1 ADDRESS
003220  000004                          4                       ;SOURCE2 LENGTH
003222  003414                          S2T7                    ;SOURCE2 ADDRESS
003224  000004                          4                       ;DESTINATION LENGTH
003226  004767  011572                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
003232  004567  011606                  JSR     R5,XPSW
003236  000210                          .WORD   210
003240  004767  011514                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
003244  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
003246  000250                          CLN
003250  076050                          ADDN

003252  106767  175420                  MFPS    CCODES          ;STORE RESULTANT PSW
003256  042767  177400  175412          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
003264  023767  000700  175404          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
003272  001401                          BEQ     64$             ;BR, IF EQUAL
003274  104001                          ERROR   1               ;***************TEST 7 - ERROR 1***************
                                                        ;PSW ERROR
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                                                                ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
003276                                  64$:
003276  005700                          TST     R0              ;CHECK R0=0
003300  001401                          BEQ     65$
003302  104002                          ERROR   2               ;****************TEST 7 - ERROR 2***************
                                                                ;R0 SHOULD BE ZERO
003304  005701                  65$:    TST     R1              ;CHECK R1=0
003306  001401                          BEQ     66$
003310  104003                          ERROR   3               ;****************TEST 7 - ERROR 3***************
                                                                ;R1 SHOULD BE ZERO
003312  005702                  66$:    TST     R2              ;CHECK R2=0
003314  001401                          BEQ     67$
003316  104004                          ERROR   4               ;****************TEST 7 - ERROR 4***************
                                                                ;R2 SHOULD BE ZERO
003320  005703                  67$:    TST     R3              ;CHECK R3=0
003322  001401                          BEQ     68$
003324  104005                          ERROR   5               ;****************TEST 7 - ERROR 5***************
                                                                ;R3 SHOULD BE ZERO
003326  020467  175322          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
003332  001401                          BEQ     69$
003334  104006                          ERROR   6               ;****************TEST 7 - ERROR 6***************
                                                                ;R4 SHOULD STILL BE DESTINATION LENGTH
003336  020567  175314          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
003342  001401                          BEQ     70$
003344  104007                          ERROR   7               ;****************TEST 7 - ERROR 7***************
                                                                ;R5 SHOULD STILL BE DESTINATION ADDRESS
003346  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
003352  001403                          BEQ     71$             ;BR IF OK
003354  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
003360  104010                          ERROR   10              ;****************TEST 7 - ERROR 10**************
                                                                ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                                ;EXPECTED SP IS STORED AT "SAVR6"
                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
003362                                  71$:
                                                                ;CHECK ANSWER
003362  012700  003420                  MOV     #ANS7,R0        ;POINT R0 TO EXPECTED ANSWER
003366  016701  175264                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
003372  016702  175256                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
003376  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
003400  001401                          BEQ     73$             ;BR IF EQUAL
003402  104011                          ERROR   11              ;****************TEST 7 - ERROR 11**************
                                                                ;ERRONEOUS ANSWER
                                                                ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
                                                                ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
003404  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
003406  001373                          BNE     72$             ;BR IF NOT FINISHED
003410  000405                          BR      TST10           ;BR TO NEXT TEST
003412                          S1T7:                           ;SOURCE1 STRING
003412      063                         .BYTE   63              ;MOST SIGNIFICANT DIGIT
003413      165                         .BYTE   165
003414                          S2T7:                           ;SOURCE2 STRING
003414      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
003415      071                         .BYTE   71
003416      066                         .BYTE   66
003417      165                         .BYTE   165
```

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                        ;7      TEST "ADDN" WITH NEGATIVE OPERANDS, S2L .GT. S1L, NO OVERFLOW                SEQ 0028

                        ANS7:                                   ;EXPECTED ANSWER
003420  061                             .BYTE   61              ;MOST SIGNIFICANT DIGIT
003421  060                             .BYTE   60
003422  060                             .BYTE   60
003423  160                             .BYTE   160

                                        .EVEN


                        ;;**********  **************************************************
                        ;*TEST 10        TEST "ADDN" WITH NEGATIVE OPERANDS, OVERFLOW
                        ;;**************************************************************
003424  000004          TST10:  SCOPE
003426  004567  011300            JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
003432  000004                    4                       ;SOURCE1 LENGTH
003434  003630                    S1T10                   ;SOURCE1 ADDRESS
003436  000002                    2                       ;SOURCE2 LENGTH
003440  003634                    S2T10                   ;SOURCE2 ADDRESS
003442  000002                    2                       ;DESTINATION LENGTH
003444  004767  011354            JSR     PC,CLBUF        ;CLEAR BUFFER AREA
003450  004567  011370            JSR     R5,XPSW
003454  000212                    .WORD   212
003456  004767  011276            JSR     PC,GENR         ;SET UP GENERAL REGISTERS
003462  000265                    +SEZ!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
003464  000252                    +CLN!CLV
003466  076050                    ADDN

003470  106767  175202            MFPS    CCODES          ;STORE RESULTANT PSW
003474  042767  177400  175174    BIC     #177400,CCODES  ;CLEAR UNUSED BITS
003502  023767  000700  175166    CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
003510  001401                    BEQ     64$             ;BR, IF EQUAL
003512  104001                    ERROR   1               ;****************TEST 10 - ERROR 1***************
                                                        ;PSW ERROR
                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"

003514                  64$:
003514  005700                    TST     R0              ;CHECK R0=0
003516  001401                    BEQ     65$
003520  104002                    ERROR   2               ;****************TEST 10 - ERROR 2***************
                                                        ;R0 SHOULD BE ZERO
003522  005701          65$:      TST     R1              ;CHECK R1=0
003524  001401                    BEQ     66$
003526  104003                    ERROR   3               ;****************TEST 10 - ERROR 3***************
                                                        ;R1 SHOULD BE ZERO
003530  005702          66$:      TST     R2              ;CHECK R2=0
003532  001401                    BEQ     67$
003534  104004                    ERROR   4               ;****************TEST 10 - ERROR 4***************
                                                        ;R2 SHOULD BE ZERO
003536  005703          67$:      TST     R3              ;CHECK R3=0
003540  001401                    BEQ     68$
003542  104005                    ERROR   5               ;****************TEST 10 - ERROR 5***************
                                                        ;R3 SHOULD BE ZERO
003544  020467  175104    68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
003550  001401                    BEQ     69$
003552  104006                    ERROR   6               ;****************TEST 10 - ERROR 6***************
                                                        ;R4 SHOULD STILL BE DESTINATION LENGTH
```

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 1433  003554  020567  175076          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
 1434  003560  001401                          BEQ     70$
 1435  003562  104007                          ERROR   7               ;***************TEST 10 - ERROR 7***************
 1436                                                                  ;R5 SHOULD STILL BE DESTINATION ADDRESS
 1437  003564  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 1438  003570  001403                          BEQ     71$             ;BR IF OK
 1439  003572  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 1440  003576  104010                          ERROR   10              ;***************TEST 10 - ERROR 10***************
 1441                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
 1442                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
 1443                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 1444  003600                          71$:
 1445                                                                  ;CHECK ANSWER
 1446  003600  012700  003636                  MOV     #ANS10,R0       ;POINT R0 TO EXPECTED ANSWER
 1447  003604  016701  175046                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
 1448  003610  016702  175040                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
 1449  003614  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
 1450  003616  001401                          BEQ     73$             ;BR IF EQUAL
 1451  003620  104011                          ERROR   11              ;***************TEST 10 - ERROR 11***************
 1452                                                                  ;ERRONEOUS ANSWER
 1453                                                                  ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
 1454                                                                  ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
 1455  003622  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
 1456  003624  001373                          BNE     72$             ;BR IF NOT FINISHED
 1457  003626  000404                          BR      TST11           ;BR TO NEXT TEST
 1458  003630                          S1T10:                          ;SOURCE1 STRING
 1459  003630      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
 1460  003631      061                         .BYTE   61
 1461  003632      062                         .BYTE   62
 1462  003633      163                         .BYTE   163
 1463  003634                          S2T10:                          ;SOURCE2 STRING
 1464  003634      065                         .BYTE   65              ;MOST SIGNIFICANT DIGIT
 1465  003635      164                         .BYTE   164
 1466  003636                          ANS10:                          ;EXPECTED ANSWER
 1467  003636      067                         .BYTE   67              ;MOST SIGNIFICANT DIGIT
 1468  003637      167                         .BYTE   167
 1469
 1470                                          .EVEN
 1471
 1472
 1473                                  ;;******************************************************************
 1474                                  ;*TEST 11        TEST "ADDN" WITH POSITIVE OPERANDS, S2L=S1L,OVERFLOW
 1475                                  ;;******************************************************************
 1476  003640  000004                  TST11:  SCOPE
 1477  003642  004567  011064                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 1478  003646  000002                          2                       ;SOURCE1 LENGTH
 1479  003650  004044                          S1T11                   ;SOURCE1 ADDRESS
 1480  003652  000002                          2                       ;SOURCE2 LENGTH
 1481  003654  004046                          S2T11                   ;SOURCE2 ADDRESS
 1482  003656  000002                          2                       ;DESTINATION LENGTH
 1483  003660  004767  011140                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 1484  003664  004567  011154                  JSR     R5,XPSW
 1485  003670  000206                          .WORD   206
 1486  003672  004767  011062                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 1487  003676  000271                          +SEN!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 1488  003700  000246                          +CLZ!CLV
```

```
1489  003702  076050                          ADDN
1490
1491  003704  106767  174766                  MFPS    CCODES          ;STORE RESULTANT PSW
1492  003710  042767  177400  174760          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1493  003716  023767  000700  174752          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1494  003724  001401                          BEQ     64$             ;BR, IF EQUAL
1495  003726  104001                          ERROR   1               ;*** ***********TEST 11 - ERROR 1***************
1496                                                                  ;PSW ERROR
1497                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
1498                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1499  003730                          64$:
1500  003730  005700                          TST     R0              ;CHECK R0=0
1501  003732  001401                          BEQ     65$
1502  003734  104002                          ERROR   2               ;***************TEST 11 - ERROR 2***************
1503                                                                  ;R0 SHOULD BE ZERO
1504  003736  005701                  65$:    TST     R1              ;CHECK R1=0
1505  003740  001401                          BEQ     66$
1506  003742  104003                          ERROR   3               ;***************TEST 11 - ERROR 3***************
1507                                                                  ;R1 SHOULD BE ZERO
1508  003744  005702                  66$:    TST     R2              ;CHECK R2=0
1509  003746  001401                          BEQ     67$
1510  003750  104004                          ERROR   4               ;***************TEST 11 - ERROR 4***************
1511                                                                  ;R2 SHOULD BE ZERO
1512  003752  005703                  67$:    TST     R3              ;CHECK R3=0
1513  003754  001401                          BEQ     68$
1514  003756  104005                          ERROR   5               ;***************TEST 11 - ERROR 5***************
1515                                                                  ;R3 SHOULD BE ZERO
1516  003760  020467  174670          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
1517  003764  001401                          BEQ     69$
1518  003766  104006                          ERROR   6               ;***************TEST 11 - ERROR 6***************
1519                                                                  ;R4 SHOULD STILL BE DESTINATION LENGTH
1520  003770  020567  174662          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
1521  003774  001401                          BEQ     70$
1522  003776  104007                          ERROR   7               ;***************TEST 11 - ERROR 7***************
1523                                                                  ;R5 SHOULD STILL BE DESTINATION ADDRESS
1524  004000  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
1525  004004  001403                          BEQ     71$             ;BR IF OK
1526  004006  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
1527  004012  104010                          ERROR   10              ;***************TEST 11 - ERROR 10**************
1528                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
1529                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
1530                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1531  004014                          71$:
1532                                                                  ;CHECK ANSWER
1533  004014  012700  004050                  MOV     #ANS11,R0       ;POINT R0 TO EXPECTED ANSWER
1534  004020  016701  174632                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
1535  004024  016702  174624                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
1536  004030  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
1537  004032  001401                          BEQ     73$             ;BR IF EQUAL
1538  004034  104011                          ERROR   11              ;***************TEST 11 - ERROR 11**************
1539                                                                  ;ERRONEOUS ANSWER
1540                                                                  ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1541                                                                  ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1542  004036  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
1543  004040  001373                          BNE     72$             ;BR IF NOT FINISHED
1544  004042  000403                          BR      TST12           ;BR TO NEXT TEST
```

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1545  004044                          S1T11:                          ;SOURCE1 STRING
1546  004044  063                             .BYTE   63              ;MOST SIGNIFICANT DIGIT
1547  004045  062                             .BYTE   62
1548  004046                          S2T11:                          ;SOURCE2 STRING
1549  004046  066                             .BYTE   66              ;MOST SIGNIFICANT DIGIT
1550  004047  070                             .BYTE   70
1551  004050                          ANS11:                          ;EXPECTED ANSWER
1552  004050  060                             .BYTE   60
1553  004051  060                             .BYTE   60
1554
1555                                          .EVEN
1556
1557
1558                                  ;;*****************************************************************
1559                                  ;*TEST 12       TEST ADDN WITH NEGATIVE OPERANDS, S2L=S1L,OVERFLOW CARRY
1560                                  ;;*****************************************************************
1561  004052  000004                  TST12:  SCOPE
1562  004054  004567  010652                 JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1563  004060  000002                                 2               ;SOURCE1 LENGTH
1564  004062  004256                                 S1T12           ;SOURCE1 ADDRESS
1565  004064  000002                                 2               ;SOURCE2 LENGTH
1566  004066  004260                                 S2T12           ;SOURCE2 ADDRESS
1567  004070  000001                                 1               ;DESTINATION LENGTH
1568  004072  004767  010726                 JSR     PC,CLBUF        ;CLEAR BUFFER AREA
1569  004076  004567  010742                 JSR     R5,XPSW
1570  004102  000212                         .WORD   212
1571  004104  004767  010650                 JSR     PC,GENR         ;SET UP GENERAL REGISTERS
1572  004110  000265                         +SEZ!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1573  004112  000252                         +CLN!CLV
1574  004114  076050                         ADDN
1575
1576  004116  106767  174554                 MFPS    CCODES          ;STORE RESULTANT PSW
1577  004122  042767  177400  174546         BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1578  004130  023767  000700  174540         CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1579  004136  001401                         BEQ     64$             ;BR, IF EQUAL
1580  004140  104001                         ERROR   1               ;**************TEST 12 - ERROR 1**************
1581                                                                  ;PSW ERROR
1582                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
1583                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1584  004142                          64$:
1585  004142  005700                         TST     R0              ;CHECK R0=0
1586  004144  001401                         BEQ     65$
1587  004146  104002                         ERROR   2               ;**************TEST 12 - ERROR 2**************
1588                                                                  ;R0 SHOULD BE ZERO
1589  004150  005701                  65$:   TST     R1              ;CHECK R1=0
1590  004152  001401                         BEQ     66$
1591  004154  104003                         ERROR   3               ;**************TEST 12 - ERROR 3**************
1592                                                                  ;R1 SHOULD BE ZERO
1593  004156  005702                  66$:   TST     R2              ;CHECK R2=0
1594  004160  001401                         BEQ     67$
1595  004162  104004                         ERROR   4               ;**************TEST 12 - ERROR 4**************
1596                                                                  ;R2 SHOULD BE ZERO
1597  004164  005703                  67$:   TST     R3              ;CHECK R3=0
1598  004166  001401                         BEQ     68$
1599  004170  104005                         ERROR   5               ;**************TEST 12 - ERROR 5**************
1600                                                                  ;R3 SHOULD BE ZERO
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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 33
CVKAJB.P11    22-JAN-82 08:49          T12     TEST ADDN WITH NEGATIVE OPERANDS, S2L=S1L,OVERFLOW CARRY                SEQ 0032

 1601   004172  020467  174456          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
 1602   004176  001401                          BEQ     69$
 1603   004200  104006                          ERROR   6               ;***************TEST 12 - ERROR 6***************
                                                                         ;R4 SHOULD STILL BE DESTINATION LENGTH
 1604
 1605   004202  020567  174450          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
 1606   004206  001401                          BEQ     70$
 1607   004210  104007                          ERROR   7               ;***************TEST 12 - ERROR 7***************
                                                                         ;R5 SHOULD STILL BE DESTINATION ADDRESS
 1608
 1609   004212  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 1610   004216  001403                          BEQ     71$             ;BR IF OK
 1611   004220  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 1612   004224  104010                          ERROR   10              ;***************TEST 12 - ERROR 10**************
                                                                         ;STACK POINTER NOT RESTORED BY INSTRUCTION
 1613                                                                   ;EXPECTED SP IS STORED AT "SAVR6"
 1614                                                                   ;ERRONEOUS SP VALUE IS AT "BADR6"
 1615
 1616   004226                          71$:
 1617                                                                   ;CHECK ANSWER
 1618   004226  012700  004262                  MOV     #ANS12,R0       ;POINT R0 TO EXPECTED ANSWER
 1619   004232  016701  174420                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
 1620   004236  016702  174412                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
 1621   004242  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
 1622   004244  001401                          BEQ     73$             ;BR IF EQUAL
 1623   004246  104011                          ERROR   11              ;***************TEST 12 - ERROR 11**************
                                                                         ;ERRONEOUS ANSWER
 1624                                                                   ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
 1625                                                                   ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
 1626
 1627   004250  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
 1628   004252  001373                          BNE     72$             ;BR IF NOT FINISHED
 1629   004254  000403                          BR      TST13           ;BR TO NEXT TEST
 1630   004256                          S1T12:                          ;SOURCE1 STRING
 1631   004256     066                          .BYTE   66              ;MOST SIGNIFICANT DIGIT
 1632   004257     161                          .BYTE   161
 1633   004260                          S2T12:                          ;SOURCE2 STRING
 1634   004260     064                          .BYTE   64              ;MOST SIGNIFICANT DIGIT
 1635   004261     165                          .BYTE   165
 1636   004262                          ANS12:                          ;EXPECTED ANSWER
 1637   004262     166                          .BYTE   166
 1638
 1639           004264                       .EVEN
 1640
 1641
 1642                                   ;;=====================================================================
 1643                                   ;*TEST 13       TEST "ADDN" WITH +SRC1 & -SRC2, ZERO RESULT
 1644                                   ;;=====================================================================
 1645   004264  000004          TST13:  SCOPE
 1646   004266  004567  010440          JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 1647   004272  000001                  1                       ;SOURCE1 LENGTH
 1648   004274  004442                  S1T13                   ;SOURCE1 ADDRESS
 1649   004276  000001                  1                       ;SOURCE2 LENGTH
 1650   004300  004443                  S2T13                   ;SOURCE2 ADDRESS
 1651   004302  000000                  0                       ;DESTINATION LENGTH
 1652   004304  004767  010514          JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 1653   004310  004567  010530          JSR     R5,XPSW
 1654   004314  000204                  .WORD   204
 1655   004316  004767  010436          JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 1656   004322  000277                  SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
```

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1657  004324  000244                          CLZ
1658  004326  076050                          ADDN
1659
1660  004330  106767  174342                  MFPS    CCODES          ;STORE RESULTANT PSW
1661  004334  042767  177400  174334          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1662  004342  023767  000700  174326          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1663  004350  001401                          BEQ     64$             ;BR, IF EQUAL
1664  004352  104001                          ERROR   1               ;****************TEST 13 - ERROR 1***************
                                                                      ;PSW ERROR
                                                                      ;EXPECTED PSW IS STORED AT "SAVR6"
1665                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1666
1667
1668  004354                          64$:
1669  004354  005700                          TST     R0              ;CHECK R0=0
1670  004356  001401                          BEQ     65$
1671  004360  104002                          ERROR   2               ;****************TEST 13 - ERROR 2***************
                                                                      ;R0 SHOULD BE ZERO
1672
1673  004362  005701                  65$:    TST     R1              ;CHECK R1=0
1674  004364  001401                          BEQ     66$
1675  004366  104003                          ERROR   3               ;****************TEST 13 - ERROR 3***************
                                                                      ;R1 SHOULD BE ZERO
1676
1677  004370  005702                  66$:    TST     R2              ;CHECK R2=0
1678  004372  001401                          BEQ     67$
1679  004374  104004                          ERROR   4               ;****************TEST 13 - ERROR 4***************
                                                                      ;R2 SHOULD BE ZERO
1680
1681  004376  005703                  67$:    TST     R3              ;CHECK R3=0
1682  004400  001401                          BEQ     68$
1683  004402  104005                          ERROR   5               ;****************TEST 13 - ERROR 5***************
                                                                      ;R3 SHOULD BE ZERO
1684
1685  004404  020467  174244          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
1686  004410  001401                          BEQ     69$
1687  004412  104006                          ERROR   6               ;****************TEST 13 - ERROR 6***************
                                                                      ;R4 SHOULD STILL BE DESTINATION LENGTH
1688
1689  004414  020567  174236          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
1690  004420  001401                          BEQ     70$
1691  004422  104007                          ERROR   7               ;****************TEST 13 - ERROR 7***************
                                                                      ;R5 SHOULD STILL BE DESTINATION ADDRESS
1692
1693  004424  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
1694  004430  001403                          BEQ     71$             ;BR IF OK
1695  004432  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
1696  004436  104010                          ERROR   10              ;****************TEST 13 - ERROR 10**************
                                                                      ;STACK POINTER NOT RESTORED BY INSTRUCTION
1697                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
1698                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1699
1700  004440                          71$:
1701  004440  000401                          BR      TST14           ;BR TO NEXT TEST
1702  004442                          S1T13:                          ;SOURCE1 STRING
1703  004442      063                         .BYTE   63              ;MOST SIGNIFICANT DIGIT
1704  004443                          S2T13:                          ;SOURCE2 STRING
1705  004443      163                         .BYTE   163             ;MOST SIGNIFICANT DIGIT
1706
1707                                          .EVEN
1708
1709
1710                                  ;;=====================================================================
1711                                  ;*TEST 14       TEST "ADDN" WITH -SRC1 & +SRC2, S1L .LT. S2L, /S2/ .GT. /S1/
1712                                  ;;=====================================================================
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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 35
CVKAJB.P11    22-JAN-82 08:49          T14     TEST "ADDN" WITH -SRC1 & +SRC2, S1L .LT. S2L, /S2/ .GT. /S1/                SEQ 0034

 1713  004444  000004                  TST14:  SCOPE
 1714  004446  004567  010260                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 1715  004452  000003                          3                       ;SOURCE1 LENGTH
 1716  004454  004650                          S1T14                   ;SOURCE1 ADDRESS
 1717  004456  000004                          4                       ;SOURCE2 LENGTH
 1718  004460  004653                          S2T14                   ;SOURCE2 ADDRESS
 1719  004462  000002                          2                       ;DESTINATION LENGTH
 1720  004464  004767  010334                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 1721  004470  004567  010350                  JSR     R5,XPSW
 1722  004474  000210                          .WORD   210
 1723  004476  004767  010256                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 1724  004502  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 1725  004504  000250                          CLN
 1726  004506  076050                          ADDN
 1727
 1728  004510  106767  174162                  MFPS    CCODES          ;STORE RESULTANT PSW
 1729  004514  042767  177400  174154          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 1730  004522  023767  000700  174146          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 1731  004530  001401                          BEQ     64$             ;BR, IF EQUAL
 1732  004532  104001                          ERROR   1               ;**************TEST 14 - ERROR 1**************
 1733                                                                  ;PSW ERROR
 1734                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
 1735                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 1736  004534                          64$:
 1737  004534  005700                          TST     R0              ;CHECK R0=0
 1738  004536  001401                          BEQ     65$
 1739  004540  104002                          ERROR   2               ;**************TEST 14 - ERROR 2**************
 1740                                                                  ;R0 SHOULD BE ZERO
 1741  004542  005701                  65$:    TST     R1              ;CHECK R1=0
 1742  004544  001401                          BEQ     66$
 1743  004546  104003                          ERROR   3               ;**************TEST 14 - ERROR 3**************
 1744                                                                  ;R1 SHOULD BE ZERO
 1745  004550  005702                  66$:    TST     R2              ;CHECK R2=0
 1746  004552  001401                          BEQ     67$
 1747  004554  104004                          ERROR   4               ;**************TEST 14 - ERROR 4**************
 1748                                                                  ;R2 SHOULD BE ZERO
 1749  004556  005703                  67$:    TST     R3              ;CHECK R3=0
 1750  004560  001401                          BEQ     68$
 1751  004562  104005                          ERROR   5               ;**************TEST 14 - ERROR 5**************
 1752                                                                  ;R3 SHOULD BE ZERO
 1753  004564  020467  174064          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
 1754  004570  001401                          BEQ     69$
 1755  004572  104006                          ERROR   6               ;**************TEST 14 - ERROR 6**************
 1756                                                                  ;R4 SHOULD STILL BE DESTINATION LENGTH
 1757  004574  020567  174056          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
 1758  004600  001401                          BEQ     70$
 1759  004602  104007                          ERROR   7               ;**************TEST 14 - ERROR 7**************
 1760                                                                  ;R5 SHOULD STILL BE DESTINATION ADDRESS
 1761  004604  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 1762  004610  001403                          BEQ     71$             ;BR IF OK
 1763  004612  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 1764  004616  104010                          ERROR   10              ;**************TEST 14 - ERROR 10**************
 1765                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
 1766                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
 1767                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 1768  004620                          71$:
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1769
1770  004620  012700  004657                  MOV     #ANS14,R0       ;CHECK ANSWER
1771  004624  016701  174026                  MOV     DSTAD,R1        ;POINT R0 TO EXPECTED ANSWER
1772  004630  016702  174020                  MOV     DSTLN,R2        ;POINT R1 TO RESULTANT ANSWER
1773  004634  122021                  72$:    CMPB    (R0)+,(R1)+     ;STORE ANSWER LENGTH IN R1
1774  004636  001401                          BEQ     73$             ;COMPARE EACH DIGIT
1775  004640  104011                          ERROR   11              ;BR IF EQUAL
1776                                                                  ;***************TEST 14 - ERROR 11***************
1777                                                                  ;ERRONEOUS ANSWER
1778                                                                  ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1779  004642  005302                  73$:    DEC     R2              ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1780  004644  001373                          BNE     72$             ;DECREMENT ANSWER LENGTH
1781  004646  000405                          BR      TST15           ;BR IF NOT FINISHED
1782  004650                           S1T14:                         ;BR TO NEXT TEST
1783  004650     067                          .BYTE   67              ;SOURCE1 STRING
1784  004651     066                          .BYTE   66              ;MOST SIGNIFICANT DIGIT
1785  004652     064                          .BYTE   64
1786  004653                           S2T14:                         ;SOURCE2 STRING
1787  004653     060                          .BYTE   60              ;MOST SIGNIFICANT DIGIT
1788  004654     070                          .BYTE   70
1789  004655     063                          .BYTE   63
1790  004656     171                          .BYTE   171
1791  004657                           ANS14:                         ;EXPECTED ANSWER
1792  004657     067                          .BYTE   67              ;MOST SIGNIFICANT DIGIT
1793  004660     165                          .BYTE   165
1794
1795        004662                           .EVEN
1796
1797
1798                                     ;;*********************************************************************
1799                                     ;*TEST 15       TEST "ADDN" WITH +SRC1 & -SRC2, S1L .GT. S2L, /S2 .GT. /S1/, OVERFLOW
1800                                     ;;*********************************************************************
1801  004662  000004                  TST15:  SCOPE
1802  004664  004567  010042                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1803  004670  000004                          4                       ;SOURCE1 LENGTH
1804  004672  005066                          S1T15                   ;SOURCE1 ADDRESS
1805  004674  000003                          3                       ;SOURCE2 LENGTH
1806  004676  005072                          S2T15                   ;SOURCE2 ADDRESS
1807  004700  000002                          2                       ;DESTINATION LENGTH
1808  004702  004767  010116                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
1809  004706  004567  010132                  JSR     R5,XPSW
1810  004712  000206                          .WORD   206
1811  004714  004767  010040                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
1812  004720  000271                          +SEN!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1813  004722  000246                          +CLZ!CLV
1814  004724  076050                          ADDN
1815
1816  004726  106767  173744                  MFPS    CCODES          ;STORE RESULTANT PSW
1817  004732  042767  177400  173736          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1818  004740  023767  000700  173730          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1819  004746  001401                          BEQ     64$             ;BR, IF EQUAL
1820  004750  104001                          ERROR   1               ;***************TEST 15 - ERROR 1***************
1821                                                                  ;PSW ERROR
1822                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
1823                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
1824  004752                           64$:
```

```
1825  004752  005700                        TST     R0              ;CHECK R0=0
1826  004754  001401                        BEQ     65$
1827  004756  104002                        ERROR   2               ;***************TEST 15 - ERROR 2***************
                                                                    ;R0 SHOULD BE ZERO
1828
1829  004760  005701                65$:    TST     R1              ;CHECK R1=0
1830  004762  001401                        BEQ     66$
1831  004764  104003                        ERROR   3               ;***************TEST 15 - ERROR 3***************
                                                                    ;R1 SHOULD BE ZERO
1832
1833  004766  005702                66$:    TST     R2              ;CHECK R2=0
1834  004770  001401                        BEQ     67$
1835  004772  104004                        ERROR   4               ;***************TEST 15 - ERROR 4***************
                                                                    ;R2 SHOULD BE ZERO
1836
1837  004774  005703                67$:    TST     R3              ;CHECK R3=0
1838  004776  001401                        BEQ     68$
1839  005000  104005                        ERROR   5               ;***************TEST 15 - ERROR 5***************
                                                                    ;R3 SHOULD BE ZERO
1840
1841  005002  020467  173646        68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
1842  005006  001401                        BEQ     69$
1843  005010  104006                        ERROR   6               ;***************TEST 15 - ERROR 6***************
                                                                    ;R4 SHOULD STILL BE DESTINATION LENGTH
1844
1845  005012  020567  173640        69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
1846  005016  001401                        BEQ     70$
1847  005020  104007                        ERROR   7               ;***************TEST 15 - ERROR 7***************
                                                                    ;R5 SHOULD STILL BE DESTINATION ADDRESS
1848
1849  005022  023706  000702        70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
1850  005026  001403                        BEQ     71$             ;BR IF OK
1851  005030  010637  000704                MOV     SP,@#BADR6      ;COPY BAD SP VALUE
1852  005034  104010                        ERROR   10              ;***************TEST 15 - ERROR 10**************
                                                                    ;STACK POINTER NOT RESTORED BY INSTRUCTION
1853                                                                ;EXPECTED SP IS STORED AT "SAVR6"
1854                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
1855
1856  005036                        71$:
1857                                                                ;CHECK ANSWER
1858  005036  012700  005075                MOV     #ANS15,R0       ;POINT R0 TO EXPECTED ANSWER
1859  005042  016701  173610                MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
1860  005046  016702  173602                MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
1861  005052  122021                72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
1862  005054  001401                        BEQ     73$             ;BR IF EQUAL
1863  005056  104011                        ERROR   11              ;***************TEST 15 - ERROR 11**************
                                                                    ;ERRONEOUS ANSWER
1864                                                                ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1865                                                                ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1866
1867  005060  005302                73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
1868  005062  001373                        BNE     72$             ;BR IF NOT FINISHED
1869  005064  000405                        BR      TST16           ;BR TO NEXT TEST
1870  005066                        S1T15:                          ;SOURCE1 STRING
1871  005066     060                        .BYTE   60              ;MOST SIGNIFICANT DIGIT
1872  005067     060                        .BYTE   60
1873  005070     067                        .BYTE   67
1874  005071     163                        .BYTE   163
1875  005072                        S2T15:                          ;SOURCE2 STRING
1876  005072     061                        .BYTE   61              ;MOST SIGNIFICANT DIGIT
1877  005073     067                        .BYTE   67
1878  005074     063                        .BYTE   63
1879  005075                        ANS15:                          ;EXPECTED ANSWER
1880  005075     060                        .BYTE   60              ;MOST SIGNIFICANT DIGIT
```

```
                                T15     TEST "ADDN" WITH +SRC1 & -SRC2, S1L .GT. S2L, /S2 .GT. /S1/, OVERFLOW      SEQ 0037

1881  005076     060                    .BYTE   60
1882
1883           005100                   .EVEN
1884
1885
1886
1887                                ;;*********************************************************************
1888                                ;*TEST 16       TEST ADDN WITH -SRC1 & +SRC2,S1L .LT. S2L, /S1/ .GT. /S2/,OVERFLOW
1889                                ;;*********************************************************************
1890  005100  000004                TST16:  SCOPE
1891  005102  004567  007624               JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1892  005106  000003                                               ;SOURCE1 LENGTH
1893  005110  005304                                               ;SOURCE1 ADDRESS
1894  005112  000004                                               ;SOURCE2 LENGTH
1895  005114  005307                                               ;SOURCE2 ADDRESS
1896  005116  000002                                               ;DESTINATION LENGTH
1897  005120  004767  007700               JSR     PC,CLBUF        ;CLEAR BUFFER AREA
1898  005124  004567  007714               JSR     R5,XPSW
1899  005130  000206                       .WORD   206
1900  005132  004767  007622               JSR     PC,GENR         ;SET UP GENERAL REGISTERS
1901  005136  000271                       +SEN!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1902  005140  000246                       +CLZ!CLV
1903  005142  076050                       ADDN
1904
1905  005144  106767  173526               MFPS    CCODES          ;STORE RESULTANT PSW
1906  005150  042767  177400  173520       BIC     #177400,CCODES  ;CLEAR UNUSED BITS
1907  005156  023767  000700  173512       CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
1908  005164  001401                       BEQ     64$             ;BR, IF EQUAL
1909  005166  104001                       ERROR   1               ;*****************TEST 16 - ERROR 1***************
                                                                    ;PSW ERROR
                                                                    ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
1910
1911
1912
1913  005170                        64$:
1914  005170  005700                       TST     R0              ;CHECK R0=0
1915  005172  001401                       BEQ     65$
1916  005174  104002                       ERROR   2               ;*****************TEST 16 - ERROR 2***************
                                                                    ;R0 SHOULD BE ZERO
1917
1918  005176  005701                65$:    TST     R1              ;CHECK R1=0
1919  005200  001401                       BEQ     66$
1920  005202  104003                       ERROR   3               ;*****************TEST 16 - ERROR 3***************
                                                                    ;R1 SHOULD BE ZERO
1921
1922  005204  005702                66$:    TST     R2              ;CHECK R2=0
1923  005206  001401                       BEQ     67$
1924  005210  104004                       ERROR   4               ;*****************TEST 16 - ERROR 4***************
                                                                    ;R2 SHOULD BE ZERO
1925
1926  005212  005703                67$:    TST     R3              ;CHECK R3=0
1927  005214  001401                       BEQ     68$
1928  005216  104005                       ERROR   5               ;*****************TEST 16 - ERROR 5***************
                                                                    ;R3 SHOULD BE ZERO
1929
1930  005220  020467  173430        68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
1931  005224  001401                       BEQ     69$
1932  005226  104006                       ERROR   6               ;*****************TEST 16 - ERROR 6***************
                                                                    ;R4 SHOULD STILL BE DESTINATION LENGTH
1933
1934  005230  020567  173422        69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
1935  005234  001401                       BEQ     70$
1936  005236  104007                       ERROR   7               ;*****************TEST 16 - ERROR 7***************
```

```
                                                        ;R5 SHOULD STILL BE DESTINATION ADDRESS
005240  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
005244  001403                          BEQ     71$             ;BR IF OK
005246  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
005252  104010                          ERROR   10              ;****************TEST 16 - ERROR 10***************
                                                        ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                        ;EXPECTED SP IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
005254                          71$:
                                                        ;CHECK ANSWER
005254  012700  005313                  MOV     #ANS16,R0       ;POINT R0 TO EXPECTED ANSWER
005260  016701  173372                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
005264  016702  173364                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
005270  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
005272  001401                          BEQ     73$             ;BR IF EQUAL
005274  104011                          ERROR   11              ;****************TEST 16 - ERROR 11***************
                                                        ;ERRONEOUS ANSWER
                                                        ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
                                                        ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
005276  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
005300  001373                          BNE     72$             ;BR IF NOT FINISHED
005302  000405                          BR      TST17           ;BR TO NEXT TEST
005304                          S1T16:                          ;SOURCE1 STRING
005304      061                         .BYTE   61              ;MOST SIGNIFICANT DIGIT
005305      067                         .BYTE   67
005306      162                         .BYTE   162
005307                          S2T16:                          ;SOURCE2 STRING
005307      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
005310      060                         .BYTE   60
005311      067                         .BYTE   67
005312      062                         .BYTE   62
005313                          ANS16:                          ;EXPECTED ANSWER
005313      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
005314      060                         .BYTE   60

005316                                  .EVEN


                                ;;******************************************************************
                                ;*TEST 17        TEST ADDN WITH +SRC1 & -SRC2, S1L=S2L, /S1/ .GT./S2/,OVERFLOW
                                ;;******************************************************************
000004                          TST17:  SCOPE
004567  007406                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
000003                                  3               ;SOURCE1 LENGTH
005522                                  S1T17           ;SOURCE1 ADDRESS
000003                                  3               ;SOURCE2 LENGTH
005525                                  S2T17           ;SOURCE2 ADDRESS
000002                                  2               ;DESTINATION LENGTH
004767  007462                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
004567  007476                  JSR     R5,XPSW
000202                          .WORD   202
004767  007404                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
000242                          CLV
076050                          ADDN
```

```
 1993  005362  106767  173310          MFPS    CCODES          ;STORE RESULTANT PSW
 1994  005366  042767  177400  173302  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 1995  005374  023767  000700  173274  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 1996  005402  001401                  BEQ     64$             ;BR, IF EQUAL
 1997  005404  104001                  ERROR   1               ;***************TEST 17 - ERROR 1***************
 1998                                                          ;PSW ERROR
 1999                                                          ;EXPECTED PSW IS STORED AT "SAVR6"
 2000                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
 2001  005406                  64$:
 2002  005406  005700                  TST     R0              ;CHECK R0=0
 2003  005410  001401                  BEQ     65$
 2004  005412  104002                  ERROR   2               ;*************.*TEST 17 - ERROR 2***************
                                                              ;R0 SHOULD BE ZERO
 2005
 2006  005414  005701          65$:    TST     R1              ;CHECK R1=0
 2007  005416  001401                  BEQ     66$
 2008  005420  104003                  ERROR   3               ;***************TEST 17 - ERROR 3***************
                                                              ;R1 SHOULD BE ZERO
 2009
 2010  005422  005702          66$:    TST     R2              ;CHECK R2=0
 2011  005424  001401                  BEQ     67$
 2012  005426  104004                  ERROR   4               ;***************TEST 17 - ERROR 4***************
                                                              ;R2 SHOULD BE ZERO
 2013
 2014  005430  005703          67$:    TST     R3              ;CHECK R3=0
 2015  005432  001401                  BEQ     68$
 2016  005434  104005                  ERROR   5               ;***************TEST 17 - ERROR 5***************
                                                              ;R3 SHOULD BE ZERO
 2017
 2018  005436  020467  173212  68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
 2019  005442  001401                  BEQ     69$
 2020  005444  104006                  ERROR   6               ;***************TEST 17 - ERROR 6***************
                                                              ;R4 SHOULD STILL BE DESTINATION LENGTH
 2021
 2022  005446  020567  173204  69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
 2023  005452  001401                  BEQ     70$
 2024  005454  104007                  ERROR   7               ;***************TEST 17 - ERROR 7***************
                                                              ;R5 SHOULD STILL BE DESTINATION ADDRESS
 2025
 2026  005456  023706  000702  70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 2027  005462  001403                  BEQ     71$             ;BR IF OK
 2028  005464  010637  000704          MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 2029  005470  104010                  ERROR   10              ;***************TEST 17 - ERROR 10**************
                                                              ;STACK POINTER NOT RESTORED BY INSTRUCTION
 2030                                                         ;EXPECTED SP IS STORED AT "SAVR6"
 2031                                                         ;ERRONEOUS SP VALUE IS AT "BADR6"
 2032
 2033  005472                  71$:                            ;CHECK ANSWER
 2034
 2035  005472  012700  005530          MOV     #ANS17,R0       ;POINT R0 TO EXPECTED ANSWER
 2036  005476  016701  173154          MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
 2037  005502  016702  173146          MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
 2038  005506  122021          72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
 2039  005510  001401                  BEQ     73$             ;BR IF EQUAL
 2040  005512  104011                  ERROR   11              ;***************TEST 17 - ERROR 11**************
                                                              ;ERRONEOUS ANSWER
 2041                                                         ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
 2042                                                         ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
 2043
 2044  005514  005302          73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
 2045  005516  001373                  BNE     72$             ;BR IF NOT FINISHED
 2046  005520  000404                  BR      TST20           ;BR TO NEXT TEST
 2047  005522                  S1T17:                          ;SOURCE1 STRING
 2048  005522      063                 .BYTE   63              ;MOST SIGNIFICANT DIGIT
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 41
CVKAJB.P11    22-JAN-82 08:49          T17     TEST ADDN WITH +SRC1 & -SRC2, S1L=S2L, /S1/ .GT./S2/,OVERFLOW                SEQ 0040

 2049  005523      065                        .BYTE   65
 2050  005524      067                        .BYTE   67
 2051  005525                         S2T17:                          ;SOURCE2 STRING
 2052  005525      060                        .BYTE   60              ;MOST SIGNIFICANT DIGIT
 2053  005526      063                        .BYTE   63
 2054  005527      165                        .BYTE   165
 2055  005530                         ANS17:                          ;EXPECTED ANSWER
 2056  005530      062                        .BYTE   62              ;MOST SIGNIFICANT DIGIT
 2057  005531      062                        .BYTE   62
 2058
 2059                                        .EVEN
 2060
 2061
 2062                                ;;*********************************************************************
 2063                                ;*TEST 20       TEST ADDN WITH POSITIVE OPERANDS, OVERFLOW, NO CARRY OUT OF OVERFLOW
 2064                                ;;*********************************************************************
 2065  005532  000004                TST20:  SCOPE
 2066  005534  004567  007172                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 2067  005540  000003                                3               ;SOURCE1 LENGTH
 2068  005542  005736                                S1T20           ;SOURCE1 ADDRESS
 2069  005544  000003                                3               ;SOURCE2 LENGTH
 2070  005546  005741                                S2T20           ;SOURCE2 ADDRESS
 2071  005550  000002                                2               ;DESTINATION LENGTH
 2072  005552  004767  007246                JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 2073  005556  004567  007262                JSR     R5,XPSW
 2074  005562  000202                        .WORD   202
 2075  005564  004767  007170                JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 2076  005570  000277                        SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 2077  005572  000242                        CLV
 2078  005574  076050                        ADDN
 2079
 2080  005576  106767  173074                MFPS    CCODES          ;STORE RESULTANT PSW
 2081  005602  042767  177400  173066        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 2082  005610  023767  000700  173060        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 2083  005616  001401                        BEQ     64$             ;BR, IF EQUAL
 2084  005620  104001                        ERROR   1               ;**************TEST 20 - ERROR 1**************
 2085                                                                ;PSW ERROR
 2086                                                                ;EXPECTED PSW IS STORED AT "SAVR6"
 2087                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
 2088  005622                         64$:
 2089  005622  005700                        TST     R0              ;CHECK R0=0
 2090  005624  001401                        BEQ     65$
 2091  005626  104002                        ERROR   2               ;**************TEST 20 - ERROR 2**************
 2092                                                                ;R0 SHOULD BE ZERO
 2093  005630  005701                65$:    TST     R1              ;CHECK R1=0
 2094  005632  001401                        BEQ     66$
 2095  005634  104003                        ERROR   3               ;**************TEST 20 - ERROR 3**************
 2096                                                                ;R1 SHOULD BE ZERO
 2097  005636  005702                66$:    TST     R2              ;CHECK R2=0
 2098  005640  001401                        BEQ     67$
 2099  005642  104004                        ERROR   4               ;**************TEST 20 - ERROR 4**************
 2100                                                                ;R2 SHOULD BE ZERO
 2101  005644  005703                67$:    TST     R3              ;CHECK R3=0
 2102  005646  001401                        BEQ     68$
 2103  005650  104005                        ERROR   5               ;**************TEST 20 - ERROR 5**************
 2104                                                                ;R3 SHOULD BE ZERO
```

```
2105  005652  020467  172776          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
2106  005656  001401                          BEQ     69$
2107  005660  104006                          ERROR   6               ;****************TEST 20 - ERROR 6****************
2108                                                                  ;R4 SHOULD STILL BE DESTINATION LENGTH
2109  005662  020567  172770          69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
2110  005666  001401                          BEQ     70$
2111  005670  104007                          ERROR   7               ;****************TEST 20 - ERROR 7****************
2112                                                                  ;R5 SHOULD STILL BE DESTINATION ADDRESS
2113  005672  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
2114  005676  001403                          BEQ     71$             ;BR IF OK
2115  005700  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
2116  005704  104010                          ERROR   10              ;****************TEST 20 - ERROR 10***************
2117                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
2118                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
2119                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
2120  005706                          71$:
2121                                                                  ;CHECK ANSWER
2122  005706  012700  005744                  MOV     #ANS20,R0       ;POINT R0 TO EXPECTED ANSWER
2123  005712  016701  172740                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
2124  005716  016702  172732                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
2125  005722  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
2126  005724  001401                          BEQ     73$             ;BR IF EQUAL
2127  005726  104011                          ERROR   11              ;****************TEST 20 - ERROR 11***************
2128                                                                  ;ERRONEOUS ANSWER
2129                                                                  ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2130                                                                  ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
2131  005730  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
2132  005732  001373                          BNE     72$             ;BR IF NOT FINISHED
2133  005734  000404                          BR      TST21           ;BR TO NEXT TEST
2134  005736                          S1T20:                          ;SOURCE1 STRING
2135  005736     070                          .BYTE   70              ;MOST SIGNIFICANT DIGIT
2136  005737     062                          .BYTE   62
2137  005740     064                          .BYTE   64
2138  005741                          S2T20:                          ;SOURCE2 STRING
2139  005741     061                          .BYTE   61              ;MOST SIGNIFICANT DIGIT
2140  005742     070                          .BYTE   70
2141  005743     065                          .BYTE   65
2142  005744                          ANS20:                          ;EXPECTED ANSWER
2143  005744     060                          .BYTE   60              ;MOST SIGNIFICANT DIGIT
2144  005745     071                          .BYTE   71
2145
2146                                          .EVEN
2147
2148
2149                                  ;;*******************************************************************
2150                                  ;*TEST 21        TEST INTERRUPTABILITY OF "ADDN"
2151                                  ;;*******************************************************************
2152  005746  000004                  TST21:  SCOPE
2153  005750  105777  172564                  TSTB    @SWR            ;TEST BIT 7 OF SWR
2154  005754  100555                          BMI     TST22           ;SKIP TO NEXT TEST IF SET
2155  005756  026767  172566  172700          CMP     $TPS,TCSR       ;IS SLU USED FOR INTERRUPTS THE CONSOLE?
2156  005764  001007                          BNE     T21CONT         ;BR, IF NOT & PERFORM INTERRUPTABILITY TEST
2157  005766  032767  000001  172612          BIT     #BIT0,$ENV      ;IF YES, IS PROGRAM UNDER APT?
2158  005774  001403                          BEQ     T21CONT         ;BR, IF NOT
2159  005776  005767  172572                  TST     $PASS           ;IF YES,CHECK IF NOT ON FIRST PASS
2160  006002  001142                          BNE     TST22           ;IF NOT, BR & SKIP TEST
```

```
                                        T21CONT:
006004                                          JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
006004  004567  006722                          4                       ;SOURCE1 LENGTH
006010  000004                                  S1T21                   ;SOURCE1 ADDRESS
006012  006260                                  4                       ;SOURCE2 LENGTH
006014  000004                                  S2T21                   ;SOURCE2 ADDRESS
006016  006264                                  5                       ;DESTINATION LENGTH
006020  000005                                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
006022  004767  006776                          MOV     #ADDNPC,PCI     ;STORE PC OF TEST INSTRUCTION
006026  012767  006106  172640                  MOV     #INTR,@TVECT    ;POINT TTY VECTOR TO INTERRUPT ROUTINE
006034  012777  015114  172626                  CLR     @TPSW           ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
006042  005077  172624                          JSR     PC,TDONE        ;WAIT FOR SLU READY
006046  004767  007016                          MOV     @#$NULL,@TBUF   ;SEND NULL CHARACTER
006052  013777  000554  172606                  JSR     R5,XPSW         ;STORE EXPECTED PSW
006060  004567  006760                          .WORD   0
006064  000000                                  MTPS    #0              ;ALLOW INTERRUPTS
006066  106427  000000                          BIS     #100,@TCSR      ;ENABLE TTY INTERRUPTS
006072  052777  000100  172564          READDN: JSR     PC,GENR         ;SET UP GENERAL REGISTERS
006100  004767  006654                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
006104  000277                          ADDNPC: ADDN
006106  076050
006110
006110  106767  172562                          MFPS    CCODES          ;STORE RESULTANT PSW
006114  032777  000100  172542                  BIT     #100,@TCSR      ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
006122  001366                                  BNE     READDN          ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
006124  042767  177400  172544                  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
006132  023767  000700  172536                  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
006140  001401                                  BEQ     64$             ;BR, IF EQUAL
006142  104001                                  ERROR   1               ;****************TEST 21 - ERROR 1***************
                                                                        ;PSW ERROR
                                                                        ;EXPECTED PSW IS STORED AT ''SAVR6''
                                                                        ;ERRONEOUS SP VALUE IS AT ''BADR6''
006144                                  64$:
006144  005700                                  TST     R0              ;CHECK R0=0
006146  001401                                  BEQ     65$
006150  104002                                  ERROR   2               ;****************TEST 21 - ERROR 2***************
                                                                        ;R0 SHOULD BE ZERO
006152  005701                          65$:    TST     R1              ;CHECK R1=0
006154  001401                                  BEQ     66$
006156  104003                                  ERROR   3               ;****************TEST 21 - ERROR 3***************
                                                                        ;R1 SHOULD BE ZERO
006160  005702                          66$:    TST     R2              ;CHECK R2=0
006162  001401                                  BEQ     67$
006164  104004                                  ERROR   4               ;****************TEST 21 - ERROR 4***************
                                                                        ;R2 SHOULD BE ZERO
006166  005703                          67$:    TST     R3              ;CHECK R3=0
006170  001401                                  BEQ     68$
006172  104005                                  ERROR   5               ;****************TEST 21 - ERROR 5***************
                                                                        ;R3 SHOULD BE ZERO
006174  020467  172454                  68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
006200  001401                                  BEQ     69$
006202  104006                                  ERROR   6               ;****************TEST 21 - ERROR 6***************
                                                                        ;R4 SHOULD STILL BE DESTINATION LENGTH
006204  020567  172446                  69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
006210  001401                                  BEQ     70$
006212  104007                                  ERROR   7               ;****************TEST 21 - ERROR 7***************
                                                                        ;R5 SHOULD STILL BE DESTINATION ADDRESS
```

```
2217  006214  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
2218  006220  001403                          BEQ     71$             ;BR IF OK
2219  006222  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
2220  006226  104010                          ERROR   10              ;***************TEST 21 - ERROR 10***************
2221                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
2222                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
2223                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
2224  006230                          71$:
2225                                                                  ;CHECK ANSWER
2226  006230  012700  006270                  MOV     #ANS21,R0       ;POINT R0 TO EXPECTED ANSWER
2227  006234  016701  172416                  MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
2228  006240  016702  172410                  MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
2229  006244  122021                  72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
2230  006246  001401                          BEQ     73$             ;BR IF EQUAL
2231  006250  104011                          ERROR   11              ;***************TEST 21 - ERROR 11***************
2232                                                                  ;ERRONEOUS ANSWER
2233                                                                  ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2234                                                                  ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
2235  006252  005302                  73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
2236  006254  001373                          BNE     72$             ;BR IF NOT FINISHED
2237  006256  000407                          BR      ENDT21          ;BR TO END OF THIS TEST
2238  006260                          S1T21:                          ;SOURCE1 STRING
2239  006260     061                          .BYTE   61              ;MOST SIGNIFICANT DIGIT
2240  006261     062                          .BYTE   62
2241  006262     063                          .BYTE   63
2242  006263     064                          .BYTE   64
2243  006264                          S2T21:                          ;SOURCE2 STRING
2244  006264     065                          .BYTE   65              ;MOST SIGNIFICANT DIGIT
2245  006265     066                          .BYTE   66
2246  006266     067                          .BYTE   67
2247  006267     070                          .BYTE   70
2248  006270                          ANS21:                          ;EXPECTED ANSWER
2249  006270     060                          .BYTE   60              ;MOST SIGNIFICANT DIGIT
2250  006271     066                          .BYTE   66
2251  006272     071                          .BYTE   71
2252  006273     061                          .BYTE   61
2253  006274     062                          .BYTE   62
2254
2255        006276                            .EVEN
2256  006276  016777  172370  172364  ENDT21: MOV     TPSW,@TVECT
2257  006304  106427  000200                  MTPS    #200
2258
2259
2260                                  ;;*****************************************************************
2261                                  ;*TEST 22       TEST "SUBN" WITH POSITIVE OPERANDS,SRC1 .GT. SRC2
2262                                  ;;*****************************************************************
2263  006310  000004                  TST22:  SCOPE
2264  006312  004567  006414                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2265  006316  000004                          4                       ;SOURCE1 LENGTH
2266  006320  006514                          S1T22                   ;SOURCE1 ADDRESS
2267  006322  000003                          3                       ;SOURCE2 LENGTH
2268  006324  006520                          S2T22                   ;SOURCE2 ADDRESS
2269  006326  000003                          3                       ;DESTINATION LENGTH
2270  006330  004767  006470                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
2271  006334  004567  006504                  JSR     R5,XPSW
2272  006340  000210                          .WORD   210
```

```
2273  006342  004767  006412          JSR     PC,GENR         ;SET UP GENERAL REGISTERS
2274  006346  000277                  SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2275  006350  000250                  CLN
2276  006352  076051                  SUBN
2277
2278  006354  106767  172316          MFPS    CCODES          ;STORE RESULTANT PSW
2279  006360  042767  177400  172310  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
2280  006366  023767  000700  172302  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
2281  006374  001401                  BEQ     64$             ;BR, IF EQUAL
2282  006376  104001                  ERROR   1               ;****************TEST 22 - ERROR 1***************
                                                              ;PSW ERROR
                                                              ;EXPECTED PSW IS STORED AT "SAVR6"
2283                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
2284
2285
2286  006400                  64$:
2287  006400  005700                  TST     R0              ;CHECK R0=0
2288  006402  001401                  BEQ     65$
2289  006404  104002                  ERROR   2               ;****************TEST 22 - ERROR 2***************
                                                              ;R0 SHOULD BE ZERO
2290
2291  006406  005701          65$:    TST     R1              ;CHECK R1=0
2292  006410  001401                  BEQ     66$
2293  006412  104003                  ERROR   3               ;****************TEST 22 - ERROR 3***************
                                                              ;R1 SHOULD BE ZERO
2294
2295  006414  005702          66$:    TST     R2              ;CHECK R2=0
2296  006416  001401                  BEQ     67$
2297  006420  104004                  ERROR   4               ;****************TEST 22 - ERROR 4***************
                                                              ;R2 SHOULD BE ZERO
2298
2299  006422  005703          67$:    TST     R3              ;CHECK R3=0
2300  006424  001401                  BEQ     68$
2301  006426  104005                  ERROR   5               ;****************TEST 22 - ERROR 5***************
                                                              ;R3 SHOULD BE ZERO
2302
2303  006430  020467  172220  68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
2304  006434  001401                  BEQ     69$
2305  006436  104006                  ERROR   6               ;****************TEST 22 - ERROR 6***************
                                                              ;R4 SHOULD STILL BE DESTINATION LENGTH
2306
2307  006440  020567  172212  69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
2308  006444  001401                  BEQ     70$
2309  006446  104007                  ERROR   7               ;****************TEST 22 - ERROR 7***************
                                                              ;R5 SHOULD STILL BE DESTINATION ADDRESS
2310
2311  006450  023706  000702  70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
2312  006454  001403                  BEQ     71$             ;BR IF OK
2313  006456  010637  000704          MOV     SP,@#BADR6      ;COPY BAD SP VALUE
2314  006462  104010                  ERROR   10              ;****************TEST 22 - ERROR 10**************
                                                              ;STACK POINTER NOT RESTORED BY INSTRUCTION
2315                                                          ;EXPECTED SP IS STORED AT "SAVR6"
2316                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
2317
2318  006464          71$:
2319                                                          ;CHECK ANSWER
2320  006464  012700  006523          MOV     #ANS22,R0       ;POINT R0 TO EXPECTED ANSWER
2321  006470  016701  172162          MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
2322  006474  016702  172154          MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
2323  006500  122021          72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
2324  006502  001401                  BEQ     73$             ;BR IF EQUAL
2325  006504  104011                  ERROR   11              ;****************TEST 22 - ERROR 11**************
2326                                                          ;ERRONEOUS ANSWER
2327                                                          ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2328                                                          ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
```

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 2329  006506  005302                 73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
 2330  006510  001373                         BNE     72$             ;BR IF NOT FINISHED
 2331  006512  000405                         BR      TST23           ;BR TO NEXT TEST
 2332  006514                         S1T22:                          ;SOURCE1 STRING
 2333  006514      060                        .BYTE   60              ;MOST SIGNIFICANT DIGIT
 2334  006515      071                        .BYTE   71
 2335  006516      066                        .BYTE   66
 2336  006517      062                        .BYTE   62
 2337  006520                         S2T22:                          ;SOURCE2 STRING
 2338  006520      067                        .BYTE   67              ;MOST SIGNIFICANT DIGIT
 2339  006521      065                        .BYTE   65
 2340  006522      064                        .BYTE   64
 2341  006523                         ANS22:                          ;EXPECTED ANSWER
 2342  006523      062                        .BYTE   62              ;MOST SIGNIFICANT DIGIT
 2343  006524      060                        .BYTE   60
 2344  006525      170                        .BYTE   170
 2345
 2346                                        .EVEN
 2347
 2348                                ;;*********************************************************************
 2349                                ;*TEST 23        TEST "SUBN" WITH NEGATIVE OPERANDS, SRC1 .GTT. SRC2
 2350                                ;;*********************************************************************
 2351  006526  000004                TST23:  SCOPE
 2352  006530  004567  006176                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 2353  006534  000003                        3                       ;SOURCE1 LENGTH
 2354  006536  006730                        S1T23                   ;SOURCE1 ADDRESS
 2355  006540  000004                        4                       ;SOURCE2 LENGTH
 2356  006542  006733                        S2T23                   ;SOURCE2 ADDRESS
 2357  006544  000003                        3                       ;DESTINATION LENGTH
 2358  006546  004767  006252                JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 2359  006552  004567  006266                JSR     R5,XPSW
 2360  006556  000200                        .WORD   200
 2361  006560  004767  006174                JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 2362  006564  000277                        SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 2363  006566  076051                        SUBN
 2364
 2365  006570  106767  172102                MFPS    CCODES          ;STORE RESULTANT PSW
 2366  006574  042767  177400  172074        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 2367  006602  023767  000700  172066        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 2368  006610  001401                        BEQ     64$             ;BR, IF EQUAL
 2369  006612  104001                        ERROR   1               ;***************TEST 23 - ERROR 1***************
 2370                                                                ;PSW ERROR
 2371                                                                ;EXPECTED PSW IS STORED AT "SAVR6"
 2372                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
 2373  006614                         64$:
 2374  006614  005700                        TST     R0              ;CHECK R0=0
 2375  006616  001401                        BEQ     65$
 2376  006620  104002                        ERROR   2               ;***************TEST 23 - ERROR 2***************
 2377                                                                ;R0 SHOULD BE ZERO
 2378  006622  005701                65$:    TST     R1              ;CHECK R1=0
 2379  006624  001401                        BEQ     66$
 2380  006626  104003                        ERROR   3               ;***************TEST 23 - ERROR 3***************
 2381                                                                ;R1 SHOULD BE ZERO
 2382  006630  005702                66$:    TST     R2              ;CHECK R2=0
 2383  006632  001401                        BEQ     67$
 2384  006634  104004                        ERROR   4               ;***************TEST 23 - ERROR 4***************
```

```
2385
2386  006636  005703                67$:    TST     R3              ;R2 SHOULD BE ZERO
2387  006640  001401                        BEQ     68$             ;CHECK R3=0
2388  006642  104005                        ERROR   5               ;***************TEST 23 - ERROR 5***************
2389                                                                ;R3 SHOULD BE ZERO
2390  006644  020467  172004        68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
2391  006650  001401                        BEQ     69$
2392  006652  104006                        ERROR   6               ;***************TEST 23 - ERROR 6***************
2393                                                                ;R4 SHOULD STILL BE DESTINATION LENGTH
2394  006654  020567  171776        69$:    CMP     R5,DSTAD        ;CHECK R5 = DESTINATION ADDRESS
2395  006660  001401                        BEQ     70$
2396  006662  104007                        ERROR   7               ;***************TEST 23 - ERROR 7***************
2397                                                                ;R5 SHOULD STILL BE DESTINATION ADDRESS
2398  006664  023706  000702        70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
2399  006670  001403                        BEQ     71$             ;BR IF OK
2400  006672  010637  000704                MOV     SP,@#BADR6      ;COPY BAD SP VALUE
2401  006676  104010                        ERROR   10              ;***************TEST 23 - ERROR 10***************
2402                                                                ;STACK POINTER NOT RESTORED BY INSTRUCTION
2403                                                                ;EXPECTED SP IS STORED AT "SAVR6"
2404                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
2405  006700                        71$:
2406                                                                ;CHECK ANSWER
2407  006700  012700  006737                MOV     #ANS23,R0       ;POINT R0 TO EXPECTED ANSWER
2408  006704  016701  171746                MOV     DSTAD,R1        ;POINT R1 TO RESULTANT ANSWER
2409  006710  016702  171740                MOV     DSTLN,R2        ;STORE ANSWER LENGTH IN R1
2410  006714  122021                72$:    CMPB    (R0)+,(R1)+     ;COMPARE EACH DIGIT
2411  006716  001401                        BEQ     73$             ;BR IF EQUAL
2412  006720  104011                        ERROR   11              ;***************TEST 23 - ERROR 11***************
2413                                                                ;ERRONEOUS ANSWER
2414                                                                ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2415                                                                ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
2416  006722  005302                73$:    DEC     R2              ;DECREMENT ANSWER LENGTH
2417  006724  001373                        BNE     72$             ;BR IF NOT FINISHED
2418  006726  000405                        BR      TST24           ;BR TO NEXT TEST
2419  006730                        S1T23:                          ;SOURCE1 STRING
2420  006730     071                        .BYTE   71              ;MOST SIGNIFICANT DIGIT
2421  006731     066                        .BYTE   66
2422  006732     162                        .BYTE   162
2423  006733                        S2T23:                          ;SOURCE2 STRING
2424  006733     060                        .BYTE   60              ;MOST SIGNIFICANT DIGIT
2425  006734     070                        .BYTE   70
2426  006735     063                        .BYTE   63
2427  006736     161                        .BYTE   161
2428  006737                        ANS23:                          ;EXPECTED ANSWER
2429  006737     061                        .BYTE   61              ;MOST SIGNIFICANT DIGIT
2430  006740     063                        .BYTE   63
2431  006741     061                        .BYTE   61
2432
2433                                       .EVEN
2434
2435                                ;;*******************************************************************
2436                                ;*TEST 24        TEST INTERRUPTABILITY OF "SUBN"
2437                                ;;*******************************************************************
2438  006742  000004                TST24:  SCOPE
2439  006744  105777  171570                TSTB    @SWR            ;TEST BIT 7 OF SWR
2440  006750  100556                        BMI     TST25           ;SKIP TO NEXT TEST IF SET
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 2441  006752  026767  171572  171704          CMP     $TPS,TCSR       ;IS SLU USED FOR INTERRUPTS THE CONSOLE?
 2442  006760  001007                          BNE     T24CONT         ;BR, IF NOT & PERFORM INTERRUPTABILITY TEST
 2443  006762  032767  000001  171616          BIT     #BIT0,$ENV      ;IF YES, IS PROGRAM UNDER APT?
 2444  006770  001403                          BEQ     T24CONT         ;BR, IF NOT
 2445  006772  005767  171576                  TST     $PASS           ;IF YES,CHECK IF NOT ON FIRST PASS
 2446  006776  001143                          BNE     TST25           ;IF NOT, BR & SKIP TEST
 2447  007000                          T24CONT:
 2448  007000  004567  005726                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 2449  007004  000004                          4                       ;SOURCE1 LENGTH
 2450  007006  007256                          S1T24                   ;SOURCE1 ADDRESS
 2451  007010  000004                          4                       ;SOURCE2 LENGTH
 2452  007012  007262                          S2T24                   ;SOURCE2 ADDRESS
 2453  007014  000005                          5                       ;DESTINATION LENGTH
 2454  007016  004767  006002                  JSR     PC,CLBUF        ;CLEAR BUFFER AREA
 2455  007022  012767  007104  171644          MOV     #SUBNPC,PCI     ;STORE PC OF TEST INSTRUCTION
 2456  007030  012777  015114  171632          MOV     #INTR,@TVECT    ;POINT TTY VECTOR TO INTERRUPT ROUTINE
 2457  007036  005077  171630                  CLR     @TPSW           ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
 2458  007042  004767  006022                  JSR     PC,TDONE        ;WAIT FOR SLU READY
 2459  007046  013777  000554  171612          MOV     @#$NULL,@TBUF   ;SEND NULL CHARACTER
 2460  007054  004567  005764                  JSR     R5,XPSW         ;STORE EXPECTED PSW
 2461  007060  000010                          .WORD   10
 2462  007062  106427  000000                  MTPS    #0              ;ALLOW INTERRUPTS
 2463  007066  052777  000100  171570          BIS     #100,@TCSR      ;ENABLE TTY INTERRUPTS
 2464  007074  004767  005660          RESUBN: JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 2465  007100  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 2466  007102  000250                          CLN
 2467  007104  076051                  SUBNPC: SUBN
 2468
 2469  007106  106767  171564                  MFPS    CCODES          ;STORE RESULTANT PSW
 2470  007112  032777  000100  171544          BIT     #100,@TCSR      ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
 2471  007120  001365                          BNE     RESUBN          ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
 2472  007122  042767  177400  171546          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 2473  007130  023767  000700  171540          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 2474  007136  001401                          BEQ     64$             ;BR, IF EQUAL
 2475  007140  104001                          ERROR   1               ;**************TEST 24 - ERROR 1***************
 2476                                                                  ;PSW ERROR
 2477                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
 2478                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 2479  007142                          64$:
 2480  007142  005700                          TST     R0              ;CHECK R0=0
 2481  007144  001401                          BEQ     65$
 2482  007146  104002                          ERROR   2               ;***************TEST 24 - ERROR 2***************
 2483                                                                  ;R0 SHOULD BE ZERO
 2484  007150  005701                  65$:    TST     R1              ;CHECK R1=0
 2485  007152  001401                          BEQ     66$
 2486  007154  104003                          ERROR   3               ;***************TEST 24 - ERROR 3***************
 2487                                                                  ;R1 SHOULD BE ZERO
 2488  007156  005702                  66$:    TST     R2              ;CHECK R2=0
 2489  007160  001401                          BEQ     67$
 2490  007162  104004                          ERROR   4               ;***************TEST 24 - ERROR 4***************
 2491                                                                  ;R2 SHOULD BE ZERO
 2492  007164  005703                  67$:    TST     R3              ;CHECK R3=0
 2493  007166  001401                          BEQ     68$
 2494  007170  104005                          ERROR   5               ;***************TEST 24 - ERROR 5***************
 2495                                                                  ;R3 SHOULD BE ZERO
 2496  007172  020467  171456          68$:    CMP     R4,DSTLN        ;CHECK R4= DESTINATION LENGTH
```

```
                                        BEQ     69$
                                        ERROR   6              ;****************TEST 24 - ERROR 6***************
                                                               ;R4 SHOULD STILL BE DESTINATION LENGTH
                                                               ;CHECK R5 = DESTINATION ADDRESS
007202  020567  171450        69$:    CMP     R5,DSTAD
007206  001401                        BEQ     70$
007210  104007                        ERROR   7              ;****************TEST 24 - ERROR 7***************
                                                               ;R5 SHOULD STILL BE DESTINATION ADDRESS
007212  023706  000702        70$:    CMP     @#SAVR6,SP     ;VERIFY STACK POINTER IS RESTORED
007216  001403                        BEQ     71$            ;BR IF OK
007220  010637  000704                MOV     SP,@#BADR6     ;COPY BAD SP VALUE
007224  104010                        ERROR   10             ;****************TEST 24 - ERROR 10**************
                                                               ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                               ;EXPECTED SP IS STORED AT ''SAVR6''
                                                               ;ERRONEOUS SP VALUE IS AT ''BADR6''

007226                          71$:
                                                               ;CHECK ANSWER
007226  012700  007266                MOV     #ANS24,R0      ;POINT R0 TO EXPECTED ANSWER
007232  016701  171420                MOV     DSTAD,R1       ;POINT R1 TO RESULTANT ANSWER
007236  016702  171412                MOV     DSTLN,R2       ;STORE ANSWER LENGTH IN R1
007242  122021                72$:    CMPB    (R0)+,(R1)+    ;COMPARE EACH DIGIT
007244  001401                        BEQ     73$            ;BR IF EQUAL
007246  104011                        ERROR   11             ;****************TEST 24 - ERROR 11**************
                                                               ;ERRONEOUS ANSWER
                                                               ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
                                                               ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
007250  005302                73$:    DEC     R2             ;DECREMENT ANSWER LENGTH
007252  001373                        BNE     72$            ;BR IF NOT FINISHED
007254  000407                        BR      ENDT24         ;BR TO END OF THIS TEST
007256                          S1T24:                         ;SOURCE1 STRING
007256      061                         .BYTE   61             ;MOST SIGNIFICANT DIGIT
007257      062                         .BYTE   62
007260      063                         .BYTE   63
007261      064                         .BYTE   64
007262                          S2T24:                         ;SOURCE2 STRING
007262      065                         .BYTE   65             ;MOST SIGNIFICANT DIGIT
007263      066                         .BYTE   66
007264      067                         .BYTE   67
007265      170                         .BYTE   170
007266                          ANS24:                         ;EXPECTED ANSWER
007266      060                         .BYTE   60             ;MOST SIGNIFICANT DIGIT
007267      066                         .BYTE   66
007270      071                         .BYTE   71
007271      061                         .BYTE   61
007272      162                         .BYTE   162

        007274                          .EVEN
007274  016777  171372  171366 ENDT24: MOV     TPSW,@TVECT
007302  106427  000200                MTPS    #200


                                ;;*****************************************************************
                                ;*TEST 25       TEST ''CMPN'' WITH ALL ZEROES IN BOTH SOURCE STRINGS
                                ;;*****************************************************************
007306  000004                TST25:  SCOPE
007310  004567  005416                JSR     R5,NPREP       ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
007314  000003                        3                      ;SOURCE1 LENGTH
```

```
                                                        S1T25   ;SOURCE1 ADDRESS
                                                        3       ;SOURCE2 LENGTH
                                                        S2T25   ;SOURCE2 ADDRESS
                                                        377     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
007326 004567 005512                            JSR     R5,XPSW
007332 000204                                   .WORD   204
007334 004767 005420                            JSR     PC,GENR ;SET UP GENERAL REGISTERS
007340 000277                                   SCC             ;SET UP THE COMPLEMENT OF EXPECTED CC'S
0073.2 000244                                   CLZ

007344 076052                                   CMPN

007346 106767 171324                            MFPS    CCODES          ;STORE RESULTANT PSW
007352 042767 177400 171316                     BIC     #177400,CCODES  ;CLEAR UNUSED BITS
007360 023767 000700 171310                     CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
007366 001401                                   BEQ     64$             ;BR, IF EQUAL
007370 104001                                   ERROR   1               ;***************TEST 25 - ERROR 1***************
                                                                        ;PSW ERROR
                                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"

007372                                  64$:
007372 005700                                   TST     R0              ;CHECK R0=0
007374 001401                                   BEQ     65$
007376 104002                                   ERROR   2               ;***************TEST 25 - ERROR 2***************
                                                                        ;R0 SHOULD BE ZERO
007400 005701                           65$:    TST     R1              ;CHECK R1=0
007402 001401                                   BEQ     66$
007404 104003                                   ERROR   3               ;***************TEST 25 - ERROR 3***************
                                                                        ;R1 SHOULD BE ZERO
007406 005702                           66$:    TST     R2              ;CHECK R2=0
007410 001401                                   BEQ     67$
007412 104004                                   ERROR   4               ;***************TEST 25 - ERROR 4***************
                                                                        ;R2 SHOULD BE ZERO
007414 005703                           67$:    TST     R3              ;CHECK R3=0
007416 001401                                   BEQ     68$
007420 104005                                   ERROR   5               ;***************TEST 25 - ERROR 5***************
                                                                        ;R3 SHOULD BE ZERO
007422 020467 171226                    68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
007426 001401                                   BEQ     69$             ;BR IF OK
007430 104006                                   ERROR   6               ;***************TEST 25 - ERROR 6***************
                                                                        ;R4 CHANGED
                                                                        ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
007432 020567 171220                    69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
007436 001401                                   BEQ     70$
007440 104007                                   ERROR   7               ;***************TEST 25 - ERROR 7***************
                                                                        ;R5 CHANGED
                                                                        ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
007442 023706 000702                    70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
007446 001403                                   BEQ     71$             ;BR IF OK
007450 010637 000704                            MOV     SP,@#BADR6      ;COPY BAD SP VALUE
007454 104010                                   ERROR   10              ;***************TEST 25 - ERROR 10**************
                                                                        ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                                        ;EXPECTED SP IS STORED AT "SAVR6"
                                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"

007456                                  71$:
007456 000403                                   BR      TST26           ;BR TO NEXT TEST
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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 51                                                    SEQ 0050
CVKAJB.P11    22-JAN-82 08:49          T25     TEST "CMPN" WITH ALL ZEROES IN BOTH SOURCE STRINGS

  2609  007460                         S1T25:                                  ;SOURCE1 STRING
  2610  007460      060                        .BYTE   60                      ;MOST SIGNIFICANT DIGIT
  2611  007461      060                        .BYTE   60
  2612  007462      060                        .BYTE   60
  2613  007463                         S2T25:                                  ;SOURCE2 STRING
  2614  007463      060                        .BYTE   60                      ;MOST SIGNIFICANT DIGIT
  2615  007464      060                        .BYTE   60
  2616  007465      060                        .BYTE   60
  2617
  2618                                         .EVEN
  2619
  2620
  2621                                 ;;*****************************************************************
  2622                                 ;*TEST 26       TEST "CMPN" WITH SRC1 = SRC2
  2623                                 ;;*****************************************************************
  2624  007466  000004                TST26:  SCOPE
  2625  007470  004567  005236                JSR     R5,NPREP                ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
  2626  007474  000004                                4                       ;SOURCE1 LENGTH
  2627  007476  007640                                S1T26   ;SOURCE1 ADDRESS
  2628  007500  000004                                4                       ;SOURCE2 LENGTH
  2629  007502  007644                                S2T26                   ;SOURCE2 ADDRESS
  2630  007504  000377                                377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
  2631  007506  004567  005332                JSR     R5,XPSW
  2632  007512  000204                        .WORD   204
  2633  007514  004767  005240                JSR     PC,GENR                 ;SET UP GENERAL REGISTERS
  2634  007520  000277                        SCC                             ;SET UP THE COMPLEMENT OF EXPECTED CC'S
  2635  007522  000244                        CLZ
  2636
  2637  007524  076052                        CMPN
  2638
  2639  007526  106767  171144                MFPS    CCODES                  ;STORE RESULTANT PSW
  2640  007532  042767  177400  171136        BIC     #177400,CCODES          ;CLEAR UNUSED BITS
  2641  007540  023767  000700  171130        CMP     @#EXPPSW,CCODES         ;CHECK PSW AGAINST EXPECTED VALUE
  2642  007546  001401                        BEQ     64$                     ;BR, IF EQUAL
  2643  007550  104001                        ERROR   1                       ;***************TEST 26 - ERROR 1***************
  2644                                                                         ;PSW ERROR
  2645                                                                         ;EXPECTED PSW IS STORED AT "SAVR6"
  2646                                                                         ;ERRONEOUS SP VALUE IS AT "BADR6"
  2647  007552                         64$:
  2648  007552  005700                        TST     R0                      ;CHECK R0=0
  2649  007554  001401                        BEQ     65$
  2650  007556  104002                        ERROR   2                       ;***************TEST 26 - ERROR 2***************
  2651                                                                         ;R0 SHOULD BE ZERO
  2652  007560  005701                65$:    TST     R1                      ;CHECK R1=0
  2653  007562  001401                        BEQ     66$
  2654  007564  104003                        ERROR   3                       ;***************TEST 26 - ERROR 3***************
  2655                                                                         ;R1 SHOULD BE ZERO
  2656  007566  005702                66$:    TST     R2                      ;CHECK R2=0
  2657  007570  001401                        BEQ     67$
  2658  007572  104004                        ERROR   4                       ;***************TEST 26 - ERROR 4***************
  2659                                                                         ;R2 SHOULD BE ZERO
  2660  007574  005703                67$:    TST     R3                      ;CHECK R3=0
  2661  007576  001401                        BEQ     68$
  2662  007600  104005                        ERROR   5                       ;***************TEST 26 - ERROR 5***************
   563                                                                         ;R3 SHOULD BE ZERO
  2664  007602  020467  171046        68$:    CMP     R4,@STLN                ;CHECK R4 UNCHANGED
```

```
2665  007606  001401                        BEQ     69$             ;BR IF OK
2666  007610  104006                        ERROR   6               ;****************TEST 26 - ERROR 6***************
2667                                                                  ;R4 CHANGED
2668                                                                  ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
2669  007612  020567  171040        69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
2670  007616  001401                        BEQ     70$
2671  007620  104007                        ERROR   7               ;****************TEST 26 - ERROR 7***************
2672                                                                  ;R5 CHANGED
2673                                                                  ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
2674  007622  023706  000702        70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
2675  007626  001403                        BEQ     71$             ;BR IF OK
2676  007630  010637  000704                MOV     SP,@#BADR6      ;COPY BAD SP VALUE
2677  007634  104010                        ERROR   10              ;****************TEST 26 - ERROR 10***************
2678                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
2679                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
2680                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
2681  007636                        71$:
2682  007636  000404                        BR      TST27           ;BR TO NEXT TEST
2683  007640                        S1T26:                          ;SOURCE1 STRING
2684  007640     071                        .BYTE   71              ;MOST SIGNIFICANT DIGIT
2685  007641     066                        .BYTE   66
2686  007642     062                        .BYTE   62
2687  007643     063                        .BYTE   63
2688  007644                        S2T26:                          ;SOURCE2 STRING
2689  007644     071                        .BYTE   71              ;MOST SIGNIFICANT DIGIT
2690  007645     066                        .BYTE   66
2691  007646     062                        .BYTE   62
2692  007647     063                        .BYTE   63
2693
2694                                       .EVEN
2695
2696
2697                                ;;=====================================================================
2698                                ;*TEST 27       TEST "CMPN" WITH IDENTICAL NON-ZERO MAGNITUDES, NEGATIVE SOURCE2, POSITI
2699                                ;;=====================================================================
2700  007650  000004                TST27:  SCOPE
2701  007652  004567  005054                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2702  007656  000004                        4                       ;SOURCE1 LENGTH
2703  007660  010020                        S1T27   ;SOURCE1 ADDRESS
2704  007662  000004                        4                       ;SOURCE2 LENGTH
2705  007664  010024                        S2T27                   ;SOURCE2 ADDRESS
2706  007666  000377                        377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
2707  007670  004567  005150                JSR     R5,XPSW
2708  007674  000200                        .WORD   200
2709  007676  004767  005056                JSR     PC,GENR         ;SET UP GENERAL REGISTERS
2710  007702  000277                        SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2711
2712  007704  076052                        CMPN
2713
2714  007706  106767  170764                MFPS    CCODES          ;STORE RESULTANT PSW
2715  007712  042767  177400  170756        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
2716  007720  023767  000700  170750        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
2717  007726  001401                        BEQ     64$             ;BR, IF EQUAL
2718  007730  104001                        ERROR   1               ;****************TEST 27 - ERROR 1***************
2719                                                                  ;PSW ERROR
2720                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 53
CVKAJB.P11    22-JAN-82 08:49          T27     TEST "CMPN" WITH IDENTICAL NON-ZERO MAGNITUDES, NEGATIV  SEQ 0052

                                                                ;ERRONEOUS SP VALUE IS AT 'BADR6'
007732                                  64$:
007732  005700                                  TST     R0      ;CHECK R0=0
007734  001401                                  BEQ     65$
007736  104002                                  ERROR   2       ;****************TEST 27 - ERROR 2***************
                                                                ;R0 SHOULD BE ZERO
007740  005701                          65$:    TST     R1      ;CHECK R1=0
007742  001401                                  BEQ     66$
007744  104003                                  ERROR   3       ;****************TEST 27 - ERROR 3***************
                                                                ;R1 SHOULD BE ZERO
007746  005702                          66$:    TST     R2      ;CHECK R2=0
007750  001401                                  BEQ     67$
007752  104004                                  ERROR   4       ;****************TEST 27 - ERROR 4***************
                                                                ;R2 SHOULD BE ZERO
007754  005703                          67$:    TST     R3      ;CHECK R3=0
007756  001401                                  BEQ     68$
007760  104005                                  ERROR   5       ;****************TEST 27 - ERROR 5***************
                                                                ;R3 SHOULD BE ZERO
007762  020467  170666                  68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
007766  001401                                  BEQ     69$             ;BR IF OK
007770  104006                                  ERROR   6       ;****************TEST 27 - ERROR 6**************.*
                                                                ;R4 CHANGED
                                                                ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'
007772  020567  170660                  69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
007776  001401                                  BEQ     70$
010000  104007                                  ERROR   7       ;****************TEST 27 - ERROR 7***************
                                                                ;R5 CHANGED
                                                                ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
010002  023706  000702                  70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
010006  001403                                  BEQ     71$             ;BR IF OK
010010  010637  000704                          MOV     SP,@#BADR6      ;COPY BAD SP VALUE
010014  104010                                  ERROR   10      ;****************TEST 27 - ERROR 10**************
                                                                ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                                ;EXPECTED SP IS STORED AT 'SAVR6'
                                                                ;ERRONEOUS SP VALUE IS AT 'BADR6'
010016                                  71$:
010016  000404                                  BR      TST30           ;BR TO NEXT TEST
010020                                  S1T27:                          ;SOURCE1 STRING
010020      071                                 .BYTE   71              ;MOST SIGNIFICANT DIGIT
010021      067                                 .BYTE   67
010022      065                                 .BYTE   65
010023      063                                 .BYTE   63
010024                                  S2T27:                          ;SOURCE2 STRING
010024      071                                 .BYTE   71              ;MOST SIGNIFICANT DIGIT
010025      067                                 .BYTE   67
010026      065                                 .BYTE   65
010027      163                                 .BYTE   163

                                                .EVEN


                                        ;;*******************************************************************
                                        ;*TEST 30       TEST "CMPN" WITH IDENTICAL NON-ZERO MAGNITUDES, POSITIVE SOURCE2, NEGATI
                                        ;;*******************************************************************
010030  000004                          TST30:  SCOPE
010032  004567  004674                          JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
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2777  010036  000004                                    4                ;SOURCE1 LENGTH
2778  010040  010202                                    S1T30   ;SOURCE1 ADDRESS
2779  010042  000004                                    4                ;SOURCE2 LENGTH
2780  010044  010206                                    S2T30            ;SOURCE2 ADDRESS
2781  010046  000377                                    377              ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
2782  010050  004567  004770                    JSR     R5,XPSW
2783  010054  000210                            .WORD   210
2784  010056  004767  004676                    JSR     PC,GENR          ;SET UP GENERAL REGISTERS
2785  010062  000277                            SCC                      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2786  010064  000250                            CLN
2787
2788  010066  076052                            CMPN
2789
2790  010070  106767  170602                    MFPS    CCODES           ;STORE RESULTANT PSW
2791  010074  042767  177400  170574            BIC     #177400,CCODES   ;CLEAR UNUSED BITS
2792  010102  023767  000700  170566            CMP     @#EXPPSW,CCODES  ;CHECK PSW AGAINST EXPECTED VALUE
2793  010110  001401                            BEQ     64$              ;BR, IF EQUAL
2794  010112  104001                            ERROR   1                ;****************TEST 30 - ERROR 1***************
2795                                                                     ;PSW ERROR
2796                                                                     ;EXPECTED PSW IS STORED AT "SAVR6"
2797                                                                     ;ERRONEOUS SP VALUE IS AT "BADR6"
2798  010114                                    64$:
2799  010114  005700                            TST     R0               ;CHECK R0=0
2800  010116  001401                            BEQ     65$
2801  010120  104002                            ERROR   2                ;****************TEST 30 - ERROR 2***************
2802                                                                     ;R0 SHOULD BE ZERO
2803  010122  005701                    65$:    TST     R1               ;CHECK R1=0
2804  010124  001401                            BEQ     66$
2805  010126  104003                            ERROR   3                ;****************TEST 30 - ERROR 3***************
2806                                                                     ;R1 SHOULD BE ZERO
2807  010130  005702                    66$:    TST     R2               ;CHECK R2=0
2808  010132  001401                            BEQ     67$
2809  010134  104004                            ERROR   4                ;****************TEST 30 - ERROR 4***************
2810                                                                     ;R2 SHOULD BE ZERO
2811  010136  005703                    67$:    TST     R3               ;CHECK R3=0
2812  010140  001401                            BEQ     68$
2813  010142  104005                            ERROR   5                ;****************TEST 30 - ERROR 5***************
2814                                                                     ;R3 SHOULD BE ZERO
2815  010144  020467  170504            68$:    CMP     R4,DSTLN         ;CHECK R4 UNCHANGED
2816  010150  001401                            BEQ     69$              ;BR IF OK
2817  010152  104006                            ERROR   6                ;****************TEST 30 - ERROR 6***************
2818                                                                     ;R4 CHANGED
2819                                                                     ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
2820  010154  020567  170476            69$:    CMP     R5,DSTAD         ;CHECK R5 UNCHANGED
2821  010160  001401                            BEQ     70$
2822  010162  104007                            ERROR   7                ;****************TEST 30 - ERROR 7***************
2823                                                                     ;R5 CHANGED
2824                                                                     ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
2825  010164  023706  000702            70$:    CMP     @#SAVR6,SP       ;VERIFY STACK POINTER IS RESTORED
2826  010170  001403                            BEQ     71$              ;BR IF OK
2827  010172  010637  000704                    MOV     SP,@#BADR6       ;COPY BAD SP VALUE
2828  010176  104010                            ERROR   10               ;****************TEST 30 - ERROR 10**************
2829                                                                     ;STACK POINTER NOT RESTORED BY INSTRUCTION
2830                                                                     ;EXPECTED SP IS STORED AT "SAVR6"
2831                                                                     ;ERRONEOUS SP VALUE IS AT "BADR6"
2832  010200                                    71$:
```

```
                                        BR      TST31           ;BR TO NEXT TEST
                                S1T30:                          ;SOURCE1 STRING
                                        .BYTE   70              ;MOST SIGNIFICANT DIGIT
                                        .BYTE   66
                                        .BYTE   64
                                        .BYTE   162
                                S2T30:                          ;SOURCE2 STRING
                                        .BYTE   70              ;MOST SIGNIFICANT DIGIT
                                        .BYTE   66
                                        .BYTE   64
                                        .BYTE   62

                                        .EVEN


                                ;;*******************************************************************
                                ;*TEST 31        TEST "CMPN" WITH +SRC1 & -SRC2, S1L = S2L, /S1/ .GT. /S2/
                                ;;*******************************************************************
010212  000004                  TST31:  SCOPE
010214  004567  004512                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
010220  000002                          2                       ;SOURCE1 LENGTH
010222  010364                          S1T31   ;SOURCE1 ADDRESS
010224  000002                          2                       ;SOURCE2 LENGTH
010226  010366                          S2T31                   ;SOURCE2 ADDRESS
010230  000377                          377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
010232  004567  004606                  JSR     R5,XPSW
010236  000200                          .WORD   200
010240  004767  004514                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
010244  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
010246  000250                          CLN

010250  076052                          CMPN

010252  106767  170420                  MFPS    CCODES          ;STORE RESULTANT PSW
010256  042767  177400  170412          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
010264  023767  000700  170404          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
010272  001401                          BEQ     64$             ;BR, IF EQUAL
010274  104001                          ERROR   1               ;***************TEST 31 - ERROR 1***************
                                                                ;PSW ERROR
                                                                ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"

010276                          64$:
010276  005700                          TST     R0              ;CHECK R0=0
010300  001401                          BEQ     65$
010302  104002                          ERROR   2               ;***************TEST 31 - ERROR 2***************
                                                                ;R0 SHOULD BE ZERO
010304  005701                  65$:    TST     R1              ;CHECK R1=0
010306  001401                          BEQ     66$
010310  104003                          ERROR   3               ;***************TEST 31 - ERROR 3***************
                                                                ;R1 SHOULD BE ZERO
010312  005702                  66$:    TST     R2              ;CHECK R2=0
010314  001401                          BEQ     67$
010316  104004                          ERROR   4               ;***************TEST 31 - ERROR 4***************
                                                                ;R2 SHOULD BE ZERO
010320  005703                  67$:    TST     R3              ;CHECK R3=0
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 56
CVKAJB.P11    22-JAN-82 08:49          T31     TEST "CMPN" WITH +SRC1 & -SRC2, S1L = S2L, /S1/ .GT. /S2/                SEQ 0055

 2889  010322  001401                          BEQ     68$
 2890  010324  104005                          ERROR   5                ;***************TEST 31 - ERROR 5***************
 2891                                                                   ;R3 SHOULD BE ZERO
 2892  010326  020467  170322          68$:    CMP     R4,DSTLN         ;CHECK R4 UNCHANGED
 2893  010332  001401                          BEQ     69$              ;BR IF OK
 2894  010334  104006                          ERROR   6                ;***************TEST 31 - ERROR 6***************
 2895                                                                   ;R4 CHANGED
 2896                                                                   ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
 2897  010336  020567  170314          69$:    CMP     R5,DSTAD         ;CHECK R5 UNCHANGED
 2898  010342  001401                          BEQ     70$
 2899  010344  104007                          ERROR   7                ;***************TEST 31 - ERROR 7***************
 2900                                                                   ;R5 CHANGED
 2901                                                                   ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
 2902  010346  023706  000702          70$:    CMP     @#SAVR6,SP       ;VERIFY STACK POINTER IS RESTORED
 2903  010352  001403                          BEQ     71$              ;BR IF OK
 2904  010354  010637  000704                  MOV     SP,@#BADR6       ;COPY BAD SP VALUE
 2905  010360  104010                          ERROR   10               ;***************TEST 31 - ERROR 10**************
 2906                                                                   ;STACK POINTER NOT RESTORED BY INSTRUCTION
 2907                                                                   ;EXPECTED SP IS STORED AT "SAVR6"
 2908                                                                   ;ERRONEOUS SP VALUE IS AT "BADR6"
 2909  010362                          71$:
 2910  010362  000402                          BR      TST32            ;BR TO NEXT TEST
 2911  010364                          S1T31:                           ;SOURCE1 STRING
 2912  010364     071                          .BYTE   71               ;MOST SIGNIFICANT DIGIT
 2913  010365     066                          .BYTE   66
 2914  010366                          S2T31:                           ;SOURCE2 STRING
 2915  010366     066                          .BYTE   66               ;MOST SIGNIFICANT DIGIT
 2916  010367     171                          .BYTE   171
 2917
 2918                                          .EVEN
 2919
 2920
 2921                                    ;;=====================================================================
 2922                                    ;*TEST 32       TEST "CMPN" WITH -SRC1 & +SRC2, S1L = S2L, /S1/ .GT. /S2/
 2923                                    ;;=====================================================================
 2924  010370  000004          TST32:  SCOPE
 2925  010372  004567  004334          JSR     R5,NPREP         ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 2926  010376  000003                          3                ;SOURCE1 LENGTH
 2927  010400  010542                          S1T32   ;SOURCE1 ADDRESS
 2928  010402  000003                          3                ;SOURCE2 LENGTH
 2929  010404  010545                          S2T32            ;SOURCE2 ADDRESS
 2930  010406  000377                          377              ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
 2931  010410  004567  004430          JSR     R5,XPSW
 2932  010414  000210                  .WORD   210
 2933  010416  004767  004336          JSR     PC,GENR          ;SET UP GENERAL REGISTERS
 2934  010422  000267                  +SEV!SEZ!SEC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 2935  010424  000250                  CLN
 2936
 2937  010426  076052                  CMPN
 2938
 2939  010430  106767  170242          MFPS    CCODES           ;STORE RESULTANT PSW
 2940  010434  042767  177400  170234  BIC     #177400,CCODES   ;CLEAR UNUSED BITS
 2941  010442  023767  000700  170226  CMP     @#EXPPSW,CCODES  ;CHECK PSW AGAINST EXPECTED VALUE
 2942  010450  001401                  BEQ     64$              ;BR, IF EQUAL
 2943  010452  104001                  ERROR   1                ;***************TEST 32 - ERROR 1***************
 2944                                                           ;PSW ERROR
```

```
                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
010454                          64$:
010454  005700                        TST     R0      ;CHECK R0=0
010456  001401                        BEQ     65$
010460  104002                        ERROR   2       ;***************TEST 32 - ERROR 2***************
                                                        ;R0 SHOULD BE ZERO
010462  005701                  65$:  TST     R1      ;CHECK R1=0
010464  001401                        BEQ     66$
010466  104003                        ERROR   3       ;***************TEST 32 - ERROR 3***************
                                                        ;R1 SHOULD BE ZERO
010470  005702                  66$:  TST     R2      ;CHECK R2=0
010472  001401                        BEQ     67$
010474  104004                        ERROR   4       ;***************TEST 32 - ERROR 4***************
                                                        ;R2 SHOULD BE ZERO
010476  005703                  67$:  TST     R3      ;CHECK R3=0
010500  001401                        BEQ     68$
010502  104005                        ERROR   5       ;***************TEST 32 - ERROR 5***************
                                                        ;R3 SHOULD BE ZERO
010504  020467  170144          68$:  CMP     R4,DSTLN ;CHECK R4 UNCHANGED
010510  001401                        BEQ     69$     ;BR IF OK
010512  104006                        ERROR   6       ;***************TEST 32 - ERROR 6***************
                                                        ;R4 CHANGED
                                                        ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
010514  020567  170136          69$:  CMP     R5,DSTAD ;CHECK R5 UNCHANGED
010520  001401                        BEQ     70$
010522  104007                        ERROR   7       ;***************TEST 32 - ERROR 7***************
                                                        ;R5 CHANGED
                                                        ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
010524  023706  000702          70$:  CMP     @#SAVR6,SP ;VERIFY STACK POINTER IS RESTORED
010530  001403                        BEQ     71$     ;BR IF OK
010532  010637  000704                MOV     SP,@#BADR6 ;COPY BAD SP VALUE
010536  104010                        ERROR   10      ;***************TEST 32 - ERROR 10**************
                                                        ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                        ;EXPECTED SP IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
010540                          71$:
010540  000403                        BR      TST33   ;BR TO NEXT TEST
010542                          S1T32:                  ;SOURCE1 STRING
010542     070                        .BYTE   70      ;MOST SIGNIFICANT DIGIT
010543     063                        .BYTE   63
010544     161                        .BYTE   161
010545                          S2T32:                  ;SOURCE2 STRING
010545     061                        .BYTE   61      ;MOST SIGNIFICANT DIGIT
010546     063                        .BYTE   63
010547     070                        .BYTE   70

                                    .EVEN


                                ;;*********************************************************************
                                ;*TEST 33        TEST "CMPN" WITH S1L = S2L, POSITIVE SOURCE2, SOURCE2 MAGNITUDE IS GREAT
                                ;;*********************************************************************
010550  000004                  TST33:  SCOPE
010552  004567  004154                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
010556  000004                          4                     ;SOURCE1 LENGTH
```

```
3001  010560  010722                          S1T33   ;SOURCE1 ADDRESS
3002  010562  000004                          4       ;SOURCE2 LENGTH
3003  010564  010726                          S2T33   ;SOURCE2 ADDRESS
3004  010566  000377                          377     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3005  010570  004567  004250          JSR     R5,XPSW
3006  010574  000210                  .WORD   210
3007  010576  004767  004156          JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3008  010602  000277                  SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3009  010604  000250                  CLN
3010
3011  010606  076052                  CMPN
3012
3013  010610  106767  170062          MFPS    CCODES          ;STORE RESULTANT PSW
3014  010614  042767  177400  170054  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3015  010622  023767  000700  170046  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3016  010630  001401                  BEQ     64$             ;BR, IF EQUAL
3017  010632  104001                  ERROR   1               ;****************TEST 33 - ERROR 1***************
3018                                                          ;PSW ERROR
3019                                                          ;EXPECTED PSW IS STORED AT "SAVR6"
3020                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
3021  010634                  64$:
3022  010634  005700                  TST     R0              ;CHECK R0=0
3023  010636  001401                  BEQ     65$
3024  010640  104002                  ERROR   2               ;****************TEST 33 - ERROR 2***************
3025                                                          ;R0 SHOULD BE ZERO
3026  010642  005701          65$:    TST     R1              ;CHECK R1=0
3027  010644  001401                  BEQ     66$
3028  010646  104003                  ERROR   3               ;****************TEST 33 - ERROR 3***************
3029                                                          ;R1 SHOULD BE ZERO
3030  010650  005702          66$:    TST     R2              ;CHECK R2=0
3031  010652  001401                  BEQ     67$
3032  010654  104004                  ERROR   4               ;****************TEST 33 - ERROR 4***************
3033                                                          ;R2 SHOULD BE ZERO
3034  010656  005703          67$:    TST     R3              ;CHECK R3=0
3035  010660  001401                  BEQ     68$
3036  010662  104005                  ERROR   5               ;****************TEST 33 - ERROR 5***************
3037                                                          ;R3 SHOULD BE ZERO
3038  010664  020467  167764  68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
3039  010670  001401                  BEQ     69$             ;BR IF OK
3040  010672  104006                  ERROR   6               ;****************TEST 33 - ERROR 6***************
3041                                                          ;R4 CHANGED
3042                                                          ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
3043  010674  020567  167756  69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3044  010700  001401                  BEQ     70$
3045  010702  104007                  ERROR   7               ;****************TEST 33 - ERROR 7***************
3046                                                          ;R5 CHANGED
3047                                                          ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
3048  010704  023706  000702  70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
3049  010710  001403                  BEQ     71$             ;BR IF OK
3050  010712  010637  000704          MOV     SP,@#BADR6      ;COPY BAD SP VALUE
3051  010716  104010                  ERROR   10              ;****************TEST 33 - ERROR 10**************
3052                                                          ;STACK POINTER NOT RESTORED BY INSTRUCTION
3053                                                          ;EXPECTED SP IS STORED AT "SAVR6"
3054                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
3055  010720                  71$:
3056  010720  000404                  BR      TST34           ;BR TO NEXT TEST
```

```
3057  010722                          S1T33:                          ;SOURCE1 STRING
3058  010722  067                             .BYTE   67              ;MOST SIGNIFICANT DIGIT
3059  010723  066                             .BYTE   66
3060  010724  065                             .BYTE   65
3061  010725  064                             .BYTE   64
3062  010726                          S2T33:                          ;SOURCE2 STRING
3063  010726  067                             .BYTE   67              ;MOST SIGNIFICANT DIGIT
3064  010727  066                             .BYTE   66
3065  010730  065                             .BYTE   65
3066  010731  065                             .BYTE   65
3067
3068                                          .EVEN
3069
3070
3071                                  ;;*******************************************************************
3072                                  ;*TEST 34       TEST "CMPN" WITH S2L .GT. S1L, SUCCESSFUL COMPARE
3073                                  ;;*******************************************************************
3074  010732  000004                  TST34:  SCOPE
3075  010734  004567  003772                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3076  010740  000002                          2                       ;SOURCE1 LENGTH
3077  010742  011104                          S1T34   ;SOURCE1 ADDRESS
3078  010744  000004                          4                       ;SOURCE2 LENGTH
3079  010746  011106                          S2T34                   ;SOURCE2 ADDRESS
3080  010750  000377                          377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3081  010752  004567  004066                  JSR     R5,XPSW
3082  010756  000204                          .WORD   204
3083  010760  004767  003774                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3084  010764  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3085  010766  000244                          CLZ
3086
3087  010770  076052                          CMPN
3088
3089  010772  106767  167700                  MFPS    CCODES          ;STORE RESULTANT PSW
3090  010776  042767  177400  167672          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3091  011004  023767  000700  167664          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3092  011012  001401                          BEQ     64$             ;BR, IF EQUAL
3093  011014  104001                          ERROR   1               ;***************TEST 34 - ERROR 1***************
3094                                                                  ;PSW ERROR
3095                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
3096                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
3097  011016                          64$:
3098  011016  005700                          TST     R0              ;CHECK R0=0
3099  011020  001401                          BEQ     65$
3100  011022  104002                          ERROR   2               ;***************TEST 34 - ERROR 2***************
3101                                                                  ;R0 SHOULD BE ZERO
3102  011024  005701                  65$:    TST     R1              ;CHECK R1=0
3103  011026  001401                          BEQ     66$
3104  011030  104003                          ERROR   3               ;***************TEST 34 - ERROR 3***************
3105                                                                  ;R1 SHOULD BE ZERO
3106  011032  005702                  66$:    TST     R2              ;CHECK R2=0
3107  011034  001401                          BEQ     67$
3108  011036  104004                          ERROR   4               ;***************TEST 34 - ERROR 4***************
3109                                                                  ;R2 SHOULD BE ZERO
3110  011040  005703                  67$:    TST     R3              ;CHECK R3=0
3111  011042  001401                          BEQ     68$
3112  011044  104005                          ERROR   5               ;***************TEST 34 - ERROR 5***************
```

```
                                                        ;R3 SHOULD BE ZERO
011046  020467  167602          68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
011052  001401                          BEQ     69$             ;BR IF OK
011054  104006                          ERROR   6               ;****************TEST 34 - ERROR 6***************
                                                        ;R4 CHANGED
                                                        ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
011056  020567  167574          69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
011062  001401                          BEQ     70$
011064  104007                          ERROR   7               ;****************TEST 34 - ERROR 7***************
                                                        ;R5 CHANGED
                                                        ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
011066  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
011072  001403                          BEQ     71$             ;BR IF OK
011074  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
011100  104010                          ERROR   10              ;****************TEST 34 - ERROR 10***************
                                                        ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                        ;EXPECTED SP IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
011102                          71$:
011102  000403                          BR      TST35           ;BR TO NEXT TEST
011104                          S1T34:                          ;SOURCE1 STRING
011104      067                         .BYTE   67              ;MOST SIGNIFICANT DIGIT
011105      071                         .BYTE   71
011106                          S2T34:                          ;SOURCE2 STRING
011106      060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
011107      060                         .BYTE   60
011110      067                         .BYTE   67
011111      071                         .BYTE   71

                                        .EVEN


                                ;;**********************************************************************
                                ;*TEST 35        TEST "CMPN" WITH NEGATIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-Z
                                ;;**********************************************************************
011112  000004                  TST35:  SCOPE
011114  004567  003612                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
011120  000002                          2                       ;SOURCE1 LENGTH
011122  011262                          S1T35   ;SOURCE1 ADDRESS
011124  000004                          4                       ;SOURCE2 LENGTH
011126  011264                          S2T35                   ;SOURCE2 ADDRESS
011130  000377                          377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
011132  004567  003706                  JSR     R5,XPSW
011136  000200                          .WORD   200
011140  004767  003614                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
011144  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S

011146  076052                          CMPN

011150  106767  167522                  MFPS    CCODES          ;STORE RESULTANT PSW
011154  042767  177400  167514          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
011162  023767  000700  167506          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
011170  001401                          BEQ     64$             ;BR, IF EQUAL
011172  104001                          ERROR   1               ;****************TEST 35 - ERROR 1***************
                                                        ;PSW ERROR
                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
```

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(VKAJB.P11    22-JAN-82 08:49          T35     TEST "CMPN" WITH NEGATIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-ZE  SEQ 0060

 3169                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
 3170  011174                                 64$:
 3171  011174  005700                                TST     R0          ;CHECK R0=0
 3172  011176  001401                                BEQ     65$
 3173  011200  104002                                ERROR   2           ;***************TEST 35 - ERROR 2***************
 3174                                                                ;R0 SHOULD BE ZERO
 3175  011202  005701                          65$:  TST     R1          ;CHECK R1=0
 3176  011204  001401                                BEQ     66$
 3177  011206  104003                                ERROR   3           ;***************TEST 35 - ERROR 3***************
 3178                                                                ;R1 SHOULD BE ZERO
 3179  011210  005702                          66$:  TST     R2          ;CHECK R2=0
 3180  011212  001401                                BEQ     67$
 3181  011214  104004                                ERROR   4           ;***************TEST 35 - ERROR 4***************
 3182                                                                ;R2 SHOULD BE ZERO
 3183  011216  005703                          67$:  TST     R3          ;CHECK R3=0
 3184  011220  001401                                BEQ     68$
 3185  011222  104005                                ERROR   5           ;***************TEST 35 - ERROR 5***************
 3186                                                                ;R3 SHOULD BE ZERO
 3187  011224  020467  167424                 68$:  CMP     R4,DSTLN    ;CHECK R4 UNCHANGED
 3188  011230  001401                                BEQ     69$         ;BR IF OK
 3189  011232  104006                                ERROR   6           ;***************TEST 35 - ERROR 6***************
 3190                                                                ;R4 CHANGED
 3191                                                                ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
 3192  011234  020567  167416                 69$:  CMP     R5,DSTAD    ;CHECK R5 UNCHANGED
 3193  011240  001401                                BEQ     70$
 3194  011242  104007                                ERROR   7           ;***************TEST 35 - ERROR 7***************
 3195                                                                ;R5 CHANGED
 3196                                                                ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
 3197  011244  023706  000702                 70$:  CMP     @#SAVR6,SP  ;VERIFY STACK POINTER IS RESTORED
 3198  011250  001403                                BEQ     71$         ;BR IF OK
 3199  011252  010637  000704                       MOV     SP,@#BADR6  ;COPY BAD SP VALUE
 3200  011256  104010                                ERROR   10          ;***************TEST 35 - ERROR 10**************
 3201                                                                ;STACK POINTER NOT RESTORED BY INSTRUCTION
 3202                                                                ;EXPECTED SP IS STORED AT "SAVR6"
 3203                                                                ;ERRONEOUS SP VALUE IS AT "BADR6"
 3204  011260                                 71$:
 3205  011260  000403                                BR      TST36       ;BR TO NEXT TEST
 3206  011262                                 S1T35:                      ;SOURCE1 STRING
 3207  011262     070                                 .BYTE   70          ;MOST SIGNIFICANT DIGIT
 3208  011263     161                                 .BYTE   161
 3209  011264                                 S2T35:                      ;SOURCE2 STRING
 3210  011264     061                                 .BYTE   61          ;MOST SIGNIFICANT DIGIT
 3211  011265     060                                 .BYTE   60
 3212  011266     070                                 .BYTE   70
 3213  011267     161                                 .BYTE   161
 3214
 3215                                                .EVEN
 3216
 3217
 3218                                   ;;=================================================================
 3219                                   ;*TEST 36       TEST "CMPN" WITH POSITIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-Z
 3220                                   ;;=================================================================
 3221  011270  000004                  TST36:  SCOPE
 3222  011272  004567  003434                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 3223  011276  000002                          2                       ;SOURCE1 LENGTH
 3224  011300  011442                          S1T36   ;SOURCE1 ADDRESS
```

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3225  011302  000004                          4                ;SOURCE2 LENGTH
3226  011304  011445                          S2T36            ;SOURCE2 ADDRESS
3227  011306  000377                          377              ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3228  011310  004567  003530                JSR     R5,XPSW
3229  011314  000210                        .WORD   210
3230  011316  004767  003436                JSR     PC,GENR      ;SET UP GENERAL REGISTERS
3231  011322  000277                        SCC                  ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3232  011324  000250                        CLN
3233
3234  011326  076052                        CMPN
3235
3236  011330  106767  167342                MFPS    CCODES       ;STORE RESULTANT PSW
3237  011334  042767  177400  167334        BIC     #177400,CCODES ;CLEAR UNUSED BITS
3238  011342  023767  000700  167326        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3239  011350  001401                        BEQ     64$          ;BR, IF EQUAL
3240  011352  104001                        ERROR   1            ;*****************TEST 36 - ERROR 1***************
                                                                 ;PSW ERROR
                                                                 ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                 ;ERRONEOUS SP VALUE IS AT "BADR6"
3241
3242
3243
3244  011354                          64$:
3245  011354  005700                        TST     R0           ;CHECK R0=0
3246  011356  001401                        BEQ     65$
3247  011360  104002                        ERROR   2            ;****************TEST 36 - ERROR 2***************
                                                                 ;R0 SHOULD BE ZERO
3248
3249  011362  005701                  65$:  TST     R1           ;CHECK R1=0
3250  011364  001401                        BEQ     66$
3251  011366  104003                        ERROR   3            ;****************TEST 36 - ERROR 3***************
                                                                 ;R1 SHOULD BE ZERO
3252
3253  011370  005702                  66$:  TST     R2           ;CHECK R2=0
3254  011372  001401                        BEQ     67$
3255  011374  104004                        ERROR   4            ;****************TEST 36 - ERROR 4***************
                                                                 ;R2 SHOULD BE ZERO
3256
3257  011376  005703                  67$:  TST     R3           ;CHECK R3=0
3258  011400  001401                        BEQ     68$
3259  011402  104005                        ERROR   5            ;****************TEST 36 - ERROR 5***************
                                                                 ;R3 SHOULD BE ZERO
3260
3261  011404  020467  167244          68$:  CMP     R4,DSTLN     ;CHECK R4 UNCHANGED
3262  011410  001401                        BEQ     69$          ;BR IF OK
3263  011412  104006                        ERROR   6            ;****************TEST 36 - ERROR 6***************
                                                                 ;R4 CHANGED
3264                                                             ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
3265
3266  011414  020567  167236          69$:  CMP     R5,DSTAD     ;CHECK R5 UNCHANGED
3267  011420  001401                        BEQ     70$
3268  011422  104007                        ERROR   7            ;****************TEST 36 - ERROR 7***************
                                                                 ;R5 CHANGED
3269                                                             ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
3270
3271  011424  023706  000702          70$:  CMP     @#SAVR6,SP   ;VERIFY STACK POINTER IS RESTORED
3272  011430  001403                        BEQ     71$          ;BR IF OK
3273  011432  010637  000704                MOV     SP,@#BADR6   ;COPY BAD SP VALUE
3274  011436  104010                        ERROR   10           ;****************TEST 36 - ERROR 10**************
                                                                 ;STACK POINTER NOT RESTORED BY INSTRUCTION
3275                                                             ;EXPECTED SP IS STORED AT "SAVR6"
3276                                                             ;ERRONEOUS SP VALUE IS AT "BADR6"
3277
3278  011440                          71$:
3279  011440  000403                        BR      TST37        ;BR TO NEXT TEST
3280  011442                          S1T36:                     ;SOURCE1 STRING
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 63
CVKAJB.P11    22-JAN-82 08:49          T36     TEST "CMPN" WITH POSITIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-ZE  SEQ 0062

  3281  011442      070                          .BYTE   70              ;MOST SIGNIFICANT DIGIT
  3282  011443      061                          .BYTE   61
  3283  011444      061                          .BYTE   61
  3284  011445                           S2T36:                          ;SOURCE2 STRING
  3285  011445      060                          .BYTE   60              ;MOST SIGNIFICANT DIGIT
  3286  011446      070                          .BYTE   70
  3287  011447      061                          .BYTE   61
  3288
  3289                                           .EVEN
  3290
  3291
  3292                                           ;;*********************************************************************
  3293                                           ;*TEST 37        TEST "CMPN" WITH S1L .GT. S2L, SUCCESSFUL COMPARE
  3294                                           ;;*********************************************************************
  3295  011450  000004                  TST37:  SCOPE
  3296  011452  004567  003254                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
  3297  011456  000004                          4                       ;SOURCE1 LENGTH
  3298  011460  011622                          S1T37   ;SOURCE1 ADDRESS
  3299  011462  000002                          2                       ;SOURCE2 LENGTH
  3300  011464  011626                          S2T37                   ;SOURCE2 ADDRESS
  3301  011466  000377                          377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
  3302  011470  004567  003350                  JSR     R5,XPSW
  3303  011474  000204                          .WORD   204
  3304  011476  004767  003256                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
  3305  011502  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
  3306  011504  000244                          CLZ
  3307
  3308  011506  076052                          CMPN
  3309
  3310  011510  106767  167162                  MFPS    CCODES          ;STORE RESULTANT PSW
  3311  011514  042767  177400  167154          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
  3312  011522  023767  000700  167146          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
  3313  011530  001401                          BEQ     64$             ;BR, IF EQUAL
  3314  011532  104001                          ERROR   1               ;**************TEST 37 - ERROR 1**************
  3315                                                                  ;PSW ERROR
  3316                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
  3317                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
  3318  011534                           64$:
  3319  011534  005700                          TST     R0              ;CHECK R0=0
  3320  011536  001401                          BEQ     65$
  3321  011540  104002                          ERROR   2               ;**************TEST 37 - ERROR 2**************
  3322                                                                  ;R0 SHOULD BE ZERO
  3323  011542  005701                  65$:    TST     R1              ;CHECK R1=0
  3324  011544  001401                          BEQ     66$
  3325  011546  104003                          ERROR   3               ;**************TEST 37 - ERROR 3**************
  3326                                                                  ;R1 SHOULD BE ZERO
  3327  011550  005702                  66$:    TST     R2              ;CHECK R2=0
  3328  011552  001401                          BEQ     67$
  3329  011554  104004                          ERROR   4               ;**************TEST 37 - ERROR 4**************
  3330                                                                  ;R2 SHOULD BE ZERO
  3331  011556  005703                  67$:    TST     R3              ;CHECK R3=0
  3332  011560  001401                          BEQ     68$
  3333  011562  104005                          ERROR   5               ;**************TEST 37 - ERROR 5**************
  3334                                                                  ;R3 SHOULD BE ZERO
  3335  011564  020467  167064          68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
  3336  011570  001401                          BEQ     69$             ;BR IF OK
```

```
3337  011572  104006                        ERROR   6               ;**************TEST 37 - ERROR 6**************
3338                                                                  ;R4 CHANGED
3339                                                                  ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
3340  011574  020567  167056          69$:   CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3341  011600  001401                        BEQ     70$
3342  011602  104007                        ERROR   7               ;**************TEST 37 - ERROR 7**************
3343                                                                  ;R5 CHANGED
3344                                                                  ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
3345  011604  023706  000702          70$:   CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
3346  011610  001403                        BEQ     71$             ;BR IF OK
3347  011612  010637  000704                MOV     SP,@#BADR6      ;COPY BAD SP VALUE
3348  011616  104010                        ERROR   10              ;**************TEST 37 - ERROR 10**************
3349                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
3350                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
3351                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
3352  011620                          71$:
3353  011620  000403                        BR      TST40           ;BR TO NEXT TEST
3354  011622                          S1T37:                         ;SOURCE1 STRING
3355  011622     060                         .BYTE   60              ;MOST SIGNIFICANT DIGIT
3356  011623     060                         .BYTE   60
3357  011624     071                         .BYTE   71
3358  011625     070                         .BYTE   70
3359  011626                          S2T37:                         ;SOURCE2 STRING
3360  011626     071                         .BYTE   71              ;MOST SIGNIFICANT DIGIT
3361  011627     070                         .BYTE   70
3362
3363                                         .EVEN
3364
3365
3366                                    ;;=====================================================================
3367                                    ;*TEST 40       TEST "CMPN" WITH S1L .GT. S2L, NEGATIVE SOURCE1, NON-ZERO IN EXCESS
3368                                    ;;=====================================================================
3369  011630  000004                TST40:  SCOPE
3370  011632  004567  003074                JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3371  011636  000004                        4                       ;SOURCE1 LENGTH
3372  011640  012002                        S1T40   ;SOURCE1 ADDRESS
3373  011642  000002                        2                       ;SOURCE2 LENGTH
3374  011644  012006                        S2T40                   ;SOURCE2 ADDRESS
3375  011646  000377                        377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3376  011650  004567  003170                JSR     R5,XPSW
3377  011654  000210                        .WORD   210
3378  011656  004767  003076                JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3379  011662  000277                        SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3380  011664  000250                        CLN
3381
3382  011666  076052                        CMPN
3383
3384  011670  106767  167002                MFPS    CCODES          ;STURE RESULTANT PSW
3385  011674  042767  177400  166774        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3386  011702  023767  000700  166766        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3387  011710  001401                        BEQ     64$             ;BR, IF EQUAL
3388  011712  104001                        ERROR   1               ;**************TEST 40 - ERROR 1**************
3389                                                                  ;PSW ERROR
3390                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
3391                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
3392  011714                          64$:
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 65
CVKAJB.P11    22-JAN-82 08:49          T40     TEST "CMPN" WITH S1L .GT. S2L, NEGATIVE SOURCE1, NON-ZERO IN EXCESS        SEQ 0064

 3393  011714  005700                          TST     R0              ;CHECK R0=0
 3394  011716  001401                          BEQ     65$
 3395  011720  104002                          ERROR   2               ;***************TEST 40 - ERROR 2***************
                                                                       ;R0 SHOULD BE ZERO
 3396
 3397  011722  005701                  65$:    TST     R1              ;CHECK R1=0
 3398  011724  001401                          BEQ     66$
 3399  011726  104003                          ERROR   3               ;***************TEST 40 - ERROR 3***************
                                                                       ;R1 SHOULD BE ZERO
 3400
 3401  011730  005702                  66$:    TST     R2              ;CHECK R2=0
 3402  011732  001401                          BEQ     67$
 3403  011734  104004                          ERROR   4               ;***************TEST 40 - ERROR 4***************
                                                                       ;R2 SHOULD BE ZERO
 3404
 3405  011736  005703                  67$:    TST     R3              ;CHECK R3=0
 3406  011740  001401                          BEQ     68$
 3407  011742  104005                          ERROR   5               ;***************TEST 40 - ERROR 5***************
                                                                       ;R3 SHOULD BE ZERO
 3408
 3409  011744  020467  166704          68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
 3410  011750  001401                          BEQ     69$             ;BR IF OK
 3411  011752  104006                          ERROR   6               ;***************TEST 40 - ERROR 6***************
                                                                       ;R4 CHANGED
 3412                                                                  ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL"
 3413
 3414  011754  020567  166676          69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
 3415  011760  001401                          BEQ     70$
 3416  011762  104007                          ERROR   7               ;***************TEST 40 - ERROR 7***************
                                                                       ;R5 CHANGED
 3417                                                                  ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD"
 3418
 3419  011764  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 3420  011770  001403                          BEQ     71$             ;BR IF OK
 3421  011772  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 3422  011776  104010                          ERROR   10              ;***************TEST 40 - ERROR 10**************
                                                                       ;STACK POINTER NOT RESTORED BY INSTRUCTION
 3423                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
 3424                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 3425
 3426  012000                  71$:
 3427  012000  000403                  BR      TST41           ;BR TO NEXT TEST
 3428  012002                  S1T40:                          ;SOURCE1 STRING
 3429  012002     061                  .BYTE   61              ;MOST SIGNIFICANT DIGIT
 3430  012003     060                  .BYTE   60
 3431  012004     063                  .BYTE   63
 3432  012005     167                  .BYTE   167
 3433  012006                  S2T40:                          ;SOURCE2 STRING
 3434  012006     063                  .BYTE   63              ;MOST SIGNIFICANT DIGIT
 3435  012007     167                  .BYTE   167
 3436
 3437                                  .EVEN
 3438
 3439
 3440                           ;;=====================================================================
 3441                           ;*TEST 41       TEST "CMPN" WITH S1L .GT. S2L, POSITIVE SOURCE1, NON-ZERO IN EXCESS
 3442                           ;;=====================================================================
 3443  012010  000004          TST41:  SCOPE
 3444  012012  004567  002714          JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 3445  012016  000004                  4                       ;SOURCE1 LENGTH
 3446  012020  012160                  S1T41   ;SOURCE1 ADDRESS
 3447  012022  000002                  2                       ;SOURCE2 LENGTH
 3448  012024  012164                  S2T41                   ;SOURCE2 ADDRESS
```

```
3449  012026  000377                                    377             ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3450  012030  004567  003010                    JSR     R5,XPSW
3451  012034  000200                            .WORD   200
3452  012036  004767  002716                    JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3453  012042  000277                            SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3454
3455  012044  076052                            CMPN
3456
3457  012046  106767  166624                    MFPS    CCODES          ;STORE RESULTANT PSW
3458  012052  042767  177400  166616            BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3459  012060  023767  000700  166610            CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3460  012066  001401                            BEQ     64$             ;BR, IF EQUAL
3461  012070  104001                            ERROR   1               ;****************TEST 41 - ERROR 1***************
3462                                                                    ;PSW ERROR
3463                                                                    ;EXPECTED PSW IS STORED AT "SAVR6"
3464                                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
3465  012072                            64$:
3466  012072  005700                            TST     R0              ;CHECK R0=0
3467  012074  001401                            BEQ     65$
3468  012076  104002                            ERROR   2               ;****************TEST 41 - ERROR 2***************
3469                                                                    ;R0 SHOULD BE ZERO
3470  012100  005701                    65$:    TST     R1              ;CHECK R1=0
3471  012102  001401                            BEQ     66$
3472  012104  104003                            ERROR   3               ;****************TEST 41 - ERROR 3***************
3473                                                                    ;R1 SHOULD BE ZERO
3474  012106  005702                    66$:    TST     R2              ;CHECK R2=0
3475  012110  001401                            BEQ     67$
3476  012112  104004                            ERROR   4               ;****************TEST 41 - ERROR 4***************
3477                                                                    ;R2 SHOULD BE ZERO
3478  012114  005703                    67$:    TST     R3              ;CHECK R3=0
3479  012116  001401                            BEQ     68$
3480  012120  104005                            ERROR   5               ;****************TEST 41 - ERROR 5***************
3481                                                                    ;R3 SHOULD BE ZERO
3482  012122  020467  166526            68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
3483  012126  001401                            BEQ     69$             ;BR IF OK
3484  012130  104006                            ERROR   6               ;****************TEST 41 - ERROR 6***************
3485                                                                    ;R4 CHANGED
3486                                                                    ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
3487  012132  020567  166520            69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3488  012136  001401                            BEQ     70$
3489  012140  104007                            ERROR   7               ;****************TEST 41 - ERROR 7***************
3490                                                                    ;R5 CHANGED
3491                                                                    ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
3492  012142  023706  000702            70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
3493  012146  001403                            BEQ     71$             ;BR IF OK
3494  012150  010637  000704                    MOV     SP,@#BADR6      ;COPY BAD SP VALUE
3495  012154  104010                            ERROR   10              ;****************TEST 41 - ERROR 10**************
3496                                                                    ;STACK POINTER NOT RESTORED BY INSTRUCTION
3497                                                                    ;EXPECTED SP IS STORED AT "SAVR6"
3498                                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
3499  012156                            71$:
3500  012156  000403                            BR      TST42           ;BR TO NEXT TEST
3501  012160                            S1T41:                          ;SOURCE1 STRING
3502  012160     061                             .BYTE   61              ;MOST SIGNIFICANT DIGIT
3503  012161     060                             .BYTE   60
3504  012162     063                             .BYTE   63
```

```
                        T41     TEST "CMPN" WITH S1L .GT. S2L, POSITIVE SOURCE1, NON-ZERO IN EXCESS      SEQ 0066

 3505  012163  067                       .BYTE   67
 3506  012164                    S2T41:
 3507  012164  063                       .BYTE   63              ;SOURCE2 STRING
 3508  012165  067                       .BYTE   67              ;MOST SIGNIFICANT DIGIT
 3509
 3510                                    .EVEN
 3511
 3512
 3513
 3514                            ;;*******************************************************************
 3515                            ;*TEST 42        TEST "CMPN" WITH POSITIVE OPERANDS, /S1/ .GT. /S2/
 3516                            ;;*******************************************************************
 3517  012166  000004            TST42:  SCOPE
 3518  012170  004567  002536            JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 3519  012174  000003                    3                       ;SOURCE1 LENGTH
 3520  012176  012336                    S1T42   ;SOURCE1 ADDRESS
 3521  012200  000003                    3                       ;SOURCE2 LENGTH
 3522  012202  012341                    S2T42                   ;SOURCE2 ADDRESS
 3523  012204  000377                    377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
 3524  012206  004567  002632            JSR     R5,XPSW
 3525  012212  000200                    .WORD   200
 3526  012214  004767  002540            JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 3527  012220  000277                    SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 3528
 3529  012222  076052                    CMPN
 3530
 3531  012224  106767  166446            MFPS    CCODES          ;STORE RESULTANT PSW
 3532  012230  042767  177400  166440    BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 3533  012236  023767  000700  166432    CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 3534  012244  001401                    BEQ     64$             ;BR, IF EQUAL
 3535  012246  104001                    ERROR   1               ;**************TEST 42 - ERROR 1**************
 3536                                                            ;PSW ERROR
 3537                                                            ;EXPECTED PSW IS STORED AT "SAVR6"
 3538                                                            ;ERRONEOUS SP VALUE IS AT "BADR6"
 3539  012250                    64$:
 3540  012250  005700                    TST     R0              ;CHECK R0=0
 3541  012252  001401                    BEQ     65$
 3542  012254  104002                    ERROR   2               ;**************TEST 42 - ERROR 2**************
 3543                                                            ;R0 SHOULD BE ZERO
 3544  012256  005701            65$:    TST     R1              ;CHECK R1=0
 3545  012260  001401                    BEQ     66$
 3546  012262  104003                    ERROR   3               ;**************TEST 42 - ERROR 3**************
 3547                                                            ;R1 SHOULD BE ZERO
 3548  012264  005702            66$:    TST     R2              ;CHECK R2=0
 3549  012266  001401                    BEQ     67$
 3550  012270  104004                    ERROR   4               ;**************TEST 42 - ERROR 4**************
 3551                                                            ;R2 SHOULD BE ZERO
 3552  012272  005703            67$:    TST     R3              ;CHECK R3=0
 3553  012274  001401                    BEQ     68$
 3554  012276  104005                    ERROR   5               ;**************TEST 42 - ERROR 5**************
 3555                                                            ;R3 SHOULD BE ZERO
 3556  012300  020467  166350    68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
 3557  012304  001401                    BEQ     69$             ;BR IF OK
 3558  012306  104006                    ERROR   6               ;**************TEST 42 - ERROR 6**************
 3559                                                            ;R4 CHANGED
 3560                                                            ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
```

T42 TEST "CMPN" WITH POSITIVE OPERANDS, /S1/ .GT. /S2/ SEQ 0067

```
3561  012310  020567  166342          69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3562  012314  001401                          BEQ     70$
3563  012316  104007                          ERROR   7               ;***************TEST 42 - ERROR 7***************
3564                                                                  ;R5 CHANGED
3565                                                                  ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
3566  012320  023706  000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
3567  012324  001403                          BEQ     71$             ;BR IF OK
3568  012326  010637  000704                  MOV     SP,@#BADR6      ;COPY BAD SP VALUE
3569  012332  104010                          ERROR   10              ;***************TEST 42 - ERROR 10***************
3570                                                                  ;STACK POINTER NOT RESTORED BY INSTRUCTION
3571                                                                  ;EXPECTED SP IS STORED AT "SAVR6"
3572                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
3573  012334                          71$:
3574  012334  000403                          BR      TST43           ;BR TO NEXT TEST
3575  012336                          S1T42:                          ;SOURCE1 STRING
3576  012336     067                          .BYTE   67              ;MOST SIGNIFICANT DIGIT
3577  012337     065                          .BYTE   65
3578  012340     064                          .BYTE   64
3579  012341                          S2T42:                          ;SOURCE2 STRING
3580  012341     067                          .BYTE   67              ;MOST SIGNIFICANT DIGIT
3581  012342     065                          .BYTE   65
3582  012343     063                          .BYTE   63
3583
3584                                          .EVEN
3585
3586
3587                                  ;;*****************************************************************
3588                                  ;*TEST 43        TEST "CMPN" WITH NEGATIVE OPERANDS, /S1/ .GT. /S2/
3589                                  ;;*****************************************************************
3590  012344  000004                  TST43:  SCOPE
3591  012346  004567  002360                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3592  012352  000003                          3                       ;SOURCE1 LENGTH
3593  012354  012514                          S1T43   ;SOURCE1 ADDRESS
3594  012356  000003                          3                       ;SOURCE2 LENGTH
3595  012360  012517                          S2T43                   ;SOURCE2 ADDRESS
3596  012362  000377                          377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CMPN" IN
3597  012364  004567  002454                  JSR     R5,XPSW
3598  012370  000210                          .WORD   210
3599  012372  004767  002362                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3600  012376  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3601
3602  012400  076052                          CMPN
3603
3604  012402  106767  166270                  MFPS    CCODES          ;STORE RESULTANT PSW
3605  012406  042767  177400  166262          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3606  012414  023767  000700  166254          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3607  012422  001401                          BEQ     64$             ;BR, IF EQUAL
3608  012424  104001                          ERROR   1               ;***************TEST 43 - ERROR 1***************
3609                                                                  ;PSW ERROR
3610                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
3611                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
3612  012426                          64$:
3613  012426  005700                          TST     R0              ;CHECK R0=0
3614  012430  001401                          BEQ     65$
3615  012432  104002                          ERROR   2               ;***************TEST 43 - ERROR 2***************
3616                                                                  ;R0 SHOULD BE ZERO
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 69
CVKAJB.P11    22-JAN-82 08.49          T43     TEST "CMPN" WITH NEGATIVE OPERANDS, /S1/ .GT. /S2/                SEQ 0068

 3617  012434  005701                 65$:    TST     R1              ;CHECK R1=0
 3618  012436  001401                         BEQ     66$
 3619  012440  104003                         ERROR   3               ;***************TEST 43 - ERROR 3***************
                                                                      ;R1 SHOULD BE ZERO
 3620
 3621  012442  005702                 66$:    TST     R2              ;CHECK R2=0
 3622  012444  001401                         BEQ     67$
 3623  012446  104004                         ERROR   4               ;***************TEST 43 - ERROR 4***************
                                                                      ;R2 SHOULD BE ZERO
 3624
 3625  012450  005703                 67$:    TST     R3              ;CHECK R3=0
 3626  012452  001401                         BEQ     68$
 3627  012454  104005                         ERROR   5               ;***************TEST 43 - ERROR 5***************
                                                                      ;R3 SHOULD BE ZERO
 3628
 3629  012456  020467  166172         68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
 3630  012462  001401                         BEQ     69$             ;BR IF OK
 3631  012464  104006                         ERROR   6               ;***************TEST 43 - ERROR 6***************
                                                                      ;R4 CHANGED
                                                                      ;R4 SHOULD STILL EQUAL CONTENTS OF "FILL"
 3632
 3633
 3634  012466  020567  166164         69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
 3635  012472  001401                         BEQ     70$
 3636  012474  104007                         ERROR   7               ;***************TEST 43 - ERROR 7***************
                                                                      ;R5 CHANGED
                                                                      ;R5 SHOULD STILL EQUAL CONTENTS OF "DSTAD"
 3637
 3638
 3639  012476  023706  000702         70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
 3640  012502  001403                         BEQ     71$             ;BR IF OK
 3641  012504  010637  000704                 MOV     SP,@#BADR6      ;COPY BAD SP VALUE
 3642  012510  104010                         ERROR   10              ;***************TEST 43 - ERROR 10**************
                                                                      ;STACK POINTER NOT RESTORED BY INSTRUCTION
                                                                      ;EXPECTED SP IS STORED AT "SAVR6"
 3643
 3644
 3645                                                                 ;ERRONEOUS SP VALUE IS AT "BADR6"
 3646  012512                         71$:
 3647  012512  000403                         BR      TST44           ;BR TO NEXT TEST
 3648  012514                         S1T43:                          ;SOURCE1 STRING
 3649  012514     067                          .BYTE   67              ;MOST SIGNIFICANT DIGIT
 3650  012515     065                          .BYTE   65
 3651  012516     164                          .BYTE   164
 3652  012517                         S2T43:                          ;SOURCE2 STRING
 3653  012517     067                          .BYTE   67              ;MOST SIGNIFICANT DIGIT
 3654  012520     065                          .BYTE   65
 3655  012521     163                          .BYTE   163
 3656
 3657                                        .EVEN
 3658
 3659
 3660                                ;;*****************************************************************
 3661                                ;*TEST 44       TEST INTERRUPTABILITY OF "CMPN"
 3662                                ;;*****************************************************************
 3663  012522  000004                 TST44:  SCOPE
 3664  012524  105777  166010                 TSTB    @SWR            ;TEST BIT 7 OF SWR
 3665  012530  100535                         BMI     TST45           ;SKIP TO NEXT TEST IF SET
 3666  012532  026767  166012  166124         CMP     $TPS,TCSR       ;IS SLU USED FOR INTERRUPTS THE CONSOLE?
 3667  012540  001007                         BNE     T44CONT         ;BR, IF NOT & PERFORM INTERRUPTABILITY TEST
 3668  012542  032767  000001  166036         BIT     #BIT0,$ENV      ;IF YES, IS PROGRAM UNDER APT?
 3669  012550  001403                         BEQ     T44CONT         ;BR, IF NOT
 3670  012552  005767  166016                 TST     $PASS           ;IF YES,CHECK IF NOT ON FIRST PASS
 3671  012556  001122                         BNE     TST45           ;IF NOT, BR & SKIP TEST
 3672  012560                         T44CONT:
```

```
3673  012560  004567  002146            JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3674  012564  000004                    4                       ;SOURCE1 LENGTH
3675  012566  013002                    S1T44   ;SOURCE1 ADDRESS
3676  012570  000004                    4                       ;SOURCE2 LENGTH
3677  012572  013006                    S2T44                   ;SOURCE2 ADDRESS
3678  012574  000377                    377                     ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY ''CMPN'' IN
3679  012576  012767  012656  166070    MOV     #CMPNPC,PCI     ;STORE PC OF TEST INSTRUCTION
3680  012604  012777  015114  166056    MOV     #INTR,@TVECT    ;POINT TTY VECTOR TO INTERRUPT ROUTINE
3681  012612  005077  166054            CLR     @TPSW           ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
3682  012616  004767  002246            JSR     PC,TDONE        ;WAIT FOR SLU READY
3683  012622  013777  000554  166036    MOV     @#$NULL,@TBUF   ;SEND NULL CHARACTER
3684  012630  004567  002210            JSR     R5,XPSW         ;STORE EXPECTED PSW
3685  012634  000000                    .WORD   0
3686  012636  106427  000000            MTPS    #0              ;ALLOW INTERRUPTS
3687  012642  052777  000100  166014    BIS     #100,@TCSR      ;ENABLE TTY INTERRUPTS
3688  012650  004767  002104    RECMPN: JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3689  012654  000277                    SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3690
3691  012656  076052            CMPNPC: CMPN
3692
3693  012660  106767  166012            MFPS    CCODES          ;STORE RESULTANT PSW
3694  012664  032777  000100  165772    BIT     #100,@TCSR      ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
3695  012672  001366                    BNE     RECMPN          ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
3696  012674  042767  177400  165774    BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3697  012702  023767  000700  165766    CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3698  012710  001401                    BEQ     64$             ;BR, IF EQUAL
3699  012712  104001                    ERROR   1               ;***************TEST 44 - ERROR 1***************
3700                                                            ;PSW ERROR
3701                                                            ;EXPECTED PSW IS STORED AT ''SAVR6''
3702                                                            ;ERRONEOUS SP VALUE IS AT ''BADR6''
3703  012714                    64$:
3704  012714  005700                    TST     R0              ;CHECK R0=0
3705  012716  001401                    BEQ     65$
3706  012720  104002                    ERROR   2               ;***************TEST 44 - ERROR 2***************
3707                                                            ;R0 SHOULD BE ZERO
3708  012722  005701            65$:    TST     R1              ;CHECK R1=0
3709  012724  001401                    BEQ     66$
3710  012726  104003                    ERROR   3               ;***************TEST 44 - ERROR 3***************
3711                                                            ;R1 SHOULD BE ZERO
3712  012730  005702            66$:    TST     R2              ;CHECK R2=0
3713  012732  001401                    BEQ     67$
3714  012734  104004                    ERROR   4               ;***************TEST 44 - ERROR 4***************
3715                                                            ;R2 SHOULD BE ZERO
3716  012736  005703            67$:    TST     R3              ;CHECK R3=0
3717  012740  001401                    BEQ     68$
3718  012742  104005                    ERROR   5               ;***************TEST 44 - ERROR 5***************
3719                                                            ;R3 SHOULD BE ZERO
3720  012744  020467  165704    68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
3721  012750  001401                    BEQ     69$             ;BR IF OK
3722  012752  104006                    ERROR   6               ;***************TEST 44 - ERROR 6***************
3723                                                            ;R4 CHANGED
3724                                                            ;R4 SHOULD STILL EQUAL CONTENTS OF ''FILL''
3725  012754  020567  165676    69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3726  012760  001401                    BEQ     70$
3727  012762  104007                    ERROR   7               ;***************TEST 44 - ERROR 7***************
3728                                                            ;R5 CHANGED
```

```
3729                                                    ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD"
3730  012764 023706 000702          70$:    CMP     @#SAVR6,SP      ;VERIFY STACK POINTER IS RESTORED
3731  012770 001403                        BEQ     71$             ;BR IF OK
3732  012772 010637 000704                 MOV     SP,@#BADR6      ;COPY BAD SP VALUE
3733  012776 104010                        ERROR   10              ;****************TEST 44 - ERROR 10****************
3734                                                    ;STACK POINTER NOT RESTORED BY INSTRUCTION
3735                                                    ;EXPECTED SP IS STORED AT "SAVR6"
3736                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
3737  013000                        71$:
3738  013000 000404                        BR      ENDT44          ;BR TO END OF THIS TEST
3739  013002                        S1T44:                          ;SOURCE1 STRING
3740  013002    071                         .BYTE   71              ;MOST SIGNIFICANT DIGIT
3741  013003    070                         .BYTE   70
3742  013004    067                         .BYTE   67
3743  013005    066                         .BYTE   66
3744  013006                        S2T44:                          ;SOURCE2 STRING
3745  013006    071                         .BYTE   71              ;MOST SIGNIFICANT DIGIT
3746  013007    070                         .BYTE   70
3747  013010    067                         .BYTE   67
3748  013011    065                         .BYTE   65
3749
3750                                        .EVEN
3751  013012 016777 165654 165650 ENDT44: MOV     TPSW,@TVECT
3752  013020 106427 000200                MTPS    #200
3753
3754
3755
3756                                        ;;*****************************************************************
3757                                        ;*TEST 45       TEST "CVTNL" WITH SRC = +2,147,483,647
3758                                        ;;*****************************************************************
3759  013024 000004                 TST45:  SCOPE
3760  013026 004567 001700                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3761  013032 000012                         12                      ;SOURCE LENGTH
3762  013034 013164                         ST45                    ;SOURCE ADDRESS
3763  013036 177777                         177777                  ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
3764  013040 177777                         177777
3765  013042 000377                         377                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
3766  013044 004567 001774                  JSR     R5,XPSW
3767  013050 000200                         .WORD   200
3768  013052 004767 001702                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3769  013056 000277                         SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3770
3771  013060 076053                         CVTNL
3772
3773  013062 106767 165610                  MFPS    CCODES          ;STORE RESULTANT PSW
3774  013066 042767 177400 165602           BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3775  013074 023767 000700 165574           CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3776  013102 001401                         BEQ     64$             ;BR, IF EQUAL
3777  013104 104001                         ERROR   1               ;****************TEST 45 - ERROR 1****************
3778                                                    ;PSW ERROR
3779                                                    ;EXPECTED PSW IS STORED AT "SAVR6"
3780                                                    ;ERRONEOUS SP VALUE IS AT "BADR6"
3781  013106                        64$:
3782  013106 005700                        TST     R0              ;CHECK R0=0
3783  013110 001401                         BEQ     65$
3784  013112 104002                         ERROR   2               ;****************TEST 45 - ERROR 2****************
```

```
3785                                                    ;R0 SHOULD BE ZERO
3786  013114  005701                  65$:    TST     R1          ;CHECK R1=0
3787  013116  001401                          BEQ     66$
3788  013120  104003                          ERROR   3           ;***************TEST 45 - ERROR 3***************
3789                                                    ;R1 SHOULD BE ZERO
3790  013122  020227  077777          66$:    CMP     R2,#077777  ;CHECK UPPER WORD OF ANSWER
3791  013126  001401                          BEQ     67$         ;BR IF OK
3792  013130  104004                          ERROR   4           ;***************TEST 45 - ERROR 4***************
3793                                                    ;UPPER WORD OF ANSWER IS IN ERROR
3794                                                    ;EXPECTED VALUE IS 077777
3795                                                    ;ERRONEOUS ANSWER VALUE IS IN R2
3796  013132  020327  177777          67$:    CMP     R3,#177777  ;CHECK LOWER WORD OF ANSWER
3797  013136  001401                          BEQ     68$         ;BR IF OK
3798  013140  104005                          ERROR   5           ;***************TEST 45 - ERROR 5***************
3799                                                    ;LOWER WORD OF ANSWER IS IN ERROR
3800                                                    ;EXPECTED VALUE IS 177777
3801                                                    ;ERRORNEOUS ANSWER IS IN R3
3802  013142  020467  165506          68$:    CMP     R4,DSTLN    ;CHECK R4 UNCHANGED
3803  013146  001401                          BEQ     69$
3804  013150  104006                          ERROR   6           ;***************TEST 45 - ERROR 6***************
3805                                                    ;R4 CHANGED
3806                                                    ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL"
3807  013152  020567  165500          69$:    CMP     R5,DSTAD    ;CHECK R5 UNCHANGED
3808  013156  001401                          BEQ     70$         ;BR IF OK
3809  013160  104007                          ERROR   7           ;***************TEST 45 - ERROR 7***************
3810                                                    ;R5 CHANGED
3811                                                    ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD"
3812  013162                          70$:
3813  013162  000405                          BR      TST46       ;BR TO NEXT TEST
3814  013164                          ST45:                       ;SOURCE STRING
3815  013164      062                         .BYTE   62          ;MOST SIGNIFICANT DIGIT
3816  013165      061                         .BYTE   61
3817  013166      064                         .BYTE   64
3818  013167      067                         .BYTE   67
3819  013170      064                         .BYTE   64
3820  013171      070                         .BYTE   70
3821  013172      063                         .BYTE   63
3822  013173      066                         .BYTE   66
3823  013174      064                         .BYTE   64
3824  013175      067                         .BYTE   67
3825
3826
3827
3828                                    ;;*******************************************************************
3829                                    ;*TEST 46       TEST "CVTNL" WITH SRC= +2,687,483,648, OVERFLOW WITH CORRECT SIGN
3830                                    ;;*******************************************************************
3831
3832  013176  000004                  TST46:  SCOPE
3833  013200  004567  001526                  JSR     R5,NPREP    ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3834  013204  000012                          12                  ;SOURCE LENGTH
3835  013206  013340                          ST46                ;SOURCE ADDRESS
3836  013210  177777                          177777              ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
3837  013212  177777                          177777
3838  013214  000377                          377                 ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL"
3839  013216  004567  001622                  JSR     R5,XPSW
3840  013222  000202                          .WORD   202
```

```
3841  013224  004767  001530            JSR     PC,GENR         ;SET UP GENERAL REGISTERS
3842  013230  000277                    SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3843  013232  000242                    CLV
3844
3845  013234  076053                    CVTNL
3846
3847  013236  106767  165434            MFPS    CCODES          ;STORE RESULTANT PSW
3848  013242  042767  177400  165426    BIC     #177400,CCODES  ;CLEAR UNUSED BITS
3849  013250  023767  000700  165420    CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
3850  013256  001401                    BEQ     64$             ;BR, IF EQUAL
3851  013260  104001                    ERROR   1               ;***************TEST 46 - ERROR 1***************
3852                                                            ;PSW ERROR
3853                                                            ;EXPECTED PSW IS STORED AT "SAVR6"
3854                                                            ;ERRONEOUS SP VALUE IS AT "BADR6"
3855  013262                    64$:
3856  013262  005700                    TST     R0              ;CHECK R0=0
3857  013264  001401                    BEQ     65$
3858  013266  104002                    ERROR   2               ;***************TEST 46 - ERROR 2***************
3859                                                            ;R0 SHOULD BE ZERO
3860  013270  005701            65$:    TST     R1              ;CHECK R1=0
3861  013272  001401                    BEQ     66$
3862  013274  104003                    ERROR   3               ;***************TEST 46 - ERROR 3***************
3863                                                            ;R1 SHOULD BE ZERO
3864  013276  020227  014631    66$:    CMP     R2,#014631      ;CHECK UPPER WORD OF ANSWER
3865  013302  001401                    BEQ     67$             ;BR IF OK
3866  013304  104004                    ERROR   4               ;***************TEST 46 - ERROR 4***************
3867                                                            ;UPPER WORD OF ANSWER IS IN ERROR
3868                                                            ;EXPECTED VALUE IS 014631
3869                                                            ;ERRONEOUS ANSWER VALUE IS IN R2
3870  013306  020327  031462    67$:    CMP     R3,#031462      ;CHECK LOWER WORD OF ANSWER
3871  013312  001401                    BEQ     68$             ;BR IF OK
3872  013314  104005                    ERROR   5               ;***************TEST 46 - ERROR 5***************
3873                                                            ;LOWER WORD OF ANSWER IS IN ERROR
3874                                                            ;EXPECTED VALUE IS 031462
3875                                                            ;ERRORNEOUS ANSWER IS IN R3
3876  013316  020467  165332    68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
3877  013322  001401                    BEQ     69$
3878  013324  104006                    ERROR   6               ;***************TEST 46 - ERROR 6***************
3879                                                            ;R4 CHANGED
3880                                                            ;R4 SHOULD STILL EQUAL TH CONTENTS OF "FILL"
3881  013326  020567  165324    69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
3882  013332  001401                    BEQ     70$             ;BR IF OK
3883  013334  104007                    ERROR   7               ;***************TEST 46 - FRROR 7***************
3884                                                            ;R5 CHANGED
3885                                                            ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
3886  013336                    70$:
3887  013336  000405                    BR      TST47           ;BR TO NEXT TEST
3888  013340                    ST46:                           ;SOURCE STRING
3889  013340      064                   .BYTE   64              ;MOST SIGNIFICANT DIGIT
3890  013341      062                   .BYTE   62
3891  013342      071                   .BYTE   71
3892  013343      064                   .BYTE   64
3893  013344      071                   .BYTE   71
3894  013345      066                   .BYTE   66
3895  013346      067                   .BYTE   67
3896  013347      062                   .BYTE   62
```

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MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 74
CVKAJB.P11    22-JAN-82 08:49          T46     TEST "CVTNL" WITH SRC= +2,687,483,648, OVERFLOW WITH CORRECT SIGN          SEQ 0073

 3897  013350  000071                          .BYTE   71
 3898  013351  000066                          .BYTE   66
 3899
 3900
 3901
 3902                                  ;;*****************************************************************
 3903                                  ;*TEST 47        TEST "CVTNL" WITH SRC = +2,147,483,648, OVERFLOW
 3904                                  ;;*****************************************************************
 3905  013352  000004                  TST47:  SCOPE
 3906  013354  004567  001352                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
 3907  013360  000012                          12                      ;SOURCE LENGTH
 3908  013362  013514                          ST47                    ;SOURCE ADDRESS
 3909  013364  177777                          177777                  ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
 3910  013366  177777                          177777
 3911  013370  000377                          377                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
 3912  013372  004567  001'46                  JSR     R5,XPSW
 3913  013376  000212                          .WORD   212
 3914  013400  004767  001354                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
 3915  013404  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
 3916  013406  000242                          CLV
 3917
 3918  013410  076053                          CVTNL
 3919
 3920  013412  106767  165260                  MFPS    CCODES          ;STORE RESULTANT PSW
 3921  013416  042767  177400  165252          BIC     #177400,CCODES  ;CLEAR UNUSED BITS
 3922  013424  023767  000700  165244          CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
 3923  013432  001401                          BEQ     64$             ;BR, IF EQUAL
 3924  013434  104001                          ERROR   1               ;***************TEST 47 - ERROR 1***************
 3925                                                                  ;PSW ERROR
 3926                                                                  ;EXPECTED PSW IS STORED AT "SAVR6"
 3927                                                                  ;ERRONEOUS SP VALUE IS AT "BADR6"
 3928  013436                          64$:
 3929  013436  005700                          TST     R0              ;CHECK R0=0
 3930  013440  001401                          BEQ     65$
 3931  013442  104002                          ERROR   2               ;***************TEST 47 - ERROR 2***************
 3932                                                                  ;R0 SHOULD BE ZERO
 3933  013444  005701                  65$:    TST     R1              ;CHECK R1=0
 3934  013446  001401                          BEQ     66$
 3935  013450  104003                          ERROR   3               ;***************TEST 47 - ERROR 3***************
 3936                                                                  ;R1 SHOULD BE ZERO
 3937  013452  020227  100000          66$:    CMP     R2,#100000      ;CHECK UPPER WORD OF ANSWER
 3938  013456  001401                          BEQ     67$             ;BR IF OK
 3939  013460  104004                          ERROR   4               ;***************TEST 47 - ERROR 4***************
 3940                                                                  ;UPPER WORD OF ANSWER IS IN ERROR
 3941                                                                  ;EXPECTED VALUE IS 100000
 3942                                                                  ;ERRONEOUS ANSWER VALUE IS IN R2
 3943  013462  020327  000000          67$:    CMP     R3,#0   ;CHECK LOWER WORD OF ANSWER
 3944  013466  001401                          BEQ     68$             ;BR IF OK
 3945  013470  104005                          ERROR   5               ;***************TEST 47 - ERROR 5***************
 3946                                                                  ;LOWER WORD OF ANSWER IS IN ERROR
 3947                                                                  ;EXPECTED VALUE IS 0
 3948                                                                  ;ERRORNEOUS ANSWER IS IN R3
 3949  013472  020467  165156          68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
 3950  013476  001401                          BEQ     69$
 3951  013500  104006                          ERROR   6               ;***************TEST 47 - ERROR 6***************
 3952                                                                  ;R4 CHANGED
```

```
                                                        ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL'
013502  020567  165150          69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
013506  001401                  BEQ     70$             ;BR IF OK
013510  104007                  ERROR   7               ;**************TEST 47 - ERROR 7**************
                                                        ;R5 CHANGED
                                                        ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
013512                          70$:
013512  000405                  BR      TST50           ;BR TO NEXT TEST
013514                          ST47:                   ;SOURCE STRING
013514      062                 .BYTE   62              ;MOST SIGNIFICANT DIGIT
013515      061                 .BYTE   61
013516      064                 .BYTE   64
013517      067                 .BYTE   67
013520      064                 .BYTE   64
013521      070                 .BYTE   70
013522      063                 .BYTE   63
013523      066                 .BYTE   66
013524      064                 .BYTE   64
013525      070                 .BYTE   70


                                ;;*****************************************************************
                                ;*TEST 50       TEST "CVTNL" WITH SRC = -2,147,483,648
                                ;;*****************************************************************
013526  000004                  TST50:  SCOPE
013530  004567  001176                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
013534  000012                          12                      ;SOURCE LENGTH
013536  013670                          ST50                    ;SOURCE ADDRESS
013540  177777                          177777                  ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
013542  177777                          177777
013544  000377                          377                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
013546  004567  001272                  JSR     R5,XPSW
013552  000210                  .WORD   210
013554  004767  001200                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
013560  000277                  SCC                             ;SET UP THE COMPLEMENT OF EXPECTED CC'S
013562  000250                  CLN

013564  076053                  CVTNL

013566  106767  165104          MFPS    CCODES          ;STORE RESULTANT PSW
013572  042767  177400  165076  BIC     #1,7400,CCODES  ;CLEAR UNUSED BITS
013600  023767  000700  165070  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
013606  001401                  BEQ     64$             ;BR, IF EQUAL
013610  104001                  ERROR   1               ;**************TEST 50 - ERROR 1**************
                                                        ;PSW ERROR
                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
013612                          64$:
013612  005700                  TST     R0              ;CHECK R0=0
013614  001401                  BEQ     65$
013616  104002                  ERROR   2               ;**************TEST 50 - ERROR 2**************
                                                        ;R0 SHOULD BE ZERO
013620  005701                  65$:    TST     R1              ;CHECK R1=0
013622  001401                  BEQ     66$
013624  104003                  ERROR   3               ;**************TEST 50 - ERROR 3**************
```

```
                                                                ;R1 SHOULD BE ZERO
013626  020227  100000          66$:    CMP     R2,#100000      ;CHECK UPPER WORD OF ANSWER
013632  001401                          BEQ     67$             ;BR IF OK
013634  104004                          ERROR   4               ;***************TEST 50 - ERROR 4***************
                                                                ;UPPER WORD OF ANSWER IS IN ERROR
                                                                ;EXPECTED VALUE IS 100000
                                                                ;ERRONEOUS ANSWER VALUE IS IN R2
013636  020327  000000          67$:    CMP     R3,#0   ;CHECK LOWER WORD OF ANSWER
013642  001401                          BEQ     68$             ;BR IF OK
013644  104005                          ERROR   5               ;***************TEST 50 - ERROR 5***************
                                                                ;LOWER WORD OF ANSWER IS IN ERROR
                                                                ;EXPECTED VALUE IS 0
                                                                ;ERRORNEOUS ANSWER IS IN R3
013646  020467  165002          68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
013652  001401                          BEQ     69$
013654  104006                          ERROR   6               ;***************TEST 50 - ERROR 6***************
                                                                ;R4 CHANGED
                                                                ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL'
013656  020567  164774          69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
013662  001401                          BEQ     70$             ;BR IF OK
013664  104007                          ERROR   7               ;***************TEST 50 - ERROR 7***************
                                                                ;R5 CHANGED
                                                                ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
013666                          70$:
013666  000405                          BR      TST51           ;BR TO NEXT TEST
013670                          ST50:                           ;SOURCE STRING
013670     062                          .BYTE   62              ;MOST SIGNIFICANT DIGIT
013671     061                          .BYTE   61
013672     064                          .BYTE   64
013673     067                          .BYTE   67
013674     064                          .BYTE   64
013675     070                          .BYTE   70
013676     063                          .BYTE   63
013677     066                          .BYTE   66
013700     064                          .BYTE   64
013701     170                          .BYTE   170



                                ;;*************************************************************
                                ;;*TEST 51      TEST "CVTNL" WITH SRC = -2,147,483,649. OVERFLOW
                                ;;*************************************************************
013702  000004                  TST51:  SCOPE
013704  004567  001022                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
013710  000012                                  12              ;SOURCE LENGTH
013712  014044                                  ST51            ;SOURCE ADDRESS
013714  177777                                  177777          ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
013716  177777                                  177777
013720  000377                                  377             ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
013722  004567  001116                  JSR     R5,\PSW
013726  000202                          .WORD   202
013730  004767  001024                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
013734  000265                          +SEZ!SEC                        ;SET UP THE COMPLEMENT OF EXPECTED CC'S
013736  000252                          +CLN!CLV

013740  076053                          CVTNL
```

```
4065
4066  013742  106767  164730          MFPS    CCODES          ;STORE RESULTANT PSW
4067  013746  042767  177400  164722  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
4068  013754  023767  000700  164714  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
4069  013762  001401                  BEQ     64$             ;BR, IF EQUAL
4070  013764  104001                  ERROR   1               ;***************TEST 51 - ERROR 1***************
4071                                                          ;PSW ERROR
4072                                                          ;EXPECTED PSW IS STORED AT "SAVR6"
4073                                                          ;ERRONEOUS SP VALUE IS AT "BADR6"
4074  013766                  64$:
4075  013766  005700                  TST     R0              ;CHECK R0=0
4076  013770  001401                  BEQ     65$
4077  013772  104002                  ERROR   2               ;***************TEST 51 - ERROR 2***************
4078                                                          ;R0 SHOULD BE ZERO
4079  013774  005701          65$:    TST     R1              ;CHECK R1=0
4080  013776  001401                  BEQ     66$
4081  014000  104003                  ERROR   3               ;***************TEST 51 - ERROR 3***************
4082                                                          ;R1 SHOULD BE ZERO
4083  014002  020227  077777  66$:    CMP     R2,#077777      ;CHECK UPPER WORD OF ANSWER
4084  014006  001401                  BEQ     67$             ;BR IF OK
4085  014010  104004                  ERROR   4               ;***************TEST 51 - ERROR 4***************
4086                                                          ;UPPER WORD OF ANSWER IS IN ERROR
4087                                                          ;EXPECTED VALUE IS 077777
4088                                                          ;ERRONEOUS ANSWER VALUE IS IN R2
4089  014012  020327  177777  67$:    CMP     R3,#177777      ;CHECK LOWER WORD OF ANSWER
4090  014016  001401                  BEQ     68$             ;BR IF OK
4091  014020  104005                  ERROR   5               ;***************TEST 51 - ERROR 5***************
4092                                                          ;LOWER WORD OF ANSWER IS IN ERROR
4093                                                          ;EXPECTED VALUE IS 177777
4094                                                          ;ERRORNEOUS ANSWER IS IN R3
4095  014022  020467  164626  68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
4096  014026  001401                  BEQ     69$
4097  014030  104006                  ERROR   6               ;***************TEST 51 - ERROR 6***************
4098                                                          ;R4 CHANGED
4099                                                          ;R4 SHOULD STILL EQUAL TH CONTENTS OF "FILL"
4100  014032  020567  164620  69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
4101  014036  001401                  BEQ     70$             ;BR IF OK
4102  014040  104007                  ERROR   7               ;***************TEST 51 - ERROR 7***************
4103                                                          ;R5 CHANGED
4104                                                          ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
4105  014042                  70$:
4106  014042  000405                  BR      TST52           ;BR TO NEXT TEST
4107  014044                  ST51:                           ;SOURCE STRING
4108  014044      062                 .BYTE   62              ;MOST SIGNIFICANT DIGIT
4109  014045      061                 .BYTE   61
4110  014046      064                 .BYTE   64
4111  014047      067                 .BYTE   67
4112  014050      064                 .BYTE   64
4113  014051      070                 .BYTE   70
4114  014052      063                 .BYTE   63
4115  014053      066                 .BYTE   66
4116  014054      064                 .BYTE   64
4117  014055      171                 .BYTE   171
4118
4119
4120
```

```
                                ;;*****************************************************************
                                ;*TEST 52        TEST "CVTNL" WITH SRC LENGTH = 1, SOURCE= 60,60
                                ;;*****************************************************************
014056  000004                  TST52:  SCOPE
014060  004567  000646                  JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
014064  000002                          2                       ;SOURCE LENGTH
014066  014220                          ST52                    ;SOURCE ADDRESS
014070  177777                          177777                  ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
014072  177777                          177777
014074  000377                          377                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
014076  004567  000742                  JSR     R5,XPSW
014102  000204                          .WORD   204
014104  004767  000650                  JSR     PC,GENR         ;SET UP GENERAL REGISTERS
014110  000277                          SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
014112  000244                          CLZ

014114  076053                          CVTNL

014116  106767  164554                  MFPS    CCODES          ;STORE RESULTANT PSW
014122  042767  177400  164546        BIC     #177400,CCODES  ;CLEAR UNUSED BITS
014130  023767  000700  164540        CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
014136  001401                        BEQ     64$             ;BR, IF EQUAL
014140  104001                        ERROR   1               ;****************TEST 52 - ERROR 1***************
                                                              ;PSW ERROR
                                                              ;EXPECTED PSW IS STORED AT "SAVR6"
                                                              ;ERRONEOUS SP VALUE IS AT "BADR6"
014142                          64$:
014142  005700                        TST     R0              ;CHECK R0=0
014144  001401                        BEQ     65$
014146  104002                        ERROR   2               ;****************TEST 52 - ERROR 2***************
                                                              ;R0 SHOULD BE ZERO
014150  005701                  65$:  TST     R1              ;CHECK R1=0
014152  001401                        BEQ     66$
014154  104003                        ERROR   3               ;****************TEST 52 - ERROR 3***************
                                                              ;R1 SHOULD BE ZERO
014156  020227  000000          66$:  CMP     R2,#0   ;CHECK UPPER WORD OF ANSWER
014162  001401                        BEQ     67$             ;BR IF OK
014164  104004                        ERROR   4               ;****************TEST 52 - ERROR 4***************
                                                              ;UPPER WORD OF ANSWER IS IN ERROR
                                                              ;EXPECTED VALUE IS 0
                                                              ;ERRONEOUS ANSWER VALUE IS IN R2
014166  020327  000000          67$:  CMP     R3,#0   ;CHECK LOWER WORD OF ANSWER
014172  001401                        BEQ     68$             ;BR IF OK
014174  104005                        ERROR   5               ;****************TEST 52 - ERROR 5***************
                                                              ;LOWER WORD OF ANSWER IS IN ERROR
                                                              ;EXPECTED VALUE IS 0
                                                              ;ERRORNEOUS ANSWER IS IN R3
014176  020467  164452          68$:  CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
014202  001401                        BEQ     69$
014204  104006                        ERROR   6               ;****************TEST 52 - ERROR 6***************
                                                              ;R4 CHANGED
                                                              ;R4 SHOULD STILL EQUAL TH CONTENTS OF "FILL"
014206  020567  164444          69$:  CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
014212  001401                        BEQ     70$             ;BR IF OK
014214  104007                        ERROR   7               ;****************TEST 52 - ERROR 7***************
                                                              ;R5 CHANGED
```

```
                                                        ;R5 SHOULD STILL EQUAL THE CONTENTS OF "DSTAD"
014216                                  70$:
014216  000401                                  BR      TST53           ;BR TO NEXT TEST
014220                                  ST52:                           ;SOURCE STRING
014220      060                                 .BYTE   60              ;MOST SIGNIFICANT DIGIT
014221      060                                 .BYTE   60
                                        ;;**********************************************************************
                                        ;*TEST 53       TEST INTERRUPTABILITY OF "CVTNL"
                                        ;;**********************************************************************
014222  000004                          TST53:  SCOPE
014224  105777  164310                          TSTB    @SWR            ;TEST BIT 7 OF SWR
014230  100532                                  BMI     $EOP            ;SKIP TO NEXT TEST IF SET
014232  026767  164312  164424                  CMP     $TPS,TCSR       ;IS SLU USED FOR INTERRUPTS THE CONSOLE?
014240  001007                                  BNE     CVTCONT         ;BR, IF NOT & PERFORM INTERRUPTABILITY TEST
014242  032767  000001  164336                  BIT     #BIT0,$ENV      ;IF YES, IS PROGRAM UNDER APT?
014250  001403                                  BEQ     CVTCONT         ;BR, IF NOT
014252  005767  164316                          TST     $PASS           ;IF YES,CHECK IF NOT ON FIRST PASS
014256  001117                                  BNE     $EOP            ;IF NOT, BR & SKIP TEST
014260                                  CVTCONT:
014260  004567  000446                          JSR     R5,NPREP        ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
014264  000012                                  12                      ;SOURCE LENGTH
014266  014472                                  ST53                    ;SOURCE ADDRESS
014270  177777                                  177777                  ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
014272  177777                                  177777
014274  000377                                  377                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
014276  012767  014356  164370                  MOV     #CVTPC,PCI      ;STORE PC OF TEST INSTRUCTION
014304  012777  015114  164356                  MOV     #INTR,@TVECT    ;POINT TTY VECTOR TO INTERRUPT ROUTINE
014312  005077  164354                          CLR     @TPSW           ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
014316  004767  000546                          JSR     PC,TDONE        ;WAIT FOR SLU READY
014322  013777  000554  164336                  MOV     @#$NULL,@TBUF   ;SEND NULL CHARACTER
014330  004567  000510                          JSR     R5,XPSW         ;STORE EXPECTED PSW
014334  000000                                  .WORD   0
014336  106427  000000                          MTPS    #0              ;ALLOW INTERRUPTS
014342  052777  000100  164314                  BIS     #100,@TCSR      ;ENABLE TTY INTERRUPTS
014350  004767  000404                  RECVTN: JSR     PC,GENR         ;SET UP GENERAL REGISTERS
014354  000277                                  SCC                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S
014356  076053                          CVTPC:  CVTNL
014360  106767  164312                          MFPS    CCODES          ;STORE RESULTANT PSW
014364  032777  000100  164272                  BIT     #100,@TCSR      ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
014372  001366                                  BNE     RECVTN          ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
014374  042767  177400  164274                  BIC     #177400,CCODES  ;CLEAR UNUSED BITS
014402  023767  000700  164266                  CMP     @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
014410  001401                                  BEQ     64$             ;BR, IF EQUAL
014412  104001                                  ERROR   1               ;***************TEST 53 - ERROR 1***************
                                                                        ;PSW ERROR
                                                                        ;EXPECTED PSW IS STORED AT "SAVR6"
                                                                        ;ERRONEOUS SP VALUE IS AT "BADR6"
014414                                  64$:
014414  005700                                  TST     R0              ;CHECK R0=0
014416  001401                                  BEQ     65$
014420  104002                                  ERROR   2               ;***************TEST 53 - ERROR 2***************
                                                                        ;R0 SHOULD BE ZERO
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 80
CVKAJB.P11    22-JAN-82 08:49          T53     TEST INTERRUPTABILITY OF "CVTNL"                                SEQ 0079

 4233  014422  005701                 65$:    TST     R1              ;CHECK R1=0
 4234  014424  001401                         BEQ     66$
 4235  014426  104003                         ERROR   3               ;***************TEST 53 - ERROR 3***************
 4236                                                                 ;R1 SHOULD BE ZERO
 4237  014430  020227  052525         66$:    CMP     R2,#052525      ;CHECK UPPER WORD OF ANSWER
 4238  014434  001401                         BEQ     67$             ;BR IF OK
 4239  014436  104004                         ERROR   4               ;***************TEST 53 - ERROR 4***************
 4240                                                                 ;UPPER WORD OF ANSWER IS IN ERROR
 4241                                                                 ;EXPECTED VALUE IS 052525
 4242                                                                 ;ERRONEOUS ANSWER VALUE IS IN R2
 4243  014440  020327  125252         67$:    CMP     R3,#125252      ;CHECK LOWER WORD OF ANSWER
 4244  014444  001401                         BEQ     68$             ;BR IF OK
 4245  014446  104005                         ERROR   5               ;***************TEST 53 - ERROR 5***************
 4246                                                                 ;LOWER WORD OF ANSWER IS IN ERROR
 4247                                                                 ;EXPECTED VALUE IS 125252
 4248                                                                 ;ERRORNEOUS ANSWER IS IN R3
 4249  014450  020467  164200         68$:    CMP     R4,DSTLN        ;CHECK R4 UNCHANGED
 4250  014454  001401                         BEQ     69$
 4251  014456  104006                         ERROR   6               ;***************TEST 53 - ERROR 6***************
 4252                                                                 ;R4 CHANGED
 4253                                                                 ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL"
 4254  014460  020567  164172         69$:    CMP     R5,DSTAD        ;CHECK R5 UNCHANGED
 4255  014464  001401                         BEQ     70$             ;BR IF OK
 4256  014466  104007                         ERROR   7               ;***************TEST 53 - ERROR 7***************
 4257                                                                 ;R5 CHANGED
 4258                                                                 ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD"
 4259  014470                         70$:
 4260  014470  000405                         BR      ENDT53          ;BR TO END OF THIS TEST
 4261  014472                         ST53:                           ;SOURCE STRING
 4262  014472      061                         .BYTE   61              ;MOST SIGNIFICANT DIGIT
 4263  014473      064                         .BYTE   64
 4264  014474      063                         .BYTE   63
 4265  014475      061                         .BYTE   61
 4266  014476      066                         .BYTE   66
 4267  014477      067                         .BYTE   67
 4268  014500      067                         .BYTE   67
 4269  014501      066                         .BYTE   66
 4270  014502      061                         .BYTE   61
 4271  014503      060                         .BYTE   60
 4272
 4273  014504  016777  164162  164156 ENDT53: MOV     TPSW,@TVECT
 4274  014512  106427  000200                 MTPS    #200
 4275                                 .SBTTL  END OF PASS ROUTINE
 4276
 4277                                 ;;**********************************************************************
 4278                                 ;*INCREMENT THE PASS NUMBER ($PASS)
 4279                                 ;*IF SW12=1 INHIBIT TRACE TRAP
 4280                                 ;*IF THERES A MONITOR GO TO IT
 4281                                 ;*IF THERE ISN'T JUMP TO BEGIN
 4282
 4283  014516                         $EOP:
 4284  014516  000004                         SCOPE
 4285  014520  005067  163756                 CLR     $TSTNM          ;;ZERO THE TEST NUMBER
 4286  014524  005267  164044                 INC     $PASS           ;;INCREMENT THE PASS NUMBER
 4287  014530  042767  100000  164036        BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
 4288  014536  005327                         DEC     (PC)+           ;;LOOP?
```

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 4289  014540  000001                  $EOPCT: .WORD   1
 4290  014542  003024                          BGT     $DOAGN          ;;YES
 4291  014544  012737                          MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
 4292  014546  000001                  $ENDCT: .WORD   1
 4293  014550  014540                          $EOPCT
 4294  014552  104401  014664                  TYPE,   ENDMSG          ;TYPE "END PASS"
 4295  014556  013700  000042          $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
 4296  014562  001414                          BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
 4297  014564  005046                          CLR     -(SP)           ;;INSURE THE "T" BIT IS CLEAR
 4298  014566  012746  014574                  MOV     #$CLR.T,-(SP)   ;;SETUP FOR AN RTI OR RTT
 4299  014572  000426                          BR      $RTRN           ;;GO DO AN RTI OR RTT TO LOAD THE PSW
 4300                                                                  ;;WITH A CLEARED "T" BIT
 4301  014574                          $CLR.T:
 4302  014574  013700  000042                  MOV     @#42,R0         ;;INSURE R0 CONTAINS THE MONITORS
 4303  014600  001405                          BEQ     $DOAGN          ;;RETURN ADDRESS
 4304  014602  000005                          RESET                   ;;CLEAR THE WORLD
 4305  014604  004710                  $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
 4306  014606  000240                          NOP                     ;;SAVE ROOM
 4307  014610  000240                          NOP                     ;;FOR
 4308  014612  000240                          NOP                     ;;ACT11
 4309  014614                          $DOAGN:
 4310  014614  104400                          TRAP                    ;;PUSH OLD PSW AND PC ON STACK
 4311  014616  042716  000020                  BIC     #20,(SP)        ;;CLEAR THE "T" BIT
 4312  014622  032777  010000  163710          BIT     #BIT12,@SWR     ;;RUN WITH TRACE TRAP?
 4313  014630  001005                          BNE     1$              ;;BR IF NO
 4314  014632  005167  000020                  COM     $TBIT           ;;IS IT TIME FOR TRACE TRAP
 4315  014636  100402                          BMI     1$              ;;BR IF NO
 4316  014640  052716  000020                  BIS     #20,(SP)        ;;SET TRACE TRAP
 4317  014644  012746  014652          1$:     MOV     #$LOOP,-(SP)    ;;JUMP TO START OF TEST
 4318  014650  000002                  $RTRN:  RTI                     ;;RETURN--THIS IS CHANGED TO
 4319                                                                  ;;AN "RTT" IF "RTT" IS A LEGAL
 4320                                                                  ;;INSTRUCTION
 4321  014652                          $LOOP:
 4322  014652  000137                          JMP     @(PC)+          ;;RETURN
 4323  014654  001300                  $RTNAD: .WORD   BEGIN
 4324  014656  000000                  $TBIT:  .WORD   0               ;;"T" BIT STATE INDICATOR
 4325  014660     377     377     000  $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
 4326           014664                         .EVEN
 4327  014664  005015  047105  020104  ENDMSG: .ASCIZ  <15><12>/END PASS  /
 4328  014672  040520  051523  020040
 4329  014700     000
 4330           014702                         .EVEN
 4331
 4332
 4333                                  ;ROUTINE TO REPORT UNEXPECTED TRAPS TO LOCATION 0
 4334  014702  011637  000706          TZERO:  MOV     (SP),@#OLDPC    ;GET PC+2 WHERE UNEXPECTED  TRAP OCCURRED
 4335  014706  104200                          ERROR   200             ;**********ERROR 200**********
 4336                                                                  ;UNEXPECTED TRAP TO LOCATION 0
 4337                                                                  ;"OLDPC" CONTAINS THE PC+2 OF THE TRAP OCCURRENCE
 4338  014710  000000                          HALT                    ;PROGRAM MUST BE RESTARTED AT THIS POINT
 4339
 4340
 4341                                  ;ROUTINE TO REPORT UNEXPECTED TRAPS TO LOCATION 4
 4342  014712  011637  000706          TIMTRP: MOV     (SP),@#OLDPC    ;GET PC+2 WHERE UNEXPECTED TIMEOUT TRAP OCCURRED
 4343  014716  104204                          ERROR   204             ;**********ERROR 204**********
 4344                                                                  ;UNEXPECTED TRAP TO LOCATION 4
```

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4345
4346  014720  000000                        HALT                    ;"OLDPC" CONTAINS THE PC+2 OF THE TRAP OCCURRENCE
4347                                                                  ;PROGRAM MUST BE RESTARTED AT THIS POINT
4348
4349                                ;ROUTINE TO REPORT UNEXPECTED TRAPS TO LOCATION 10
4350  014722  011637  000706        ILLTRP: MOV     (SP),@#OLDPC    ;GET PC+2 WHERE UNEXPECTED ILLEGAL INSTRUCTION TRAP OCCU
4351  014726  104210                        ERROR   210             ;**********ERROR 210**********
4352                                                                  ;UNEXPECTED TRAP TO LOCATION 10
4353                                                                  ;"OLDPC" CONTAINS THE PC+2 OF THE TRAP OCCURRENCE
4354  014730  000000                        HALT                    ;PROGRAM MUST BE RESTARTED AT THIS POINT
4355
4356
4357
4358
4359                                ;SUBROUTINE TO SET OPERAND VALUES
4360
4361  014732  012567  163706        NPREP:  MOV     (R5)+,S1LN      ;STORE INSTRUCTION TEST ARGUMENTS
4362  014736  012567  163704                MOV     (R5)+,S1ADR
4363  014742  012567  163702                MOV     (R5)+,S2LN
4364  014746  012567  163700                MOV     (R5)+,S2ADR
4365  014752  012567  163676                MOV     (R5)+,DSTLN
4366  014756  000205                        RTS     R5
4367
4368
4369                                ;SUBROUTINE TO SET UP GENERAL REGISTERS
4370
4371  014760  016700  163660        GENR:   MOV     S1LN,R0         ;TRANSFER INSTRUCTION TEST ARGUMENTS TO
4372  014764  016701  163656                MOV     S1ADR,R1        ;    THE GENERAL REGISTERS
4373  014770  016702  163654                MOV     S2LN,R2
4374  014774  016703  163652                MOV     S2ADR,R3
4375  015000  016704  163650                MOV     DSTLN,R4
4376  015004  016705  163646                MOV     DSTAD,R5
4377  015010  010637  000702                MOV     SP,@#SAVR6      ;COPY STACK POINTER BEFORE INSTRUCTION EXECUTION
4378  015014  062737  000002  000702        ADD     #2,@#SAVR6      ;ADJUST SAVED SP BECAUSE OF JSR TO THIS ROUTINE
4379  015022  000207                        RTS     PC
4380
4381
4382
4333                                ;SUBROUTINE TO CLEAR BUFFER AREA
4384  015024  012700  017044        CLBUF:  MOV     #BUF,R0         ;POINT R0 TO BUFFER AREA
4385  015030  012701  000020                MOV     #20,R1          ;STORE BUFFER LENGTH IN R1
4386  015034  005020                1$:     CLR     (R0)+           ;CLEAR BUFFER
4387  015036  005301                        DEC     R1              ;DECREMENT BUFFER LENGTH
4388  015040  001375                        BNE     1$              ;BR IF NOT FINISHED
4389  015042  000207                        RTS     PC              ;RETURN
4390
4391                                ;SUBROUTINE TO RECORD EXPECTED PSW
4392  015044  012537  000700        XPSW:   MOV     (R5)+,@#EXPPSW  ;STORE EXPECTED PSW VALUE IN "EXPPSW"
4393  015050  106700                        MFPS    R0              ;GET PRESENT PSW
4394  015052  032700  000020                BIT     #TBIT,R0        ;IS T-BIT SET?
4395  015056  001403                        BEQ     1$              ;BR IF NOT
4396  015060  052737  000020  000700        BIS     #TBIT,@#EXPPSW  ;OTHERWISE SET T-BIT IN EXPECTED PSW VALUE
4397  015066  000205                1$:     RTS     R5              ;RETURN
4398
4399
4400
```

```
4401
4402                                        ;SUBROUTINE TO TEST FOR TRANSMIT DONE FLAG
4403  015070  005037  000710          TDONE: CLR     @#TEMP           ;CLEAR TIMER
4404  015074  105777  163564          1$:    TSTB    @TCSR            ;IS SLU READY?
4405  015100  100404                        BMI     RETN             ;BR IF READY
4406  015102  005237  000710                INC     @#TEMP           ;OTHERWISE INCREMENT TIMER
4407  015106  001372                        BNE     1$               ;BR IF NOT TIMED OUT
4408  015110  104300                        ERROR   300              ;**************ERROR 300***************
4409                                                                 ;NEVER GOT TRANSMIT DONE FLAG
4410  015112  000207                RETN:   RTS     PC               ;RETURN
4411
4412
4413                                        ;SUBROUTINE TO HANDLE TTY INTERRUPTS IN INSTRUCTION
4414                                        ;INTERRUPTABILITY TESTS
4415
4416  015114                         INTR:
4417  015114  021667  163554                CMP     (SP),PCI         ;WAS PC AT INSTRUCTION UNDER TEST?
4418  015120  001003                        BNE     SEND             ;BR, IF NO
4419  015122  032704  177400        CKR4:   BIT     #177400,R4       ;IF YES, CHECK UPPER BYTE OF R4
4420  015126  001004                        BNE     CLRINT           ;IF ZERO, INSTRUCTION WAS NOT INTERRUPTED-TRY AGAIN
4421  015130  013777  000554  163530 SEND:  MOV     @#$NULL,@TBUF    ;SEND ANOTHER CHARACTER
4422  015136  000002                        RTI                      ;RETURN
4423  015140  042777  000100  163516 CLRINT: BIC    #100,@TCSR       ;IF NON-ZERO, CLEAR INTERRUPT ENABLE
4424  015146  000002                        RTI                      ;CONTINUE INSTRUCTION
4425
4426
4427
4428                                        .SBTTL  SCOPE HANDLER ROUTINE
4429
4430                                        ;;**********************************************************************
4431                                        ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
4432                                        ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
4433                                        ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
4434                                        ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
4435                                        ;*SW14=1        LOOP ON TEST
4436                                        ;*SW09=1        LOOP ON ERROR
4437                                        ;*SW08=1        LOOP ON TEST IN SWR<5:0>
4438                                        ;*CALL
4439                                        ;*      SCOPE           ;;SCOPE=IOT
4440
4441  015150                         $SCOPE:
4442  015150  032777  040000  163362 1$:    BIT     #BIT14,@SWR      ;;LOOP ON PRESENT TEST?
4443  015156  001065                        BNE     $OVER            ;;YES IF SW14=1
4444                                 ;#####START OF CODE FOR THE XOR TESTER#####
4445  015160  000416                $XTSTR: BR      6$               ;;IF RUNNING ON THE "XOR" TESTER CHANGE
4446                                                                 ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
4447  015162  013746  000004                MOV     @#ERRVEC,-(SP)   ;;SAVE THE CONTENTS OF THE ERROR VECTOR
4448  015166  012737  015206  000004        MOV     #5$,@#ERRVEC     ;;SET FOR TIMEOUT
4449  015174  005737  177060                TST     @#177060         ;;TIME OUT ON XOR?
4450  015200  012637  000004                MOV     (SP)+,@#ERRVEC   ;;RESTORE THE ERROR VECTOR
4451  015204  000434                        BR      $SVLAD           ;;GO TO THE NEXT TEST
4452  015206  022626                5$:     CMP     (SP)+,(SP)+      ;;CLEAR THE STACK AFTER A TIME OUT
4453  015210  012637  000004                MOV     (SP)+,@#ERRVEC   ;;RESTORE THE ERROR VECTOR
4454  015214  000422                        BR      7$               ;;LOOP ON THE PRESENT TEST
4455  015216                         6$:;#####END OF CODE FOR THE XOR TESTER#####
4456  015216  032777  000400  163314        BIT     #BIT08,@SWR      ;;LOOP ON SPEC. TEST?
```

```
4457  015224  001407                          BEQ     2$              ;;BR IF NO
4458  015226  017746  163306                  MOV     @SWR,-(SP)      ;;SET DESIRED TEST NUM. FROM SWR
4459  015232  042716  000300                  BIC     #$SWRMK,(SP)    ;;STRIP AWAY UNDESIRED BITS
4460  015236  122667  163240                  CMPB    (SP)+,$TSTNM    ;;ON THE RIGHT TEST?
4461  015242  001433                          BEQ     $OVER           ;;BR IF YES
4462  015244  105767  163233          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
4463  015250  001412                          BEQ     $SVLAD          ;;BR IF NO
4464  015252  032777  001000  163260          BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
4465  015260  001404                          BEQ     4$              ;;BR IF NO
4466  015262  016767  163222  163216  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
4467  015270  000420                          BR      $OVER
4468  015272  105067  163205          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
4469  015276  105267  163200          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
4470  015302  116767  163174  163262          MOVB    $TSTNM,$TESTN   ;;SET TEST NUMBER IN APT MAILBOX
4471  015310  011667  163172                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
4472  015314  011667  163170                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
4473  015320  005067  163234                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
4474  015324  112767  000001  163163          MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
4475  015332  016777  163144  163202  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
4476  015340  016716  163142                  MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
4477  015344  000002                          RTI                     ;;FIXES PS
4478
4479                                  .SBTTL  POWER DOWN AND UP ROUTINES
4480
4481                                  ;;**************************************************************************
4482                                  ;POWER DOWN ROUTINE
4483  015346  012737  015530  000024  $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
4484  015354  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
4485  015362  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
4486  015364  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
4487  015366  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
4488  015370  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
4489  015372  010446                          MOV     R4,-(SP)        ;;PUSH R4 ON STACK
4490  015374  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
4491  015376  017746  163136                  MOV     @SWR,-(SP)      ;;PUSH @SWR ON STACK
4492  015402  010667  000126                  MOV     SP,$SAVR6       ;;SAVE SP
4493  015406  012737  015420  000024          MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
4494  015414  000000                          HALT
4495  015416  000776                          BR      .-2             ;;HANG UP
4496
4497                                  ;;**************************************************************************
4498                                  ;POWER UP ROUTINE
4499  015420  012737  015530  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
4500  015426  016706  000102                  MOV     $SAVR6,SP       ;;GET SP
4501  015432  005067  000076                  CLR     $SAVR6          ;;WAIT LOOP FOR THE TTY
4502  015436  005267  000072          1$:     INC     $SAVR6          ;;WAIT FOR THE INC
4503  015442  001375                          BNE     1$              ;;OF  WORD
4504  015444  005067  163032                  CLR     $TSTNM
4505  015450  012677  163064                  MOV     (SP)+,@SWR      ;;POP STACK INTO @SWR
4506  015454  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
4507  015456  012604                          MOV     (SP)+,R4        ;;POP STACK INTO R4
4508  015460  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
4509  015462  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
4510  015464  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
4511  015466  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
4512  015470  012737  015346  000024          MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
```

```
4513  015476  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
4514  015504  104401                          TYPE                    ;REPORT THE POWER FAILURE
4515  015506  015536                  $PWRMG: .WORD   $POWER          ;;POWER FAIL MESSAGE POINTER
4516  015510  012716                          MOV     (PC)+,(SP)      ;;RESTART AT $LOOP
4517  015512  014652                  $PWRAD: .WORD   $LOOP           ;;RESTART ADDRESS
4518  015514  042766  000020  000002          BIC     #20,2(SP)       ;;CLEAR "T" BIT
4519  015522  005067  177130                  CLR     $TBIT           ;;CLEAR THE "T" BIT FLAG
4520  015526  000002                          RTI
4521  015530  000000                  $ILLUP: HALT                    ;;THE POWER UP SEQUENCE WAS STARTED
4522  015532  000776                          BR      .-2             ;; BEFORE THE POWER DOWN WAS COMPLETE
4523  015534  000000                  $SAVR6: 0                       ;;PUT THE SP HERE
4524  015536  005015  047520  042527  $POWER: .ASCIZ  <15><12>"POWER"
4525  015544  000122
4526                                          .EVEN
4527
4528                                  .SBTTL  ERROR HANDLER ROUTINE
4529
4530                                  ;;**********************************************************************
4531                                  ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
4532                                  ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
4533                                  ;*AND TYPE OUT THE PC OF THE ERROR INSTRUCTION
4534                                  ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
4535                                  ;*SW15=1         HALT ON ERROR
4536                                  ;*SW13=1         INHIBIT ERROR TYPEOUTS
4537                                  ;*SW09=1         LOOP ON ERROR
4538                                  ;*CALL
4539                                  ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER
4540
4541  015546                  $ERROR:
4542  015546  105267  162731          7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
4543  015552  001775                          BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
4544  015554  016777  162722  162760          MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
4545  015562  005267  162724                  INC     $ERTTL          ;;INC THE ERROR COUNT
4546  015566  011667  162724                  MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
4547  015572  162767  000002  162716          SUB     #2,$ERRPC
4548  015600  117767  162712  162706          MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
4549  015606  032777  020000  162724          BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
4550  015614  001007                          BNE     20$             ;;SKIP TYPEOUTS
4551  015616  104401  000563                  TYPE    ,$CRLF
4552  015622  016746  162670                  MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
4553                                                                  ;;ERROR ADDRESS
4554  015626  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
4555  015630  104401  000563                  TYPE    ,$CRLF
4556  015634                          20$:
4557  015634  122767  000001  162744          CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
4558  015642  001007                          BNE     2$              ;;NO,SKIP APT ERROR REPORT
4559  015644  116767  162644  000004          MOVB    $ITEMB,21$      ;;SET ITEM NUMBER AS ERROR NUMBER
4560  015652  004767  000656                  JSR     PC,$ATY4        ;;REPORT FATAL ERROR TO APT
4561  015656     000                  21$:    .BYTE   0
4562  015657     000                          .BYTE   0
4563  015660  000777                  22$:    BR      22$             ;;APT ERROR LOOP
4564  015662  005777  162652          2$:     TST     @SWR            ;;HALT ON ERROR
4565  015666  100001                          BPL     3$              ;;SKIP IF CONTINUE
4566  015670  000000                          HALT                    ;;HALT ON ERROR!
4567  015672  032777  001000  162640  3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
4568  015700  001402                          BEQ     4$              ;;BR IF NO
```

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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 86
CVKAJB.P11    22-JAN-82 08:49          ERROR HANDLER ROUTINE

 4569  015702  016716  162602                MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
 4570  015706  005767  162646          4$:   TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
 4571  015712  001402                        BEQ     5$              ;;BR IF NONE
 4572  015714  016716  162640                MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
 4573  015720                          5$:
 4574  015720  022737  014604  000042        CMP     #$ENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
 4575  015726  001001                        BNE     6$              ;;BRANCH IF NO
 4576  015730  000000                        HALT                    ;;YES
 4577  015732                          6$:
 4578  015732  000002                        RTI                     ;;RETURN
 4579
 4580                                  .SBTTL  TYPE ROUTINE
 4581
 4582                                  ;;**********************************************************************
 4583                                  ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
 4584                                  ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
 4585                                  ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
 4586                                  ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
 4587                                  ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
 4588                                  ;*
 4589                                  ;*CALL:
 4590                                  ;*1) USING A TRAP INSTRUCTION
 4591                                  ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
 4592                                  ;*OR
 4593                                  ;*      TYPE
 4594                                  ;*      MESADR
 4595                                  ;*
 4596
 4597  015734  105767  162617          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
 4598  015740  100002                        BPL     1$              ;;BR IF YES
 4599  015742  000000                        HALT                    ;;HALT HERE IF NO TERMINAL
 4600  015744  000430                        BR      3$              ;;LEAVE
 4601  015746  010046                  1$:   MOV     R0,-(SP)        ;;SAVE R0
 4602  015750  017600  000002                MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
 4603  015754  122767  000001  162624        CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
 4604  015762  001011                        BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
 4605  015764  132767  000100  162615        BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
 4606  015772  001405                        BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
 4607  015774  010067  000004                MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
 4608  016000  004767  000520                JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
 4609  016004  000000                  61$:  .WORD   0               ;;MESSAGE ADDRESS
 4610  016006  132767  000040  162573  62$:  BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
 4611  016014  001003                        BNE     60$             ;;YES,SKIP TYPE OUT
 4612  016016  112046                  2$:   MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
 4613  016020  001005                        BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
 4614  016022  005726                        TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
 4615  016024  012600                  60$:  MOV     (SP)+,R0        ;;RESTORE R0
 4616  016026  062716  000002          3$:   ADD     #2,(SP)         ;;ADJUST RETURN PC
 4617  016032  000002                        RTI                     ;;RETURN
 4618  016034  122716  000011          4$:   CMPB    #HT,(SP)        ;;BRANCH IF <HT>
 4619  016040  001430                        BEQ     8$
 4620  016042  122716  000200                CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
 4621  016046  001006                        BNE     5$
 4622  016050  005726                        TST     (SP)+           ;;POP  <CR><LF> EQUIV
 4623  016052  104401                        TYPE                    ;;TYPE A CR AND LF
 4624  016054  000563                        $CRLF
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.MAIN.  MACY11 30(1046)  22-JAN-82  08:50  PAGE 87
CVKAJB.P11    22-JAN-82 08:49          TYPE ROUTINE

 4625  016056  105067  000202                CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
 4626  016062  000755                        BR      2$              ;;GET NEXT CHARACTER
 4627  016064  004767  000056        5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
 4628  016070  126726  162462        6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
 4629  016074  001350                        BNE     2$              ;;IF NO GO GET NEXT CHAR.
 4630  016076  016746  162452                MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
 4631                                                                ;;AND THE NULL CHAR.
 4632  016102  105366  000001        7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
 4633  016106  002770                        BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
 4634  016110  004767  000032                JSR     PC,$TYPEC       ;;GO TYPE A NULL
 4635  016114  105367  000144                DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
 4636  016120  000770                        BR      7$              ;;LOOP
 4637
 4638                                  ;HORIZONTAL TAB PROCESSOR
 4639
 4640  016122  112716  000040        8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
 4641  016126  004767  000014        9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
 4642  016132  132767  000007  000124        BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
 4643  016140  001372                        BNE     9$              ;;TAB STOP
 4644  016142  005726                        TST     (SP)+           ;;POP SPACE OFF STACK
 4645  016144  000724                        BR      2$              ;;GET NEXT CHARACTER
 4646  016146                        $TYPEC:
 4647  016146  105777  162372                TSTB    @$TKS           ;;CHAR IN KYBD BUFFER?                  ;MJD001
 4648  016152  100022                        BPL     10$             ;;BR IF NOT                             ;MJD001
 4649  016154  017746  162366                MOV     @$TKB,-(SP)     ;;GET CHAR                              ;MJD001
 4650  016160  042716  177600                BIC     #177600,(SP)    ;;STRIP EXTRANEOUS BITS                 ;MJD001
 4651  016164  122716  000023                CMPB    #$XOFF,(SP)     ;;WAS CHAR XOFF                         ;MJD001
 4652  016170  001012                        BNE     102$            ;;BR IF NOT                             ;MJD001
 4653  016172                        101$:                                                                   ;MJD001
 4654  016172  105777  162346                TSTB    @$TKS           ;;WAIT FOR CHAR                         ;MJD001
 4655  016176  100375                        BPL     101$                                                    ;MJD001
 4656  016200  117716  162342                MOVB    @$TKB,(SP)      ;;GET CHAR                              ;MJD001
 4657  016204  042716  177600                BIC     #177600,(SP)    ;;STRIP IT                              ;MJD001
 4658  016210  122716  000021                CMPB    #$XON,(SP)      ;;WAS IT XON?                           ;MJD001
 4659  016214  001366                        BNE     101$            ;;BR IF NOT                             ;MJD001
 4660  016216                        102$:                                                                   ;MJD001
 4661  016216  005726                        TST     (SP)+           ;;FIX STACK                             ;MJD001
 4662  016220                        10$:                                                                    ;MJD001
 4663  016220  105777  162324                TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 4664  016224  100375                        BPL     10$                                                     ;MJD001
 4665  016226  116677  000002  162316        MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 4666  016234  122766  000015  000002        CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 4667  016242  001003                        BNE     1$              ;;BRANCH IF NO
 4668  016244  105067  000014                CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 4669  016250  000406                        BR      $TYPEX          ;;EXIT
 4670  016252  122766  000012  000002  1$:   CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 4671  016260  001402                        BEQ     $TYPEX          ;;BRANCH IF YES
 4672  016262  105227                        INCB    (PC)+           ;;COUNT THE CHARACTER
 4673  016264  000000        $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 4674  016266  000207        $TYPEX: RTS     PC
 4675
 4676
 4677                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
 4678
 4679                                  ;;**************************************************************
 4680                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
```

```
                                        ;*OCTAL (ASCII) NUMBER AND TYPE IT.
                                        ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
                                        ;*CALL:
                                        ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                        ;*      TYPOS                   ;;CALL FOR TYPEOUT
                                        ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
                                        ;*      .BYTE   M               ;;M=1 OR 0
                                        ;*                                      ;;1=TYPE LEADING ZEROS
                                        ;*                                      ;;0=SUPPRESS LEADING ZEROS
                                        ;*
                                        ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
                                        ;*$TYPOS OR $TYPOC
                                        ;*CALL:
                                        ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                        ;*      TYPON                   ;;CALL FOR TYPEOUT
                                        ;*
                                        ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
                                        ;*CALL:
                                        ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                        ;*      TYPOC                   ;;CALL FOR TYPEOUT

016270  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
016274  116667  000001  000211          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
016302  112667  000207                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
016306  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
016312  000406                          BR      $TYPON
016314  112767  000001  000171  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
016322  112767  000006  000165          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
016330  112767  000005  000154  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
016336  010346                          MOV     R3,-(SP)        ;;SAVE R3
016340  010446                          MOV     R4,-(SP)        ;;SAVE R4
016342  010546                          MOV     R5,-(SP)        ;;SAVE R5
016344  116704  000145                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
016350  005404                          NEG     R4
016352  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
016356  110467  000132                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
016362  116704  000125                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
016366  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
016372  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
016374  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO 'C'
016376  000404                          BR      3$              ;;GO DO MSB
016400  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
016402  006105                          ROL     R5
016404  006105                          ROL     R5
016406  010503                          MOV     R5,R3
016410  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
016412  105367  000076                  DECB    $OMODE          ;;TYPE THIS DIGIT?
016416  100016                          BPL     7$              ;;BR IF NO
016420  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
016424  001002                          BNE     4$              ;;TEST FOR 0
016426  005704                          TST     R4              ;;SUPPRESS THIS 0?
016430  001403                          BEQ     5$              ;;BR IF YES
016432  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
016434  052703  000060                  BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
016440  052703  000040          5$:     BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
016444  110367  000040                  MOVB    R3,8$           ;;SAVE FOR TYPING
```

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 4737  016450  104401  016510                 TYPE    ,8$             ;;GO TYPE THIS DIGIT
 4738  016454  105367  000032          7$:    DECB    $OCNT           ;;COUNT BY 1
 4739  016460  003347                         BGT     2$              ;;BR IF MORE TO DO
 4740  016462  002402                         BLT     6$              ;;BR IF DONE
 4741  016464  005204                         INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
 4742  016466  000744                         BR      2$              ;;GO DO THE LAST DIGIT
 4743  016470  012605                 6$:     MOV     (SP)+,R5        ;;RESTORE R5
 4744  016472  012604                         MOV     (SP)+,R4        ;;RESTORE R4
 4745  016474  012603                         MOV     (SP)+,R3        ;;RESTORE R3
 4746  016476  016666  000002  000004        MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
 4747  016504  012616                         MOV     (SP)+,(SP)
 4748  016506  000002                         RTI                     ;;RETURN
 4749  016510     000          8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
 4750  016511     000                  .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
 4751  016512     000          $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
 4752  016513     000          $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
 4753  016514  000000          $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
 4754
 4755                          .SBTTL  APT COMMUNICATIONS ROUTINE
 4756
 4757                          ;;**************************************************************************
 4758  016516  112767  000001  000236 $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
 4759  016524  112767  000001  000226 $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
 4760  016532  000403                         BR      $ATYC
 4761  016534  112767  000001  000220 $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
 4762  016542                         $ATYC:
 4763  016542  010046                         MOV     R0,-(SP)        ;;PUSH R0 ON STACK
 4764  016544  010146                         MOV     R1,-(SP)        ;;PUSH R1 ON STACK
 4765  016546  105767  000206                 TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
 4766  016552  001450                         BEQ     5$              ;;IF NOT:  BR
 4767  016554  122767  000001  162024        CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
 4768  016562  001031                         BNE     3$              ;;IF NOT:  BR
 4769  016564  132767  000100  162015        BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
 4770  016572  001425                         BEQ     3$              ;;IF NOT:  BR
 4771  016574  017600  000004                 MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
 4772  016600  062766  000002  000004        ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
 4773  016606  005767  161754          1$:    TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
 4774  016612  001375                         BNE     1$              ;;IF NOT:  WAIT
 4775  016614  010067  161762                 MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
 4776  016620  105720                 2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
 4777  016622  001376                         BNE     2$
 4778  016624  166700  161752                 SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
 4779  016630  006200                         ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
 4780  016632  010067  161746                 MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
 4781  016636  012767  000004  161722        MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
 4782  016644  000413                         BR      5$
 4783  016646  017667  000004  000016 3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
 4784  016654  062766  000002  000004        ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
 4785  016662  016746  161110                 MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
 4786  016666  004767  177042                 JSR     PC,$TYPE        ;;CALL TYPE MACRO
 4787  016672  000000          4$:     .WORD   0
 4788  016674                  5$:
 4789  016674  105767  000062          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
 4790  016700  001416                         BEQ     12$             ;;IF NOT:  BR
 4791  016702  005767  161700                 TST     $ENV            ;;RUNNING UNDER APT?
 4792  016706  001413                         BEQ     12$             ;;IF NOT:  BR
```

```
 4793  016710  005767  161652          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
 4794  016714  001375                          BNE     11$             ;;IF NOT:  WAIT
 4795  016716  017667  000004  161644          MOV     @4(SP),$FATAL   ;;GET ERROR #
 4796  016724  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
 4797  016732  005267  161630                  INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
 4798  016736  105067  000020          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
 4799  016742  105067  000013                  CLRB    $LFLG           ;;CLEAR LOG FLAG
 4800  016746  105067  000006                  CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
 4801  016752  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
 4802  016754  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
 4803  016756  000207                          RTS     PC              ;;RETURN
 4804  016760     000          $MFLG:  .BYTE   0               ;;MESSG. FLAG
 4805  016761     000          $LFLG:  .BYTE   0               ;;LOG FLAG
 4806  016762     000          $FFLG:  .BYTE   0               ;;FATAL FLAG
 4807          016764                  .EVEN
 4808          000200          APTSIZE=200
 4809          000001          APTENV=001
 4810          000100          APTSPOOL=100
 4811          000040          APTCSUP=040
 4812
 4813                          .SBTTL  TRAP DECODER
 4814
 4815                          ;;**************************************************************************
 4816                          ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
 4817                          ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
 4818                          ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
 4819                          ;*GO TO THAT ROUTINE.
 4820
 4821  016764  010046          $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
 4822  016766  016600  000002          MOV     2(SP),R0        ;;GET TRAP ADDRESS
 4823  016772  005740                  TST     -(R0)           ;;BACKUP BY 2
 4824  016774  111000                  MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
 4825  016776  006300                  ASL     R0              ;;POSITION FOR INDEXING
 4826  017000  016000  017020          MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
 4827  017004  000200                  RTS     R0              ;;GO TO ROUTINE
 4828
 4829
 4830                          ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
 4831
 4832  017006  011646          $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
 4833  017010  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
 4834  017016  000002                  RTI                     ;;RESTORE THE PSW
 4835
 4836                          .SBTTL  TRAP TABLE
 4837
 4838                          ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
 4839                          ;*BY THE "TRAP" INSTRUCTION.
 4840
 4841                          ;       ROUTINE
 4842                          ;       -------
 4843  017020  017006          $TRPAD: .WORD   $TRAP2
 4844  017022  015734                  $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
 4845  017024  016314                  $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
 4846  017026  016270                  $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
 4847  017030  016330                  $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
 4848
```

```
 4849
 4850
 4851  017032  005015  053103  040513  NAME:   .ASCIZ  <15><12>/CVKAJB/
 4852  017040  041112     000
 4853          017044                  .EVEN
 4854
 4855  017044  000020                  BUF:    .BLKW   20
 4856          000001                  .END
```

```
ABASE = 177560            488#   605    646
ACDW1 = 000000            605
ACDW2 = 000000            605
ACPUOP= 000000            605    620
ADDN  = 076050            477#   778    874    970   1066   1158   1226   1313   1402   1489   1574   1658   1726
                         1814   1903   1991   2078   2180
ADDNPC  006106           2169   2180#
ADDW0 = 000000            605
ADDW1 = 000000            605
ADDW10= 000000            605
ADDW11= 000000            605
ADDW12= 000000            605
ADDW13= 000000            605
ADDW14= 000000            605
ADDW15= 000000            605
ADDW2 = 000000            605
ADDW3 = 000000            605
ADDW4 = 000000            605
ADDW5 = 000000            605
ADDW6 = 000000            605
ADDW7 = 000000            605
ADDW8 = 000000            605
ADDW9 = 000000            605
ADEVCT= 000000            605    611
ADEVM = 000000            605
AENV  = 000000            605    616
AENVM = 000000            605    617
AFATAL= 000000            605    608
AMADR1= 000000            605    633
AMADR2= 000000            605    637
AMADR3= 000000            605    640
AMADR4= 000000            605    643
AMAMS1= 000000            605    627
AMAMS2= 000000            605    635
AMAMS3= 000000            605    638
AMAMS4= 000000            605    641
AMSGAD= 000000            605    613
AMSGLG= 000000            605    614
AMSGTY= 000000            605    607
AMTYP1= 000000            605    628
AMTYP2= 000000            605    636
AMTYP3= 000000            605    639
AMTYP4= 000000            605    642
ANS10   003636           1446   1466#
ANS11   004050           1533   1551#
ANS12   004262           1618   1636#
ANS14   004657           1770   1791#
ANS15   005075           1858   1879#
ANS16   005313           1947   1968#
ANS17   005530           2035   2055#
ANS20   005744           2122   2142#
ANS21   006270           2226   2248#
ANS22   006523           2320   2341#
ANS23   006737           2407   2428#
ANS24   007266           2513   2535#
ANS6    003204           1270   1290#
```

```
ANS7    003420          1357    1377#
APASS = 000000           605     610
APRIOR= 000000           605
APTCSU= 000040           480#    4610    4811#
APTENV= 000001           478#    4557    4603    4767    4809#
APTSIZ= 000200           477#     734    4808#
APTSPO= 000100           479#    4605    4769    4810#
ASWREG= 000000           605     618
ATESIN= 000000           605     609
AUNIT = 000000           605     612
AUSWR = 000000           605     619
AVECT1= 000060           489#    605     644
AVECT2= 000000           605     645
BADR6   000704           681#    1195*   1263*   1350*   1439*   1526*   1611*   1695*   1763*   1851*   1940*   2028*   2115*
                        2219*   2313*   2400*   2506*   2602*   2676*   2751*   2827*   2904*   2976*   3050*   3126*   3199*
                        3273*   3347*   3421*   3494*   3568*   3641*   3732*
BEGIN   001300           739     754#    4323
BIT0  = 000001           462#    2157    2443    3668    4193
BIT00 = 000001           452#     462
BIT01 = 000002           451#     461
BIT02 = 000004           450#     460
BIT03 = 000010           449#     459
BIT04 = 000020           448#     458
BIT05 = 000040           447#     457
BIT06 = 000100           446#     456
BIT07 = 000200           445#     455
BIT08 = 000400           444#     454    4456
BIT09 = 001000           443#     453    4464    4567
BIT1  = 000002           461#
BIT10 = 002000           442#
BIT11 = 004000           441#
BIT12 = 010000           440#    4312
BIT13 = 020000           439#    4549
BIT14 = 040000           438#    4442
BIT15 = 100000           437#
BIT2  = 000004           460#
BIT3  = 000010           459#
BIT4  = 000020           458#
BIT5  = 000040           457#
BIT6  = 000100           456#
BIT7  = 000200           455#
BIT8  = 000400           454#
BIT9  = 001000           453#
BPTVEC= 000014           469#
BUF     017044           670    4384    4855#
CCODES  000676           678#    1160*   1161*   1162    1228*   1229*   1230    1315*   1316*   1317    1404*   1405*   1406
                        1491*   1492*   1493    1576*   1577*   1578    1660*   1661*   1662    1728*   1729*   1730    1816*
                        1817*   1818    1905*   1906*   1907    1993*   1994*   1995    2080*   2081*   2082    2182*   2185*
                        2186    2278*   2279*   2280    2365*   2366*   2367    2469*   2472*   2473    2565*   2566*   2567
                        2639*   2640*   2641    2714*   2715*   2716    2790*   2791*   2792    2867*   2868*   2869    2939*
                        2940*   2941    3013*   3014*   3015    3089*   3090*   3091    3162*   3163*   3164    3236*   3237*
                        3238    3310*   3311*   3312    3384*   3385*   3386    3457*   3458*   3459    3531*   3532*   3533
                        3604*   3605*   3606    3693*   3696*   3697    3773*   3774*   3775    3847*   3848*   3849    3920*
                        3921*   3922    3993*   3994*   3995    4066*   4067*   4068    4139*   4140*   4141    4218*   4221*
                        4222
CKR4    015122          4419#
```

```
CLBUF   015024   768  864  960 1056 1152 1221 1307 1396 1483 1568 1652 1720 1808
                1897 1985 2072 2168 2270 2358 2454 4384#
CLRINT  015140  4420 4423#
CMPN  = 076052   477# 2563 2637 2712 2788 2865 2937 3011 3087 3160 3234 3308 3382
                3455 3529 3602 3691
CMPNPC  012656  3679 3691#
CR    = 000015   377# 4666 4676
CRLF  = 000200   378# 4620 4676
CVTCON  014260  4192 4194 4197#
CVTNL = 076053   477# 3771 3845 3918 3991 4064 4137 4216
CVTPC   014356  4204 4216#
DDISP = 177570   384#  588
DISPLA  000542   588#  731* 4475* 4544*
DISPRE  000174   502#  731
DSTAD   000656   670#  811  907 1003 1099 1189 1257 1271 1344 1358 1433 1447 1520
                1534 1605 1619 1689 1757 1771 1845 1859 1934 1948 2022 2036 2109
                2123 2213 2227 2307 2321 2394 2408 2500 2514 2595 2669 2744 2820
                2897 2969 3043 3119 3192 3266 3340 3414 3487 3561 3634 3725 3807
                3881 3954 4027 4100 4173 4254 4376
DSTLN   000654   669# 1185 1253 1272 1340 1359 1429 1448 1516 1535 1601 1620 1685
                1753 1772 1841 1860 1930 1949 2018 2037 2105 2124 2209 2228 2303
                2322 2390 2409 2496 2515 2590 2664 2739 2815 2892 2964 3038 3114
                3187 3261 3335 3409 3482 3556 3629 3720 3802 3876 3949 4022 4095
                4168 4249 4365* 4375
DSWR  = 177570   383#  587
EMTVEC= 000030   472#  703* 704*
ENDMSG  014664  4294 4327#
ENDT1   001552   783  840  850#
ENDT2   002034   879  936  946#
ENDT21  006276  2237 2256#
ENDT24  007274  2524 2543#
ENDT3   002316   975 1032 1042#
ENDT4   002600  1071 1128 1138#
ENDT44  013012  3738 3751#
ENDT53  014504  4260 4273#
ERRVEC= 000004   465# 4447 4448* 4450* 4453*
EXPPSW  000700   679#  819  841  915  937 1011 1033 1107 1129 1162 1230 1317 1406
                1493 1578 1662 1730 1818 1907 1995 2082 2186 2280 2367 2473 2567
                2641 2716 2792 2869 2941 3015 3091 3164 3238 3312 3386 3459 3533
                3606 3697 3775 3849 3922 3995 4068 4141 4222 4392* 4396*
FILL    000660   671#  806  902  998 1094
GENR    014760   775  871  967 1063 1155 1224 1310 1399 1486 1571 1653 1723 1811
                1900 1988 2075 2178 2273 2361 2464 2559 2633 2709 2784 2861 2933
                3007 3083 3157 3230 3304 3378 3452 3526 3599 3688 3768 3841 3914
                3987 4060 4133 4213 4371#
GNS   = ****** U  501 4844 4845 4846 4847
HT    = 000011   375# 4618 4676
ILLTRP  014722   511 4350#
INTR    015114  2170 2456 3680 4205 4416#
IOTVEC= 000020   470#  701* 702*
LF    = 000012   376# 4670 4676
N     = 000010   485# 762# 780 781# 788 789# 793 794# 798 799# 803 804# 808
                809# 813 814# 821 822# 828 829# 836 837# 858# 876 877# 884
                885# 889 890# 894 895# 899 900# 904 905# 909 910# 917 918#
                924 925# 932 933# 954# 972 973# 980 981# 985 986# 990 991#
                995 996# 1000 1001# 1005 1006# 1013 1014# 1020 1021# 1028 1029# 1050#
```

	1068	1069#	1076	1077#	1081	1082#	1086	1087#	1091	1092#	1096	1097#	1101
	1102#	1109	1110#	1116	1117#	1124	1125#	1146#	1164	1165#	1171	1172#	1175
	1176#	1179	1180#	1183	1184#	1187	1188#	1191	1192#	1196	1197#	1215#	1232
	1233#	1239	1240#	1243	1244#	1247	1248#	1251	1252#	1255	1256#	1259	1260#
	1264	1265#	1275	1276#	1301#	1319	1320#	1326	1327#	1330	1331#	1334	1335#
	1338	1339#	1342	1343#	1346	1347#	1351	1352#	1362	1363#	1390#	1408	1409#
	1415	1416#	1419	1420#	1423	1424#	1427	1428#	1431	1432#	1435	1436#	1440
	1441#	1451	1452#	1477#	1495	1496#	1502	1503#	1506	1507#	1510	1511#	1514
	1515#	1518	1519#	1522	1523#	1527	1528#	1538	1539#	1562#	1580	1581#	1587
	1588#	1591	1592#	1595	1596#	1599	1600#	1603	1604#	1607	1608#	1612	1613#
	1623	1624#	1646#	1664	1665#	1671	1672#	1675	1676#	1679	1680#	1683	1684#
	1687	1688#	1691	1692#	1696	1697#	1714#	1732	1733#	1739	1740#	1743	1744#
	1747	1748#	1751	1752#	1755	1756#	1759	1760#	1764	1765#	1775	1776#	1802#
	1820	1821#	1827	1828#	1831	1832#	1835	1836#	1839	1840#	1843	1844#	1847
	1848#	1852	1853#	1863	1864#	1891#	1909	1910#	1916	1917#	1920	1921#	1924
	1925#	1928	1929#	1932	1933#	1936	1937#	1941	1942#	1952	1953#	1979#	1997
	1998#	2004	2005#	2008	2009#	2012	2013#	2016	2017#	2020	2021#	2024	2025#
	2029	2030#	2040	2041#	2066#	2084	2085#	2091	2092#	2095	2096#	2099	2100#
	2103	2104#	2107	2108#	2111	2112#	2116	2117#	2127	2128#	2153#	2188	2189#
	2195	2196#	2199	2200#	2203	2204#	2207	2208#	2211	2212#	2215	2216#	2220
	2221#	2231	2232#	2264#	2282	2283#	2289	2290#	2293	2294#	2297	2298#	2301
	2302#	2305	2306#	2309	2310#	2314	2315#	2325	2326#	2352#	2369	2370#	2376
	2377#	2380	2381#	2384	2385#	2388	2389#	2392	2393#	2396	2397#	2401	2402#
	2412	2413#	2439#	2475	2476#	2482	2483#	2486	2487#	2490	2491#	2494	2495#
	2498	2499#	2502	2503#	2507	2508#	2518	2519#	2551#	2569	2570#	2576	2577#
	2580	2581#	2584	2585#	2588	2589#	2592	2593#	2597	2598#	2603	2604#	2625#
	2643	2644#	2650	2651#	2654	2655#	2658	2659#	2662	2663#	2666	2667#	2671
	2672#	2677	2678#	2701#	2718	2719#	2725	2726#	2729	2730#	2733	2734#	2737
	2738#	2741	2742#	2746	2747#	2752	2753#	2776#	2794	2795#	2801	2802#	2805
	2806#	2809	2810#	2813	2814#	2817	2818#	2822	2823#	2828	2829#	2853#	2871
	2872#	2878	2879#	2882	2883#	2886	2887#	2890	2891#	2894	2895#	2899	2900#
	2905	2906#	2925#	2943	2944#	2950	2951#	2954	2955#	2958	2959#	2962	2963#
	2966	2967#	2971	2972#	2977	2978#	2999#	3017	3018#	3024	3025#	3028	3029#
	3032	3033#	3036	3037#	3040	3041#	3045	3046#	3051	3052#	3075#	3093	3094#
	3100	3101#	3104	3105#	3108	3109#	3112	3113#	3116	3117#	3121	3122#	3127
	3128#	3149#	3166	3167#	3173	3174#	3177	3178#	3181	3182#	3185	3186#	3189
	3190#	3194	3195#	3200	3201#	3222#	3240	3241#	3247	3248#	3251	3252#	3255
	3256#	3259	3260#	3263	3264#	3268	3269#	3274	3275#	3296#	3314	3315#	3321
	3322#	3325	3326#	3329	3330#	3333	3334#	3337	3338#	3342	3343#	3348	3349#
	3370#	3388	3389#	3395	3396#	3399	3400#	3403	3404#	3407	3408#	3411	3412#
	3416	3417#	3422	3423#	3444#	3461	3462#	3468	3469#	3472	3473#	3476	3477#
	3480	3481#	3484	3485#	3489	3490#	3495	3496#	3518#	3535	3536#	3542	3543#
	3546	3547#	3550	3551#	3554	3555#	3558	3559#	3563	3564#	3569	3570#	3591#
	3608	3609#	3615	3616#	3619	3620#	3623	3624#	3627	3628#	3631	3632#	3636
	3637#	3642	3643#	3664#	3699	3700#	3706	3707#	3710	3711#	3714	3715#	3718
	3719#	3722	3723#	3727	3728#	3733	3734#	3760#	3777	3778#	3784	3785#	3788
	3789#	3792	3793#	3798	3799#	3804	3805#	3809	3810#	3833#	3851	3852#	3858
	3859#	3862	3863#	3866	3867#	3872	3873#	3878	3879#	3883	3884#	3906#	3924
	3925#	3931	3932#	3935	3936#	3939	3940#	3945	3946#	3951	3952#	3956	3957#
	3979#	3997	3998#	4004	4005#	4008	4009#	4012	4013#	4018	4019#	4024	4025#
	4029	4030#	4052#	4070	4071#	4077	4078#	4081	4082#	4085	4086#	4091	4092#
	4097	4098#	4102	4103#	4125#	4143	4144#	4150	4151#	4154	4155#	4158	4159#
	4164	4165#	4170	4171#	4175	4176#	4189#	4224	4225#	4231	4232#	4235	4236#
	4239	4240#	4245	4246#	4251	4252#	4256	4257#					
NAME 017032	740	4851#											
NPREP 014732	762	858	954	1050	1146	1215	1301	1390	1477	1562	1646	1714	1802

```
                    1891    1979    2066    2162    2264    2352    2448    2551    2625    2701    2776    2853    2925
                    2999    3075    3149    3222    3296    3370    3444    3518    3591    3673    3760    3833    3906
                    3979    4052    4125    4198    4361#
NXM     = 177777     487#
OLDPC     000706     682#  4334*   4342*   4350*
PCI       000674     677#  2169*   2455*   3679*   4204*   4417
PIRQ    = 177772     382#
PIRQVE= 000240       476#
PR0     = 000000     399#
PR1     = 000040     400#
PR2     = 000100     401#
PR3     = 000140     402#
PR4     = 000200     403#
PR5     = 000240     404#
PR6     = 000300     405#
PR7     = 000340     406#
PS      = 177776     379#   380
PSW     = 177776     380#
PWRVEC= 000024       471#   707*    708*   4483*   4484*   4493*   4499*   4512*   4513*
READDN    006100    2178#  2184
RECMPN    012650    3688#  3695
RECVTN    014350    4213#  4220
RESUBN    007074    2464#  2471
RESVEC= 000010       466#   717     718*    725*
RETN      015112    4405   4410#
SAVR6     000702     680#   834     930    1026    1122    1193    1261    1348    1437    1524    1609    1693    1761
                    1849    1938    2026    2113    2217    2311    2398    2504    2600    2674    2749    2825    2902
                    2974    3048    3124    3197    3271    3345    3419    3492    3566    3639    3730    4377*   4378*
SEND      015130    4418    4421#
STACK   = 001100     370#
START     000716     522     690#
STKLMT= 177774       381#
ST45      013164    3762    3814#
ST46      013340    3835    3888#
ST47      013514    3908    3961#
ST50      013670    3981    4034#
ST51      014044    4054    4107#
ST52      014220    4127    4180#
ST53      014472    4200    4261#
SUBN    = 076051     477#   2276    2363    2467
SUBNPC    007104    2455    2467#
SWR       000540     587#    697     730*    736*   2153    2439    3664    4189    4312    4442    4456    4458    4464
                    4491    4505*   4549    4564    4567
SWREG     000176     503#    730
SW0     = 000001     434#
SW00    = 000001     424#    434
SW01    = 000002     423#    433
SW02    = 000004     422#    432
SW03    = 000010     421#    431
SW04    = 000020     420#    430
SW05    = 000040     419#    429
SW06    = 000100     418#    428
SW07    = 000200     417#    427
SW08    = 000400     416#    426
SW09    = 001000     415#    425
SW1     = 000002     433#
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SW10  = 002000            414#
SW11  = 004000            413#
SW12  = 010000            412#
SW13  = 020000            411#
SW14  = 040000            410#
SW15  = 100000            409#
SW2   = 000004            432#
SW3   = 000010            431#
SW4   = 000020            430#
SW5   = 000040            429#
SW6   = 000100            428#
SW7   = 000200            427#
SW8   = 000400            426#
SW9   = 001000            425#
S1ADR   000646            666#    791     887     983    1079    4362*   4372
S1LN    000644            665#    786     882     978    1074    4361*   4371
S1T1    001550            764     844#
S1T10   003630           1392    1458#
S1T11   004044           1479    1545#
S1T12   004256           1564    1630#
S1T13   004442           1648    1702#
S1T14   004650           1716    1782#
S1T15   005066           1804    1870#
S1T16   005304           1893    1959#
S1T17   005522           1981    2047#
S1T2    002032            860     940#
S1T20   005736           2068    2134#
S1T21   006260           2164    2238#
S1T22   006514           2266    2332#
S1T23   006730           2354    2419#
S1T24   007256           2450    2525#
S1T25   007460           2553    2609#
S1T26   007640           2627    2683#
S1T27   010020           2703    2758#
S1T3    002314            956    1036#
S1T30   010202           2778    2834#
S1T31   010364           2855    2911#
S1T32   010542           2927    2983#
S1T33   010722           3001    3057#
S1T34   011104           3077    3133#
S1T35   011262           3151    3206#
S1T36   011442           3224    3280#
S1T37   011622           3298    3354#
S1T4    002576           1052    1132#
S1T40   012002           3372    3428#
S1T41   012160           3446    3501#
S1T42   012336           3520    3575#
S1T43   012514           3593    3648#
S1T44   013002           3675    3739#
S1T5    002772           1148    1202#
S1T6    003176           1217    1282#
S1T7    003412           1303    1369#
S2ADR   000652            668#    801     897     993    1089    4364*   4374
S2LN    000650            667#    796     892     988    1084    4363*   4373
S2T1    001551            766     846#
S2T10   003634           1394    1463#
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S2T11   004046            1481    1548#
S2T12   004260            1566    1633#
S2T13   004443            1650    1704#
S2T14   004653            1718    1786#
S2T15   005072            1806    1875#
S2T16   005307            1895    1963#
S2T17   005525            1983    2051#
S2T2    002033             862     942#
S2T20   005741            2070    2138#
S2T21   006264            2166    2243#
S2T22   006520            2268    2337#
S2T23   006733            2356    2423#
S2T24   007262            2452    2530#
S2T25   007463            2555    2613#
S2T26   007644            2629    2688#
S2T27   010024            2705    2763#
S2T3    002315             958    1038#
S2T30   010206            2780    2839#
S2T31   010366            2857    2914#
S2T32   010545            2929    2987#
S2T33   010726            3003    3062#
S2T34   011106            3079    3136#
S2T35   011264            3153    3209#
S2T36   011445            3226    3284#
S2T37   011626            3300    3359#
S2T4    002577            1054    1134#
S2T40   012006            3374    3433#
S2T41   012164            3448    3506#
S2T42   012341            3522    3579#
S2T43   012517            3595    3652#
S2T44   013006            3677    3744#
S2T5    002773            1150    1204#
S2T6    003202            1219    1287#
S2T7    003414            1305    1372#
TABLE   000662             672#
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TBITVE= 000014             467#     714*    715*
TBUF    000666             674#     740*   2173*   2459*   3683*   4208*   4421*
TCSR    000664             673#     744*   2155    2177*   2183    2441    2463*   2470    3666    3687*   3694    4191    4212*
                          4219    4404    4423*
TDONE   015070            2172    2458    3682    4207    4403#
TEMP    000710             683#     717*    725    4403*   4406*
TEMP1   000712             684#     769*    850     865*    946     961*   1042    1057*   1138
TEMP2   000714             685#     770*    851     866*    947     962*   1043    1058*   1139
TIMTRP  014712             509    4342#
TKVEC = 000060             474#
TPSW    000672             676#     751*   2171*   2256    2457*   2543    3681*   3751    4206*   4273
TPVEC = 000064             475#
TRAPVE= 000034             473#     705*    706*
TRTVEC= 000014             468#
TST1    001304             761#
TST10   003424            1368    1389#
TST11   003640            1457    1476#
TST12   004052            1544    1561#
TST13   004264            1629    1645#
TST14   004444            1701    1713#
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TST15   004662            1781    1801#
TST16   005100            1869    1890#
TST17   005316            1958    1978#
TST2    001566             857#
TST20   005532            2046    2065#
TST21   005746            2133    2152#
TST22   006310            2154    2160    2263#
TST23   006526            2331    2351#
TST24   006742            2418    2438#
TST25   007306            2440    2446    2550#
TST26   007466            2608    2624#
TST27   007650            2682    2700#
TST3    002050             953#
TST30   010030            2757    2775#
TST31   010212            2833    2852#
TST32   010370            2910    2924#
TST33   010550            2982    2998#
TST34   010732            3056    3074#
TST35   011112            3132    3148#
TST36   011270            3205    3221#
TST37   011450            3279    3295#
TST4    002332            1049#
TST40   011630            3353    3369#
TST41   012010            3427    3443#
TST42   012166            3500    3517#
TST43   012344            3574    3590#
TST44   012522            3647    3663#
TST45   013024            3665    3671    3759#
TST46   013176            3813    3832#
TST47   013352            3887    3905#
TST5    002614            1145#
TST50   013526            3960    3978#
TST51   013702            4033    4051#
TST52   014056            4106    4124#
TST53   014222            4179    4188#
TST6    002774            1201    1214#
TST7    003206            1281    1300#
TVECT   000670             675#    749*   2170*  2256*  2456*  2543*  3680*  3751*  4205*  4273*
TYPE  = 104401             740    4294    4514   4551   4555   4623   4737   4844#
TYPOC = 104402            4554    4845#
TYPON = 104404            4847#
TYPOS = 104403            4846#
TZERO   014702             507    4334#
T1      001374             778#    825
T1CONT  001402             771     785#
T2      001656             874#    921
T2CONT  001664             867     881#
T21CON  006004            2156    2158    2161#
T24CON  007000            2442    2444    2447#
T3      002140             970#   1017
T3CONT  002146             963     977#
T4      002422            1066#   1113
T4CONT  002430            1059    1073#
T44CON  012560            3667    3669    3672#
X     = 000000             486#
XPSW    015044             773     869     965    1061   1153   1222   1308   1397   1484   1569   1653   1721   1809
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                    1898    1986    2073    2174    2271    2359    2460    2557    2631    2707    2782    2859    2931
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                    3985    4058    4131    4209    4392#
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$ATY1   016516      4758#
$ATY3   016524      4608    4759#
$ATY4   016534      4560    4761#
$AUTOB  000534       584#
$BASE   000642       646#    742
$BDADR  000522       579#    827*    923*    1019*   1115*
$BDDAT  000526       581#
$CHARC  016264      4625*   4635*   4642    4668*   4673#
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$CLR.T  014574      4298    4301#
$CMTAG  000500       567#    695
$CM3  = 000000       597#
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$DEVCT  000576       611#
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$ENDCT  014546       709    4292#
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$ENV    000606       616#    2157    2443    3668    4193    4557    4603    4767    4791
$ENVM   000607       617#    734     4605    4610    4769
$EOP    014516      4190    4196    4283#
$EOPCT  014540       709*   4289#   4293
$ERFLG  000503       570#    4433    4462    4468*   4478    4542*   4579
$ERMAX  000515       576#    711*    4474*   4478
$ERROR  015546       703    4541#
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$ERRTB  000644       663#
$ERTTL  000512       574#    4545*   4579
$ESCAP  000560       597#    710*    4473*   4570    4572    4579
$ETABL  000606       615#
$ETEND  000644       557     647#
$FATAL  000570       608#    690*    4795*
$FFLG   016762      4758*   4761*   4789    4798*   4806#
$FILLC  000556       595#    4628    4676
$FILLS  000555       594#    4676
$GDADR  000520       578#
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$GET42  014556      4295#
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$HIBTS  000400       552#
$ICNT   000504       571#
$ILLUP  015530      4483    4499    4521#
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$ITEMB  000514       575#    4548*   4559    4579
$LF     000564       600#    4579    4676
$LFLG   016761      4799*   4805#
$LOOP   014652      4317    4321#   4517
$LPADR  000506       572#    727*    4466*   4471*   4476    4478
$LPERR  000510       573#    728*    4466    4472*   4478    4569
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$MADR2  000624            637#
$MADR3  000630            640#
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$MAIL   000566            553    557    606#   4470   4557   4603
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$MAMS2  000622            635#
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$MAMS4  000632            641#
$MBADR  000402            553#
$MFLG   016760           4759*  4765   4800*  4804#
$MSGAD  000602            613#  4775*  4778
$MSGLG  000604            614#  4780*
$MSGTY  000566            607#   691*  4773   4781*  4793   4797*
$MTYP1  000617            628#
$MTYP2  000623            636#
$MTYP3  000627            639#
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$NULL   000554            593#  2173   2459   3683   4208   4421   4630   4676
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                         1887#  1975#  2062#  2149#  2260#  2348#  2435#  2547#  2621#  2697#  2772#  2849#  2921#
                         2995#  3071#  3145#  3218#  3292#  3366#  3440#  3514#  3587#  3660#  3756#  3829#  3902#
                         3975#  4048#  4121#  4185#
$OCNT   016512           4709*  4738*  4751#
$OMODE  016514           4704*  4708*  4713   4716*  4727*  4753#
$OVER   015332           4443   4461   4467   4475#
$PASS   000574            610#   733*  2159   2445   3670   4195   4286*  4287*  4324
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$PWRDN  015346            707   4483#  4512
$PWRMG  015506           4515#
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$QUES   000562            598#  4579   4676
$RDCHR= ****** U         4850
$RDDEC= ****** U         4850
$RDLIN= ****** U         4850
$RDOCT= ****** U         4850
$RTNAD  014654           4323#
$RTRN   014650            714    716*   722*  4299   4318#
$R2A  = ****** U         4850
$SAVRE= ****** U         4850
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                         2776   2853   2925   2999   3075   3149   3222   3296   3370   3444   3518   3591   3664
                         3760   3833   3906   3979   4052   4125   4189   4279   4286   4297   4310   4324   4434
                         4435   4436   4437   4442   4454   4456   4457   4462   4463   4464   4469   4472   4475
                         4478   4518   4533   4534   4535   4536   4537   4545   4549   4564   4567   4579
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$SWRMX= 000300            482#  4437   4438   4458   4459
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$TKB    000546          590# 4649 4656 4676
$TKS    000544          589# 4647 4654 4676
$TN   = 000054          484# 486 758 762# 780 788 793 798 803 808 813 821 828
                        836 854 858# 876 884 889 894 899 904 909 917 924 932
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                        1050# 1068 1076 1081 1086 1091 1096 1101 1109 1116 1124 1142 1146#
                        1164 1171 1175 1179 1183 1187 1191 1196 1211 1215# 1232 1239 1243
                        1247 1251 1255 1259 1264 1275 1297 1301# 1319 1326 1330 1334 1338
                        1342 1346 1351 1362 1386 1390# 1408 1415 1419 1423 1427 1431 1435
                        1440 1451 1473 1477# 1495 1502 1506 1510 1514 1518 1522 1527 1538
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                        1941 1952 1975 1979# 1997 2004 2008 2012 2016 2020 2024 2029 2040
                        2062 2066# 2084 2091 2095 2099 2103 2107 2111 2116 2127 2149 2153#
                        2188 2195 2199 2203 2207 2211 2215 2220 2231 2260 2264# 2282 2289
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$TPFLG  000557          596# 4597 4676
$TPS    000550          591# 2155 2441 3666 4191 4663 4676
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$TRAP2  017006          4832# 4843
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$TRPAD  017020          4826 4843#
$TSTM   000404          554#
$TSTNM  000502          569# 4285* 4433 4460 4469* 4470 4475 4478 4504* 4544 4579
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$TYPEC  016146          4627 4634 4641 4646#
$TYPEX  016266          4669 4671 4674#
$TYPOC  016314          4707# 4845
$TYPON  016330          4706 4709# 4847
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$UNITM  000410             556#
$USWR   000612             619#
$VECT1  000636             644#    747
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$XON  = 000021            4658    4676
$XTSTK  015160            4445#
$$GET4= 000001            4297#   4302
$OFILL  016513            4703*   4707*   4717    4752#
$$OCAT= ****** U          4442    4551
.     = 017104             490#    497#    501#    506#    516#    521#    525#    530     531#    533#    535#    541     542#
                           544#    546#    566#    601     698     727     728     1639#   1795#   1883#   1972#   2255#   2542#
                          4324    4326#   4330#   4478    4495    4522    4579    4676    4807#   4853#   4855#
.$ASTA= ****** U          4759    4762
.$X   = 000400             541#    546
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	3591														
CMPREP	344#	2551	2625	2701	2776	2853	2925	2999	3075	3149	3222	3296	3370	3444	3518
	3591	3673													
COMMEN	1#	477#													
CVPREP	358#	3760	3833	3906	3979	4052	4125	4197							
CVTINT	360#	4189													
CVTSRC	355#	3814	3888	3961	4034	4107	4180	4261							
CVTTST	359#	3760	3833	3906	3979	4052	4125								
DECTRP	361#	762	858	954	1050										
EHLT	340#	780	788	793	798	803	808	813	821	828	836	876	88/	889	894
	899	904	909	917	924	932	972	980	985	990	995	1000	1005	1013	1020
	1028	1068	1076	1081	1086	1091	1096	1101	1109	1116	1124	1164	1171	1175	1179
	1183	1187	1191	1196	1232	1239	1243	1247	1251	1255	1259	1264	1275	1319	1326
	1330	1334	1338	1342	1346	1351	1362	1408	1415	1419	1423	1427	1431	1435	1440
	1451	1495	1502	1506	1510	1514	1518	1522	1527	1538	1580	1587	1591	1595	1599
	1603	1607	1612	1623	1664	1671	1675	1679	1683	1687	1691	1696	1732	1739	1743
	1747	1751	1755	1759	1764	1775	1820	1827	1831	1835	1839	1843	1847	1852	1863
	1909	1916	1920	1924	1928	1932	1936	1941	1952	1997	2004	2008	2012	2016	2020
	2024	2029	2040	2084	2091	2095	2099	2103	2107	2111	2116	2127	2188	2195	2199
	2203	2207	2211	2215	2220	2231	2282	2289	2293	2297	2301	2305	2309	2314	2325
	2369	2376	2380	2384	2388	2392	2396	2401	2412	2475	2482	2486	2490	2494	2498
	2502	2507	2518	2569	2576	2580	2584	2588	2592	2597	2603	2643	2650	2654	2658
	2662	2666	2671	2677	2718	2725	2729	2733	2737	2741	2746	2752	2794	2801	2805
	2809	2813	2817	2822	2828	2871	2878	2882	2886	2890	2894	2899	2905	2943	2950
	2954	2958	2962	2966	2971	2977	3017	3024	3028	3032	3036	3040	3045	3051	3093
	3100	3104	3108	3112	3116	3121	3127	3166	3173	3177	3181	3185	3189	3194	3200
	3240	3247	3251	3255	3259	3263	3268	3274	3314	3321	3325	3329	3333	3337	3342
	3348	3388	3395	3399	3403	3407	3411	3416	3422	3461	3468	3472	3476	3480	3484
	3489	3495	3535	3542	3546	3550	3554	3558	3563	3569	3608	3615	3619	3623	3627
	3631	3636	3642	3699	3706	3710	3714	3718	3722	3727	3733	3777	3784	3788	3792
	3798	3804	3809	3851	3858	3862	3866	3872	3878	3883	3924	3931	3935	3939	3945
	3951	3956	3997	4004	4008	4012	4018	4024	4029	4070	4077	4081	4085	4091	4097
	4102	4143	4150	4154	4158	4164	4170	4175	4224	4231	4235	4239	4245	4251	4256
ENDCOM	1#	477#													
ENDPAS	338#	4294													
ERR	341#	780	788	793	798	803	808	813	821	828	836	876	884	889	894
	899	904	909	917	924	932	972	980	985	990	995	1000	1005	1013	1020
	1028	1068	1076	1081	1086	1091	1096	1101	1109	1116	1124	1164	1171	1175	1179
	1183	1187	1191	1196	1232	1239	1243	1247	1251	1255	1259	1264	1275	1319	1326
	1330	1334	1338	1342	1346	1351	1362	1408	1415	1419	1423	1427	1431	1435	1440
	1451	1495	1502	1506	1510	1514	1518	1522	1527	1538	1580	1587	1591	1595	1599
	1603	1607	1612	1623	1664	1671	1675	1679	1683	1687	1691	1696	1732	1739	1743
	1747	1751	1755	1759	1764	1775	1820	1827	1831	1835	1839	1843	1847	1852	1863
	1909	1916	1920	1924	1928	1932	1936	1941	1952	1997	2004	2008	2012	2016	2020
	2024	2029	2040	2084	2091	2095	2099	2103	2107	2111	2116	2127	2188	2195	2199
	2203	2207	2211	2215	2220	2231	2282	2289	2293	2297	2301	2305	2309	2314	2325
	2369	2376	2380	2384	2388	2392	2396	2401	2412	2475	2482	2486	2490	2494	2498
	2502	2507	2518	2569	2576	2580	2584	2588	2592	2597	2603	2643	2650	2654	2658
	2662	2666	2671	2677	2718	2725	2729	2733	2737	2741	2746	2752	2794	2801	2805
	2809	2813	2817	2822	2828	2871	2878	2882	2886	2890	2894	2899	2905	2943	2950
	2954	2958	2962	2966	2971	2977	3017	3024	3028	3032	3036	3040	3045	3051	3093
	3100	3104	3108	3112	3116	3121	3127	3166	3173	3177	3181	3185	3189	3194	3200
	3240	3247	3251	3255	3259	3263	3268	3274	3314	3321	3325	3329	3333	3337	3342

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                3489    3495    3535    3542    3546    3550    3554    3558    3563    3569    3608    3615    3619    3623    3627
                3631    3636    3642    3699    3706    3710    3714    3718    3722    3727    3733    3777    3784    3788    3792
                3798    3804    3809    3851    3858    3862    3866    3872    3878    3883    3924    3931    3935    3939    3945
                3951    3956    3997    4004    4008    4012    4018    4024    4029    4070    4077    4081    4085    4091    4097
                4102    4143    4150    4154    4158    4164    4170    4175    4224    4231    4235    4239    4245    4251    4256
ERROR            371#    780     788     793     798     803     808     813     821     828     836     876     884     889     894
                 899     904     909     917     924     932     972     980     985     990     995    1000    1005    1013    1020
                1028    1068    1076    1081    1086    1091    1096    1101    1109    1116    1124    1164    1171    1175    1179
                1183    1187    1191    1196    1232    1239    1243    1247    1251    1255    1259    1264    1275    1319    1326
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                1909    1916    1920    1924    1928    1932    1936    1941    1952    1997    2004    2008    2012    2016    2020
                2024    2029    2040    2084    2091    2095    2099    2103    2107    2111    2116    2127    2188    2195    2199
                2203    2207    2211    2215    2220    2231    2282    2289    2293    2297    2301    2305    2309    2314    2325
                2369    2376    2380    2384    2388    2392    2396    2401    2412    2475    2482    2486    2490    2494    2498
                2502    2507    2518    2569    2576    2580    2584    2588    2592    2597    2603    2643    2650    2654    2658
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                2954    2958    2962    2966    2971    2977    3017    3024    3028    3032    3036    3040    3045    3051    3093
                3100    3104    3108    3112    3116    3121    3127    3166    3173    3177    3181    3185    3189    3194    3200
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                3798    3804    3809    3851    3858    3862    3866    3872    3878    3883    3924    3931    3935    3939    3945
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                4102    4143    4150    4154    4158    4164    4170    4175    4224    4231    4235    4239    4245    4251    4256
                4335    4343    4351    4408
ESCAPE             1#    477#
GETPRI             1#    477#    4310
GETSWR             1#    477#
INT              348#   4416
MANS             351#   1290    1377    1466    1551    1636    1791    1879    1968    2055    2142    2248    2341    2428    2535
MNPREP           343#    762     858     954    1050    1146    1215    1301    1390    1477    1562    1646    1714    1802    1891
                1979    2066    2162    2264    2352    2448
MSRC             350#    844     940    1036    1132    1202    1282    1369    1458    1545    1630    1702    1782    1870    1959
                2047    2134    2238    2332    2419    2525    2609    2683    2758    2834    2911    2983    3057    3133    3206
                3280    3354    3428    3501    3575    3648    3739
MULT               1#    477#
NEWTST             1#    477#     758     854     950    1046    1142    1211    1297    1386    1473    1558    1642    1710    1798
                1887    1975    2062    2149    2260    2348    2435    2547    2621    2697    2772    2849    2921    2995    3071
                3145    3218    3292    3366    3440    3514    3587    3660    3756    3829    3902    3975    4048    4121    4185
NUMERI           354#   1146    1215    1301    1390    1477    1562    1646    1714    1802    1891    1979    2066    2264    2352
NUMINT           355#   2153    2439
POP                1#    336#    477#   4505    4506    4801    4802
PUSH               1#    336#    477#   4485    4491    4762    4764    4785
REPORT             1#    477#
RESETN           342#    762     858     954    1050    1146    1215    1301    1390    1477    1562    1646    1714    1802    1891
                1979    2066    2153    2264    2352    2439    2551    2625    2701    2776    2853    2925    2999    3075    3149
                3222    3296    3370    3444    3518    3591    3664    3760    3833    3906    3979    4052    4125    4189
SCOPE            372#    761     857     953    1049    1145    1214    1300    1389    1476    1561    1645    1713    1801    1890
                1978    2065    2152    2263    2351    2438    2550    2624    2700    2775    2852    2924    2998    3074    3148
                3221    3295    3369    3443    3517    3590    3663    3759    3832    3905    3978    4051    4124    4188    4284
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SETPRI      1#    477#
SETTRA   4836#   4845    4846    4847
SETUP       1#    336#    477#
SKIP        1#    477#
SKPINT    344#   2153    2439    3664
SLASH       1#    477#
SPACE     477#
STARS       1#    336#    477#     528     538     540     547     562     601     604     758     760     854     856     950
          952   1046    1048    1142    1144    1211    1213    1297    1299    1386    1388    1473    1475    1558    1560
         1642   1644    1710    1712    1798    1800    1887    1889    1975    1977    2062    2064    2149    2151    2260
         2262   2348    2350    2435    2437    2547    2549    2621    2623    2697    2699    2772    2774    2849    2851
         2921   2923    2995    2997    3071    3073    3145    3147    3218    3220    3292    3294    3366    3368    3440
         3442   3514    3516    3587    3589    3660    3662    3756    3758    3829    3831    3902    3904    3975    3977
         4048   4050    4121    4123    4185    4187    4277    4430    4481    4497    4530    4582    4679    4757    4815
SWRSU       1#    477#
TCVTAN    356#   3782    3856    3929    4002    4075    4148    4229
TRMTRP   4836#
TSTANS    353#   1269    1356    1445    1532    1617    1769    1857    1946    2034    2121    2225    2319    2406    2512
TSTCC     352#   1160    1228    1315    1404    1491    1576    1660    1728    1816    1905    1993    2080    2182    2278
         2365   2469    2565    2639    2714    2790    2867    2939    3013    3089    3162    3236    3310    3384    3457
         3531   3604    3693    3773    3847    3920    3993    4066    4139    4218
TSTGR     349#   1169    1237    1324    1413    1500    1585    1669    1737    1825    1914    2002    2089    2193    2287
         2374   2480    2574    2648    2723    2799    2876    2948    3022    3098    3171    3245    3319    3393    3466
         3540   3613    3704
TSTREG    363#    785     881     977    1073
TTY       346#   2169    2455    3679    4204
TYPBIN      1#    477#
TYPDEC      1#    477#
TYPNAM      1#    477#
TYPNUM      1#    477#
TYPOCS      1#    477#
TYPOCT      1#    477#    4552
TYPTXT      1#    477#
$$CMRE    560#
$$CMTM    560#
$$ESCA      1#    477#
$$NEWT      1#    477#     758     854     950    1046    1142    1211    1297    1386    1473    1558    1642    1710    1798
         1887   1975    2062    2149    2260    2348    2435    2547    2621    2697    2772    2849    2921    2995    3071
         3145   3218    3292    3366    3440    3514    3587    3660    3756    3829    3902    3975    4048    4121    4185
$$SET    4836#  4845    4846    4847
$$SKIP      1#    477#
.EQUAT      1#    336#    367
.HEADE      1#
.KT11       1#
.SETUP      1#    336#    492
.SWRHI      1#
.$ACTI      1#    336#    526
.$APTB      1#    602#
.$APTH      1#    336#    536
.$APTY      1#    336#   4755
.$ASTA      1#
.$CATC      1#    336#    495
.$CMTA      1#    336#    560
.$D82D      1#
.$D82O      1#
.$DIV       1#
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.$EOP       1#     336#   4275
.$ERRO      1#     336#   4528
.$ERRT      1#
.$MULT      1#
.$POWE      1#     336#   4479
.$RAND      1#
.$RDDE      1#
.$RDOC      1#
.$READ      1#
.$R2AZ      1#
.$SAVE      1#
.$SB2D      1#
.$SB2O      1#
.$SCOP      1#     336#   4428
.$SIZE      1#
.$SUPR      1#
.$TRAP      1#     336#   4813
.$TYPB      1#
.$TYPD      1#
.$TYPE      1#     336#   4580
.$TYPO      1#     336#   4677
.$40CA      1#
.1170       1#


. ABS.  017104     000


ERRORS DETECTED:  0

CVKAJB.BIN,CVKAJB.LST/CRF/SOL/NL:TOC=SYSMAC.SML,CVKAJB.P11
RUN-TIME: 19 21 1 SECONDS
RUN-TIME RATIO: 115/42=2.7
CORE USED:  39K  (78 PAGES)
```