

LSI-11

DIS DECIMAL INST TST
CVKAJBO

AH-8220B MC
FICHE 1 OF 1

JUL 1982
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MADE IN USA



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IDENTIFICATION

PRODUCT CODE: AC-8218B-MC
PRODUCT NAME: CVKAJB0 DIS DECMAL INSTR TST
PRODUCT DATE: JANUARY 1982
MAINTAINER: DIAGNOSTIC ENGINEERING

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D I G I T A L

1.0 GENERAL INFORMATION

1.1 ABSTRACT

THIS DIAGNOSTIC VERIFIES THE OPERATION OF THE DIBOL DECIMAL INSTRUCTIONS OF THE LSI-11 [ADDN,SUBN,CMFN,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:

CVKAJ* 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 0000C0 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 MAINDFC 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 BITS OF BYTE SENVM
HIGH.

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2.3.2 RUNNING UNDER APT

THE APT MAILBOX-ETABLE IS LOCATED AT LOCATION 566.

USING THE CONSOLE INTERFACE AS THE INTERRUPTING DEVICE,
THE INTERRUPTABILITY 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*

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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
 a <--ODT ENTERED

WHERE 'XXXXXX' IS AN OCTAL VALUE

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4.0 SUBROUTINE 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.

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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.

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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 RESTART 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 HANDLE IT.

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

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000012
000015
000200
177776
177774
177772
177570
177570

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000001
000002
000003
000004
000005
000006
000007
000006
000007

000000

.SBTTL BASIC DEFINITIONS

;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***

STACK= 1100

.EQUIV EMT,ERROR

::BASIC DEFINITION OF ERROR CALL

.EQUIV IOT,SCOPE

::BASIC DEFINITION OF SCOPE CALL

;*MISCELLANEOUS DEFINITIONS

HT= 11

::CODE FOR HORIZONTAL TAB

LF= 12

::CODE FOR LINE FEED

CR= 15

::CODE FOR CARRIAGE RETURN

CRLF= 200

::CODE FOR CARRIAGE RETURN-LINE FEED

PS= 177776

::PROCESSOR STATUS WORD

.EQUIV PS,PSW

STKLMT= 177774

::STACK LIMIT REGISTER

PIRQ= 177772

::PROGRAM INTERRUPT REQUEST REGISTER

DSWR= 177570

::HARDWARE SWITCH REGISTER

DDISP= 177570

::HARDWARE DISPLAY REGISTER

;*GENERAL PURPOSE REGISTER DEFINITIONS

R0= %0

::GENERAL REGISTER

R1= %1

::GENERAL REGISTER

R2= %2

::GENERAL REGISTER

R3= %3

::GENERAL REGISTER

R4= %4

::GENERAL REGISTER

R5= %5

::GENERAL REGISTER

R6= %6

::GENERAL REGISTER

R7= %7

::GENERAL REGISTER

SP= %6

::STACK POINTER

PC= %7

::PROGRAM COUNTER

;*PRIORITY LEVEL DEFINITIONS

PRO= 0

::PRIORITY LEVEL 0

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 11
 CVKAJB.P11 22-JAN-82 08:49 BASIC DEFINITIONS

SEQ 0010

400	000040	PR1=	40	::PRIORITY LEVEL 1
401	000100	PR2=	100	::PRIORITY LEVEL 2
402	000140	PR3=	140	::PRIORITY LEVEL 3
403	000200	PR4=	200	::PRIORITY LEVEL 4
404	000240	PR5=	240	::PRIORITY LEVEL 5
405	000300	PR6=	300	::PRIORITY LEVEL 6
406	000340	PR7=	340	::PRIORITY LEVEL 7

;*'SWITCH REGISTER' SWITCH DEFINITIONS

408		SW15=	100000
409	100000	SW14=	40000
410	040000	SW13=	20000
411	020000	SW12=	10000
412	010000	SW11=	4000
413	004000	SW10=	2000
414	002000	SW09=	1000
415	001000	SW08=	400
416	000400	SW07=	200
417	000200	SW06=	100
418	000100	SW05=	40
419	000040	SW04=	20
420	000020	SW03=	10
421	000010	SW02=	4
422	000004	SW01=	2
423	000002	SW00=	1
424	000001		
425		.EQUIV	SW09,SW9
426		.EQUIV	SW08,SW8
427		.EQUIV	SW07,SW7
428		.EQUIV	SW06,SW6
429		.EQUIV	SW05,SW5
430		.EQUIV	SW04,SW4
431		.EQUIV	SW03,SW3
432		.EQUIV	SW02,SW2
433		.EQUIV	SW01,SW1
434		.EQUIV	SW00,SW0

;*DATA BIT DEFINITIONS (BIT00 TO BIT15)

436		BIT15=	100000
437	100000	BIT14=	40000
438	040000	BIT13=	20000
439	020000	BIT12=	10000
440	010000	BIT11=	4000
441	004000	BIT10=	2000
442	002000	BIT09=	1000
443	001000	BIT08=	400
444	000400	BIT07=	200
445	000200	BIT06=	100
446	000100	BIT05=	40
447	000040	BIT04=	20
448	000020	BIT03=	10
449	000010	BIT02=	4
450	000004	BIT01=	2
451	000002	BIT00=	1
452	000001		
453		.EQUIV	BIT09,BIT9
454		.EQUIV	BIT08,BIT8
455		.EQUIV	BIT07,BIT7

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 12
 CVKAJB.P11 22-JAN-82 08:49 BASIC DEFINITIONS

SEQ 0011

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456      .EQUIV BIT06,BIT6
457      .EQUIV BIT05,BIT5
458      .EQUIV BIT04,BIT4
459      .EQUIV BIT03,BIT3
460      .EQUIV BIT02,BIT2
461      .EQUIV BIT01,BIT1
462      .EQUIV BIT00,BIT0
463
464      ;*BASIC "CPU" TRAP VECTOR ADDRESSES
465      ERRVEC= 4      ;;TIME OUT AND OTHER ERRORS
466      RESVEC= 10     ;;RESERVED AND ILLEGAL INSTRUCTIONS
467      TBITVEC=14     ;;'T' BIT
468      TRTVEC= 14     ;;TRACE TRAP
469      BPTVEC= 14     ;;BREAKPOINT TRAP (BPT)
470      IOTVEC= 20     ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
471      PWRVEC= 24     ;;POWER FAIL
472      EMTVEC= 30     ;;EMULATOR TRAP (EMT) **ERROR**
473      TRAPVEC=34     ;;'TRAP' TRAP
474      TKVEC= 60      ;;TTY KEYBOARD VECTOR
475      TPVEC= 64      ;;TTY PRINTER VECTOR
476      PIRQVEC=240    ;;PROGRAM INTERRUPT REQUEST VECTOR
477                      APTSIZE= 200
478                      APTENV= 001
479                      APTSPool= 100
480                      APTCSUP= 040
481                      $SWR= 171400
482                      $SWRMK= 300
483                      TBIT= 20
484                      $TN= 1
485                      N= 1
486                      X= $TN-1
487                      NXM= 177777
488                      ABASE= 177560
489                      AVFCT1= 60
490                      .=0
491
492
493
494
495      .SBTTL TRAP CATCHER
496
497      .=0
498      ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
499      ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
500      ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
501      .=174
502      000174 000000  DISPREG: .WORD 0      ;;SOFTWARE DISPLAY REGISTER
503      000176 000000  SWREG:   .WORD 0      ;;SOFTWARE SWITCH REGISTER
504
505
506      .=0
507      000000 014702  IZERO      ;SET LOCATIONS 0,4,6 TO ERROR REPORTS
508      000002 000340  340
509      000004 014712  TIMTRP
510      000006 000340  340
511      000010 014722  ILLTRP

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512 000012 000340          -      340
513
514
515
516          000100          . =100
517 000100 000102          .WORD 102          ;HANDLE EVENT LINE INTERRUPTS
518 000102 000002          .WORD 2
519
520
521          000200          . =200
522 000200 000167 000512    JMP      START          ;STARTING LOCATION FOR PROGRAM
523
524
525          000400          . =400
526          .SBTTL ACT11 HOOKS
527
528          ;*****
529          ;HOOKS REQUIRED BY ACT11
530          $SVPC=          ;SAVE PC
531          . =46
532 000046 014604          $ENDAD          ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOP
533          . =52
534 000052 000000          .WORD 0          ;;2)SET LOC.52 TO ZERO
535          . = $SVPC          ;; RESTORE PC
536          .SBTTL APT PARAMETER BLOCK
537
538          ;*****
539          ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
540          ;*****
541          . $X=          ;;SAVE CURRENT LOCATION
542          . =24          ;;SET POWER FAIL TO POINT TO START OF PROGRAM
543 000024 000200          200          ;;FOR APT START UP
544          . =44          ;;POINT TO APT INDIRECT ADDRESS PNTR.
545 000044 000400          $APTHDR ;;POINT TO APT HEADER BLOCK
546          . = $X          ;;RESET LOCATION COUNTER
547          ;*****
548          ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
549          ;INTERFACE SPEC.
550
551 000400          $APTHD:
552 000400 000000          $HIBTS: .WORD 0          ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
553 000402 000566          $MBADR: .WORD $MAIL          ;;ADDRESS OF APT MAILBOX (BITS 0-15)
554 000404 000030          $TSTM: .WORD 30          ;;RUN TIM OF LONGEST TEST
555 000406 000040          $PASTM: .WORD 40          ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
556 000410 000000          $UNITM: .WORD          ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
557 000412 000027          .WORD $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
558
559

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 1,
CVKA:3.P11 22-JAN-82 08:49 COMMON TAGS

SEQ 0013

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560          .SBTTL COMMON TAGS
561
562          ::*****
563          ::THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
564          ::USED IN THE PROGRAM.
565
566          000500          .=500
567          000500          $CMTAG:          ::START OF COMMON TAGS
568          000500          000000          .WORD 0          ::CONTAINS THE TEST NUMBER
569          000502          000          $TSTNM: .BYTE 0          ::CONTAINS ERROR FLAG
570          000503          000          $ERFLG: .BYTE 0          ::CONTAINS SUBTEST ITERATION COUNT
571          000504          000000          $ICNT: .WORD 0          ::CONTAINS SCOPE LOOP ADDRESS
572          000506          000000          $LPADR: .WORD 0          ::CONTAINS SCOPE RETURN FOR ERRORS
573          000510          000000          $LPERR: .WORD 0          ::CONTAINS TOTAL ERRORS DETECTED
574          000512          000000          $ERTTL: .WORD 0          ::CONTAINS ITEM CONTROL BYTE
575          000514          000          $ITEMB: .BYTE 0          ::CONTAINS MAX. ERRORS PER TEST
576          000515          001          $ERMAX: .BYTE 1          ::CONTAINS PC OF LAST ERROR INSTRUCTION
577          000516          000000          $ERRPC: .WORD 0          ::CONTAINS ADDRESS OF 'GOOD' DATA
578          000520          000000          $GDADR: .WORD 0          ::CONTAINS ADDRESS OF 'BAD' DATA
579          000522          000000          $BDADR: .WORD 0          ::CONTAINS 'GOOD' DATA
580          000524          000000          $GDDAT: .WORD 0          ::CONTAINS 'BAD' DATA
581          000526          000000          $BDDAT: .WORD 0          ::RESERVED- NOT TO BE USED
582          000530          000000          .WORD 0
583          000532          000000          .WORD 0
584          000534          000          $AUTOB: .BYTE 0          ::AUTOMATIC MODE INDICATOR
585          000535          000          $INTAG: .BYTE 0          ::INTERRUPT MODE INDICATOR
586          000536          000000          .WORD 0
587          000540          177570          $SWR: .WORD DSWR          ::ADDRESS OF SWITCH REGISTER
588          000542          177570          $DISPLAY: .WORD DDISP          ::ADDRESS OF DISPLAY REGISTER
589          000544          177560          $TKS: 177560          ::TTY KBD STATUS
590          000546          177562          $TKB: 177562          ::TTY KBD BUFFER
591          000550          177564          $TPS: 177564          ::TTY PRINTER STATUS REG. ADDRESS
592          000552          177566          $TPB: 177566          ::TTY PRINTER BUFFER REG. ADDRESS
593          000554          000          $NULL: .BYTE 0          ::CONTAINS NULL CHARACTER FOR FILLS
594          000555          002          $FILLS: .BYTE 2          ::CONTAINS # OF FILLER CHARACTERS REQUIRED
595          000556          012          $FILLC: .BYTE 12          ::INSERT FILL CHARS. AFTER A 'LINE FEED'
596          000557          000          $TPFLG: .BYTE 0          ::'TERMINAL AVAILABLE' FLAG (BIT<07>=0=YES)
597          000560          000000          $ESCAPE: 0          ::ESCAPE ON ERROR ADDRESS
598          000562          077          $QUES: .ASCII /?/          ::QUESTION MARK
599          000563          015          $CRLF: .ASCII <15>          ::CARRIAGE RETURN
600          000564          000012          $LF: .ASCII <12>          ::LINE FEED
601          ::*****
602          .SBTTL APT MAILBOX-ETABLE
603
604          ::*****
605          .EVEN
606          000566          $MAIL:          ::APT MAILBOX
607          000566          000000          $MSGTY: .WORD MSGTY          ::MESSAGE TYPE CODE
608          000570          000000          $FATAL: .WORD AFATAL          ::FATAL ERROR NUMBER
609          000572          000000          $TESTN: .WORD ATESTN          ::TEST NUMBER
610          000574          000000          $PASS: .WORD APASS          ::PASS COUNT
611          000576          000000          $DEVCT: .WORD ADEVCT          ::DEVICE COUNT
612          000600          000000          $UNIT: .WORD AUNIT          ::I/O UNIT NUMBER
613          000602          000000          $MSGAD: .WORD MSGAD          ::MESSAGE ADDRESS
614          000604          000000          $MSGLG: .WORD MSGLG          ::MESSAGE LENGTH
615          000606          $ETABLE:          ::APT ENVIRONMENT TABLE

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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/C4=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=001
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. BYTF
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	000C00	\$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			

```
649 .SBTTL ERROR POINTER TABLE
650
651 ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
652 ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
653 ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
654 ;*NOTE1: IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
655 ;*NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:
656
657 ;* EM ;:POINTS TO THE ERROR MESSAGE
658 ;* DH ;:POINTS TO THE DATA HEADER
659 ;* DT ;:POINTS TO THE DATA
660 ;* DF ;:POINTS TO THE DATA FORMAT
661
662
663 000644 $ERRTB:
664
665 000644 000000 S1LN: .WORD 0 ;SOURCE1 LENGTH
666 000646 000000 S1ADR: .WORD ;SOURCE1 ADDRESS
667 000650 000000 S2LN: .WORD 0 ;SOURCE2 LENGTH
668 000652 000000 S2ADR: .WORD 0 ;SOURCE2 ADDRESS
669 000654 000000 DSTLN: .WORD ;DESTINATION LENGTH
670 000656 017C44 DSTAD: .WORD BUF ;DESTINATION ADDRESS
671 000660 000000 FILL: .WORD ;FILL CHARACTER
672 000662 000000 TABLE: .WORD 0 ;TRANSLATION TABLE ADDRESS
673 000664 177564 TCSR: 177564 ;TCSR ADDRESS OF SLU USED FOR INTERRUPTS
674 000666 177566 TBUF: 177566 ;TBUF ADDRESS
675 000670 000064 TVECT: 64 ;TRANSMIT INTERRUPT VECTOR
676 000672 000066 TPSW: 66 ; AND PSW LOCATION
677 000674 000000 PCI: 0 ;ADDRESS OF TEST INSTRUCTION TO INTERRUPT
678 000676 000000 CCODES: 0 ;CONDITION CODES AFTER EXECUTION OF TEST INSTRUCTION
679 000700 000000 EXPPSW: 0 ;EXPECTED PSW
680 000702 000000 SAVR6: 0 ;STACK POINTER VALUE BEFORE TEST INSTRUCTION EXECUTION
681 000704 000000 BADR6: 0 ;BAD STACK POINTER VALUE
682 000706 000000 OLDPC: 0 ;ADDRESS WHERE UNEXPECTED TRAP OR INTERRUPT OCCURRED
683 000710 000000 TEMP: 0
684 000712 000000 TEMP1: 0
685 000714 000000 TEMP2: 0
686
687
688
689
690 000716 005067 177646 START: CLR $FATAL ;CLEAR ERROR NO.
691 000722 005067 177640 CLR $MSGTYP ;CLEAR MESSAGE TYPE
692 000726 005067 177640 CLR $TESTN ;CLEAR TEST NO.
693
694 .SBTTL INITIALIZE THE COMMON TAGS
695 000732 012706 000500 MOV #$CMTAG,R6 ;CLEAR THE COMMON TAGS ($CMTAG) AREA
696 000736 005026 CLR (R6)+ ;FIRST LOCATION TO BE CLEARED
697 000740 022706 000540 CMP #SWR,R6 ;DONE? ;CLEAR MEMORY LOCATION
698 000744 001374 BNE ,-6 ;LOOP BACK IF NO
699 000746 012706 000500 MOV #500,SP ;SETUP THE STACK POINTER
700 ;INITIALIZE A FEW VECTORS
701 000752 012737 015150 000020 MOV $$SCOPE,#IOTVEC ;IOT VECTOR FOR SCOPE ROUTINE
702 000760 012737 000340 000022 MOV #340,#IOTVEC+2 ;LEVEL 7
703 000766 012737 015546 000030 MOV $ERROR,#EMTVEC ;EMT VECTOR FOR ERROR ROUTINE
704 000774 012737 000340 000032 MOV #340,#EMTVEC+2 ;LEVEL 7
```

```
705 001002 012737 016764 000034      MOV    #STRAP, @TRAPVEC ;TRAP VECTOR FOR TRAP CALLS
706 001010 012737 000340 000036      MOV    #340, @TTRAPVEC+2;LEVEL 7
707 001016 012737 015346 000024      MOV    #SPWRDN, @PWRVEC ;POWER FAILURE VECTOR
708 001024 012737 000340 000026      MOV    #340, @PWRVEC+2 ;LEVEL 7
709 001032 016767 013510 013500      MOV    $ENDCT, $FOPCT ;SETUP END-OF-PROGRAM COUNTER
710 001040 005067 177514                CLR    $ESCAPE ;CLEAR THE ESCAPE ON ERROR ADDRESS
711 001044 112767 000001 177443      MOV    #1, $ERMAX ;ALLOW ONE ERROR PER TEST
712                                ;INITIALIZE THE 'T-BIT' TRAP VECTOR. THEN LOAD LOCATION.
713                                ;THE 'END-OF-PASS' ($EOP) ROUTINE, WITH A 'RTI' OR 'RTT'.
714 001052 012737 014650 000014      MOV    #SRTN, @TBITVEC ;SET 'T' BIT VECTOR TO SRTN
715 001060 012737 000340 000016      MOV    #340, @TBITVEC+2;LEVEL 7
716 001066 012767 000002 013554      MOV    #RTI, SRTN ;SET SRTN TO A RTI
717 001074 013767 000010 177606      MOV    @RESVEC, TEMP ;SAVE ILLEGAL INSTRUCTION TRAP VECTOR
718 001102 012737 001130 000010      MOV    #2$, @RESVEC ;TRY TO DO A RTT
719 001110 005046                CLR    -(SP) ;DUMMY PS
720 001112 012746 001120                MOV    #1$, -(SP) ;AND PC
721 001116 000006                RTT ;TRY THE RTT
722 001120 012767 000006 013522 1$:    MOV    #RTT, SRTN ;RTT IS LEGAL--SET SRTN TO A RTT
723 001126 000402                BR    3$
724 001130 062706 000010                ADD    #10, SP ;RTT ILLEGAL--CLEAN OFF THE STACK
725 001134 016737 177550 000010 2$:    MOV    TEMP, @RESVEC ;RESTORE ILLEGAL INSTRUCTION TRAP VECTOR
726 001142 005067 013510 3$:          CLR    $TBIT ;CLEAR 'T' BIT SWITCH
727 001146 012767 001146 177332      MOV    #., $LPADR ;INITIALIZE THE LOOP ADDRESS FOR SCOPE
728 001154 012767 001154 177326      MOV    #., $LPERR ;SETUP THE ERROR LOOP ADDRESS
729                                ;SETUP FOR A SOFTWARE SWITCH REGISTER.
730 001162 012767 000176 177350      MOV    #SWREG, SWR ;POINT TO SOFTWARE SWR
731 001170 012767 000174 177344      MOV    #DISPREG, DISPLAY
732
733 001176 005067 177372                CLR    $PASS ;CLEAR PASS COUNT
734 001202 132767 000200 177377      BIT    #APTSIZE, $ENVM ;TEST USER SIZE UNDER APT
735 001210 001403                BEQ    4$ ;YES, USE NON-APT SWITCH
736 001212 012767 000610 177320      MOV    #SSWREG, SWR ;NO, USE APT SWITCH REGISTER
737 001220                4$:          CMP    $ENDAD, @#42 ;UNDER ACT11?
738 001220 026737 013360 000042      BEQ    BEGIN ;BR, IF YES (SKIP PROGRAM ID TYPEOUT WHEN UNDER AACT)
739 001226 001424                TYPE, NAME
740 001230 104401 017032                ;SET UP ADDRESSES OF SLU TO USE FOR INTERRUPTABILITY TES
741                                ;GET ADDRESS OF THE SLU
742 001234 013700 000642      MOV    @#$BASE, R0 ;ADJUST TO TCSR ADDRESS
743 001240 062700 000004      ADD    #4, R0 ;STORE TCSR ADDRESS
744 001244 010037 000664      MOV    R0, @TCSR ;ADJUST TO TBUF ADDRESS
745 001250 005720                TST    (R0)+ ;STORE TBUF ADDRESS
746 001252 010037 000666      MOV    R0, @TBUF ;GET SLU INTERRUPT VECTOR
747 001256 013700 000636      MOV    @#$VECT1, R0 ;ADJUST TO TRANSMIT INTERRUPT VECTOR
748 001262 062700 000004      ADD    #4, R0 ;STORE TRANSMIT INTERRUPT VECTOR
749 001266 010037 000670      MOV    R0, @TVECT ;ADJUST TO TRANSMIT INTERRUPT PSW
750 001272 005720                TST    (R0)+ ;STORE TRANSMIT INTERRUPT PSW LOCATION
751 001274 010037 000672      MOV    R0, @TPSW
752
753
754 001300 106427 000200      BEGIN: MTPS #200 ;SET PRIORITY TO 7
755
756
757
758
759
760
```

*TEST 1 TEST 'ADDN' WITH SOURCE1 LENGTH =0 & SOURCE2 STRING VALID

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 18
 CVKAJB.P11 22-JAN-82 08:49 T1 TEST 'ADDN' WITH SOURCE1 LENGTH =0 & SOURCE2 STRING VALID

SEQ 0017

```

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$:

```

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
822                               ;*****TEST 1 - ERROR 10*****
823                               ;PSW ERROR
824                               ;EXPECTED PSW IS STORED AT 'EXPPSW'
825 001502 021627 001376      1$:      CMP      (SP),#T1+2
826 001506 001403              BEQ      2$
827 001510 011637 000522      MOV      (SP),@#SBDADR
828 001514 104011              ERROR    1!
829                               ;STORE BAD ADDRESS
830                               ;*****TEST 1 - ERROR 11*****
831                               ;TRAP ADDRESS ERROR
832 001516 010600              2$:      MOV      SP,R0
833 001520 062700 000004      ADD      #4,R0
834 001524 020037 000702      CMP      R0,@#SAVR6
835 001530 001401              BEQ      3$
836 001532 104012              ERROR    12
837                               ;*****TEST 1 - ERROR 12*****
838                               ;STACK POINTER WAS NOT RESTORED
839                               ;EXPECTED SP VALUE IS STORED AT 'SAVR6'
840 001534 012716 001552      3$:      MOV      #ENDT1,(SP)
841 001540 013766 000700 000002      MOV      @#EXPPSW,2(SP)
842 001546 000002              RTI
843                               ;RESTORE SP & PSW
844 001550              S1T1:          ;SOURCE1 STRING
845 001550              .BYTE        60      ;MOST SIGNIFICANT DIGIT
846 001551              S2T1:          ;SOURCE2 STRING
847 001551              .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
860 001576 002032              S1T2      ;SOURCE1 LENGTH
861 001600 000001              1
862 001602 002033              S2T2      ;SOURCE1 ADDRESS
863 001604 000000              0
864 001606 004767 013212              JSR      PC,CLBUF      ;SOURCE2 LENGTH
865 001612 013767 000010 177072      MOV      @#10,TEMP1      ;SOURCE2 ADDRESS
866 001620 013767 000012 177066      MOV      @#12,TEMP2      ;DESTINATION LENGTH
867 001626 012737 001664 000010      MOV      #T2CONT,@#10      ;CLEAR BUFFER AREA
868 001634 012737 000340 000012      MOV      #340,@#12      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
869 001642 004567 013176              JSR      R5,XPSW      ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
870 001646 000217              .WORD    217
871 001650 004767 013104              JSR      PC,GENR      ;STORE EXPECTED PSW VALUE
872 001654 000277              SCC

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 20
 CVKAJB.P11 22-JAN-82 08:49 T2

TEST 'ADDN' WITH A POSITIVE LEADING SIGN SOURCE1, & VALID SOURCE2

SEQ 0019

```

873
874 001656 076050      T2:      ADDN      ;EXECUTE 'ADDN' INSTRUCTION
875
876 001660 104001      ERROR 1      ;*****TEST 2 - ERROR 1*****
877
878                                ;DECIMAL INSTRUCTION DID NOT TRAP ON
879 001662 000464      BR ENDT2      ;A POSITIVE LEADING SIGN SOURCE1
880
881                                T2CONT:
882 001664 020067 176754      CMP      R0,S1LN      ;CHECK R0 UNCHANGED
883 001670 001401      BEQ      64$
884 001672 104002      ERROR 2      ;*****TEST 2 - ERROR 2*****
885                                ;R0 CHANGED
886                                ;R0 SHOULD STILL EQUAL CONTENTS OF 'S1LN'
887 001674 020167 176746      64$:    CMP      R1,S1ADR      ;CHECK R1 UNCHANGED
888 001700 001401      BEQ      65$
889 001702 104003      ERROR 3      ;*****TEST 2 - ERROR 3*****
890                                ;R1 CHANGED
891                                ;R1 SHOULD STILL EQUAL CONTENTS OF 'S1ADR'
892 001704 020267 176740      65$:    CMP      R2,S2LN      ;CHECK R2 UNCHANGED
893 001710 001401      BEQ      66$
894 001712 104004      ERROR 4      ;*****TEST 2 - ERROR 4*****
895                                ;R2 CHANGED
896                                ;R2 SHOULD STILL EQUAL THE CONTENTS OF 'S2LN'
897 001714 020367 176732      66$:    CMP      R3,S2ADR      ;CHECK R3 UNCHANGED
898 001720 001401      BEQ      67$
899 001722 104005      ERROR 5      ;*****TEST 2 - ERROR 5*****
900                                ;R3 CHANGED
901                                ;R3 SHOULD STILL EQUAL THE CONTENTS OF 'S2ADR'
902 001724 020467 176730      67$:    CMP      R4,FILL      ;CHECK R4 UNCHANGED
903 001730 001401      BEQ      68$
904 001732 104006      ERROR 6      ;*****TEST 2 - ERROR 6*****
905                                ;R4 CHANGED
906                                ;R4 SHOULD STILL EQUAL THE CONTENTS OF 'FILL'
907 001734 020567 176716      68$:    CMP      R5,DSTAD      ;CHECK R5 UNCHANGED
908 001740 001401      BEQ      69$
909 001742 104007      ERROR 7      ;*****TEST 2 - ERROR 7*****
910                                ;R5 CHANGED
911                                ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
912 001744                                69$:
913 001744 016600 000002      MOV      2(SP),R0      ;CHECK PSW AT TIME OF TRAP
914 001750 042700 177400      BIC      #177400,R0
915 001754 020067 176720      CMP      R0,EXPPSW
916 001760 001401      BEQ      1$
917 001762 104010      ERROR 10      ;*****TEST 2 - ERROR 10*****
918                                ;PSW ERROR
919                                ;EXPECTED PSW IS STORED AT 'EXPPSW'
920                                ;RESULTANT PSW IS IN R0
921 001764 021627 001660      1$:    CMP      (SP),#T2+2      ;CHECK ADDRESS OF TRAP
922 001770 001403      BEQ      2$
923 001772 011637 000522      MOV      (SP),#SBDADR      ;STORE BAD ADDRESS
924 001776 104011      ERROR 11      ;*****TEST 2 - ERROR 11*****
925                                ;TRAP ADDRESS ERROR
926                                ;EXPECTED ADDRESS IS 'T2+2'
927                                ;RESULTANT ADDRESS IS STORED AT 'SBDADR'
928 002000 010600      2$:    MOV      SP,R0      ;CHECK SP RESTORATION

```

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 21
CVKAJB.P11 22-JAN-82 08:49 T2

TEST 'ADDN' WITH A POSITIVE LEADING SIGN SOURCE1, & VALID SOURCE2

SEQ 0020

```

929 002002 062700 000004      ADD    #4,R0
930 002006 020037 000702      CMP    R0,#SAVR6
931 002012 001401              BEQ    3$
932 002014 104012              ERROR   12
933                                     ;*****TEST 2 - ERROR 12*****
934                                     ;STACK POINTER WAS NOT RESTORED
935                                     ;EXPECTED SP VALUE IS STORED AT 'SAVR6'
936                                     ;ERRONEOUS SO VALUE IS AT 'BADR6'
937                                     ;RESTORE SP & PSW
938 002016 012716 002034 000002 3$:  MOV    #ENDT2,(SP)
939 002022 013766 000700          MOV    #EXPPSW,2(SP)
940 002030 000002          RTI
941                                     ;SOURCE1 STRING
942                                     ;MOST SIGNIFICANT DIGIT
943                                     ;SOURCE2 STRING
944                                     ;MOST SIGNIFICANT DIGIT
945                                     ;SOURCE1 STRING
946                                     ;MOST SIGNIFICANT DIGIT
947                                     ;SOURCE2 STRING
948                                     ;MOST SIGNIFICANT DIGIT
949                                     ;SOURCE1 STRING
950                                     ;MOST SIGNIFICANT DIGIT
951                                     ;SOURCE2 STRING
952                                     ;MOST SIGNIFICANT DIGIT
953 002032          055          S1T2:  .BYTE  55
954 002033          060          S2T2:  .BYTE  60
955                                     .EVEN
956 002034 016737 176652 000010  ENDT2: MOV    TEMP1,#10
957 002042 016737 176646 000012      MOV    TEMP2,#12
958                                     ;RESTORE TIMEOUT VECTOR CONTENTS
959
960                                     ;*****
961                                     ;*TEST 3      TEST 'ADDN' WITH A NEGATIVE LEADING SIGN SOURCE1, & VALID SOURCE2
962                                     ;*****
963 TST3:  SCOPE
964        JSR    R5,NPREP          ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
965        1
966        S1T3
967        1
968        S2T3
969        0
970        PC,CLBUF          ;CLEAR BUFFER AREA
971        MOV    #10,TEMP1      ;SAVE TIMEOUT TRAP VECTOR CONTENTS
972        MOV    #12,TEMP2
973        MOV    #T3CONT,#10    ;POINT TIMEOUT VECTOR TO TEST CONTINUATION
974        MOV    #340,#12
975        JSR    R5,XPSW        ;STORE EXPECTED PSW VALUE
976        .WORD  217
977        JSR    PC,GENR        ;SET UP GENERAL REGISTERS
978        SCC
979
980 T3:     ADDN
981                                     ;EXECUTE 'ADDN' INSTRUCTION
982                                     ;*****TEST 3 - ERROR 1*****
983                                     ;DECIMAL INSTRUCTION DID NOT TRAP ON
984                                     ;A NEGATIVE LEADING SIGN SOURCE2
985        ERROR   1
986
987        BR ENDT3
988
989 T3CONT:
990        CMP    R0,S1LN        ;CHECK R0 UNCHANGED
991        BEQ    64$
992        ERROR   2
993                                     ;*****TEST 3 - ERROR 2*****
994                                     ;R0 CHANGED
995                                     ;R0 SHOULD STILL EQUAL CONTENTS OF 'S1LN'
996                                     ;CHECK R1 UNCHANGED
997        64$:  CMP    R1,S1ADR
998        BEQ    65$

```

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 22
 CVKAJB.P11 22-JAN-82 08:49 T3

TEST 'ADDN' WITH A NEGATIVE LEADING SIGN SOURCE1, & VALID SOURCE2

SEQ 0021

985	002164	104003		ERROR	3	*****TEST 3 - ERROR 3*****
986						:R1 CHANGED
987						:R1 SHOULD STILL EQUAL CONTENTS OF 'S1ADR'
988	002166	020267	176456	65\$:	CMP R2,S2LN	:CHECK R2 UNCHANGED
989	002172	001401			BEQ 66\$	
990	002174	104004		ERROR	4	*****TEST 3 - ERROR 4*****
991						:R2 CHANGED
992						:R2 SHOULD STILL EQUAL THE CONTENTS OF 'S2LN'
993	002176	020367	176450	66\$:	CMP R3,S2ADR	:CHECK R3 UNCHANGED
994	002202	001401			BEQ 67\$	
995	002204	104005		ERROR	5	*****TEST 3 - ERROR 5*****
996						:R3 CHANGED
997						:R3 SHOULD STILL EQUAL THE CONTENTS OF 'S2ADR'
998	002206	020467	176446	67\$:	CMP R4,FILL	:CHECK R4 UNCHANGED
999	002212	001401			BEQ 68\$	
1000	002214	104006		ERROR	6	*****TEST 3 - ERROR 6*****
1001						:R4 CHANGED
1002						:R4 SHOULD STILL EQUAL THE CONTENTS OF 'FILL'
1003	002216	020567	176434	68\$:	CMP R5,DSTAD	:CHECK R5 UNCHANGED
1004	002222	001401			BEQ 69\$	
1005	002224	104007		ERROR	7	*****TEST 3 - ERROR 7*****
1006						:R5 CHANGED
1007						:R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
1008	002226			69\$:		:CHECK PSW AT TIME OF TRAP
1009	002226	016600	000002		MOV 2(SP),R0	
1010	002232	042700	177400		BIC #177400,R0	
1011	002236	020067	176436		CMP R0,EXPPSW	
1012	002242	001401			BEQ 1\$	
1013	002244	104010		ERROR	10	*****TEST 3 - ERROR 10*****
1014						:PSW ERROR
1015						:EXPECTED PSW IS STORED AT 'EXPPSW'
1016						:RESULTANT PSW IS IN R0
1017	002246	021627	002142	1\$:	CMP (SP),#T3+2	:CHECK ADDRESS OF TRAP
1018	002252	001403			BEQ 2\$	
1019	002254	011637	000522		MOV (SP),#SBDADR	:STORE BAD ADDRESS
1020	002260	104011		ERROR	11	*****TEST 3 - ERROR 11*****
1021						:TRAP ADDRESS ERROR
1022						:EXPECTED ADDRESS IS 'T3+2'
1023						:RESULTANT ADDRESS IS STORED AT 'SBDADR'
1024	002262	010600		2\$:	MOV SP,R0	:CHECK SP RESTORATION
1025	002264	062700	000004		ADD #4,R0	
1026	002270	020037	000702		CMP R0,#SAVR6	
1027	002274	001401			BEQ 3\$	
1028	002276	104012		ERROR	12	*****TEST 3 - ERROR 12*****
1029						:STACK POINTER WAS NOT RESTORED
1030						:EXPECTED SP VALUE IS STORED AT 'SAVR6'
1031						:ERRONEOUS SO VALUE IS AT 'BADR6'
1032	002300	012716	002316	3\$:	MOV #ENDT3,(SP)	:RESTORE SP & PSW
1033	002304	013766	000700		MOV #EXPPSW,2(SP)	
1034	002312	000002			RTI	
1035						
1036	002314			S1T3:		:SOURCE1 STRING
1037	002314	053			.BYTE 53	:MOST SIGNIFICANT DIGIT
1038	002315			S2T3:		:SOURCE2 STRING
1039	002315	060			.BYTE 60	:MOST SIGNIFICANT DIGIT
1040					.EVEN	

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 23
CVKAJB.P11 22-JAN-82 08:49 T3

TEST 'ADDN' WITH A NEGATIVE LEADING SIGN SOURCE1, & VALID SOURCE2

SEQ 0022

```

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 TST4: SCOPE
1050 002332 000004 JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1051 002334 004567 012372 JSR 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*****

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 24
 CVKAJB.P11 22-JAN-82 08:49 T4 TEST 'ADDN' WITH SOURCE2 LENGTH = 0, & VALID SOURCE1

SEQ 0023

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1097                                     ;R4 CHANGED
1098                                     ;R4 SHOULD STILL EQUAL THE CONTENTS OF 'FILL'
1099 002500 020567 176152          68$:  CMP      R5,DSTAD      ;CHECK R5 UNCHANGED
1100 002504 001401                BEQ      69$
1101 002506 104007                ERROR    7
1102                                     ;*****TEST 4 - ERROR 7*****
1103                                     ;R5 CHANGED
1104                                     ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
1105 002510                69$:  MOV      2(SP),R0
1106 002510 016600 000002          BIC      #177400,R0      ;CHECK PSW AT TIME OF TRAP
1107 002514 042700 177400          CMP      R0,EXPPSW
1108 002520 020067 176154          BEQ      1$
1109 002524 001401                ERROR    10
1110                                     ;*****TEST 4 - ERROR 10*****
1111                                     ;PSW ERROR
1112                                     ;EXPECTED PSW IS STORED AT 'EXPPSW'
1113 002530 021627 002424          1$:  CMP      (SP),#T4+2
1114 002534 001403                BEQ      2$
1115 002536 011637 000522          MOV      (SP),@#$BDADR
1116 002542 104011                ERROR    11
1117                                     ;STORE BAD ADDRESS
1118                                     ;*****TEST 4 - ERROR 11*****
1119                                     ;TRAP ADDRESS ERROR
1120 002544 010600                2$:  MOV      SP,R0
1121 002546 062700 000004          ADD      #4,R0
1122 002552 020037 000702          CMP      R0,@$SAVR6
1123 002556 001401                BEQ      3$
1124 002560 104012                ERROR    12
1125                                     ;*****TEST 4 - ERROR 12*****
1126                                     ;STACK POINTER WAS NOT RESTORED
1127                                     ;EXPECTED SP VALUE IS STORED AT 'SAVR6'
1128 002562 012716 002600          3$:  MOV      #ENDT4,(SP)
1129 002566 013766 000700 000002  MOV      @#EXPPSW,2(SP)
1130 002574 000002                RTI
1131                                     ;RESTORE SP & PSW
1132 002576                S1T4:  ;SOURCE1 STRING
1133 002576          060          .BYTE    60                ;MOST SIGNIFICANT DIGIT
1134 002577                S2T4:  ;SOURCE2 STRING
1135 002577          060          .BYTE    60                ;MOST SIGNIFICANT DIGIT
1136                                     .EVEN
1137
1138 002600 016737 176106 000010  ENDT4:  MOV      TEMP1,@#10
1139 002606 016737 176102 000012  MOV      TEMP2,@#12      ;RESTORE TIMEOUT VECTOR CONTENTS
1140
1141
1142                                     ;*****
1143                                     ;*TEST 5      TEST 'ADDN' BY ADDING TWO ZEROES WITH ZERO DESTINATION LENGTH
1144                                     ;*****
1145 002614 000004          TST5:  SCOPE
1146 002616 004567 012110          JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1147 002622 000001                1
1148 002624 002772                S1T5
1149 002626 000001                1
1150 002630 002773                S2T5
1151 002632 000000                0
1152 002634 004767 012164          JSR      PC,CLBUF      ;CLEAR BUFFER AREA

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 25
 CVKAJB.P11 22-JAN-82 08:49 T5

TEST 'ADDN' BY ADDING TWO ZEROES WITH ZERO DESTINATION LENGTH

SEQ 0024

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:			:SOURCE1 STRING
1203	002772	060			.BYTE	60	:MOST SIGNIFICANT DIGIT
1204	002773			S2T5:			:SOURCE2 STRING
1205	002773	060			.BYTE	60	:MOST SIGNIFICANT DIGIT
1206							
1207					.EVEN		
1208							

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 26
 CVKAJB.P11 22-JAN-82 08:49 T5

TEST 'ADDN' BY ADDING TWO ZEROES WITH ZERO DESTINATION LENGTH

SEQ 0025

```

1209
1210
1211
1212
1213
1214 002774 000004
1215 002776 004567 011730
1216 003002 000004
1217 003004 003176
1218 003006 000002
1219 003010 003202
1220 003012 000002
1221 003014 004767 012004
1222 003020 004567 012020
1223 003024 000200
1224 003026 004767 011726
1225 003032 000277
1226 003034 076050
1227
1228 003036 106767 175634
1229 003042 042767 177400 175626
1230 003050 023767 000700 175620
1231 003056 001401
1232 003060 104001
1233
1234
1235
1236 003062
1237 003062 005700
1238 003064 001401
1239 003066 104002
1240
1241 003070 005701
1242 003072 001401
1243 003074 104003
1244
1245 003076 005702
1246 003100 001401
1247 003102 104004
1248
1249 003104 005703
1250 003106 001401
1251 003110 104005
1252
1253 003112 020467 175536
1254 003116 001401
1255 003120 104006
1256
1257 003122 020567 175530
1258 003126 001401
1259 003130 104007
1260
1261 003132 023706 000702
1262 003136 001403
1263 003140 010637 000704
1264 003144 104010

*****
*TEST 6 TEST 'ADDN' WITH POSITIVE OPERANDS, SRC1 LENGTH .GT. SRC2 LENGTH, DL = NO
*****
TST6: SCOPE
      JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
      4 ;SOURCE1 LENGTH
      S1T6 ;SOURCE1 ADDRESS
      2 ;SOURCE2 LENGTH
      S2T6 ;SOURCE2 ADDRESS
      2 ;DESTINATION LENGTH
      PC,CLBUF ;CLEAR BUFFER AREA
      JSR R5,XPSW
      .WORD 200
      JSR PC,GENR ;SET UP GENERAL REGISTERS
      SCC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
      ADDN

MFPS CCODES ;STORE RESULTANT PSW
BIC #177400,CCODES ;CLEAR UNUSED BITS
CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
BEQ 64$ ;BR, IF EQUAL
ERROR 1 ;*****TEST 6 - ERROR 1*****
;PSW ERROR
;EXPECTED PSW IS STORED AT 'SAVR6'
;ERRONEOUS SP VALUE IS AT 'BADR6'

64$: TST R0 ;CHECK R0=0
      BEQ 65$
      ERROR 2 ;*****TEST 6 - ERROR 2*****
;R0 SHOULD BE ZERO
;CHECK R1=0

65$: TST R1
      BEQ 66$
      ERROR 3 ;*****TEST 6 - ERROR 3*****
;R1 SHOULD BE ZERO
;CHECK R2=0

66$: TST R2
      BEQ 67$
      ERROR 4 ;*****TEST 6 - ERROR 4*****
;R2 SHOULD BE ZERO
;CHECK R3=0

67$: TST R3
      BEQ 68$
      ERROR 5 ;*****TEST 6 - ERROR 5*****
;R3 SHOULD BE ZERO
;CHECK R4= DESTINATION LENGTH

68$: CMP R4,DSTLN
      BEQ 69$
      ERROR 6 ;*****TEST 6 - ERROR 6*****
;R4 SHOULD STILL BE DESTINATION LENGTH
;CHECK R5 = DESTINATION ADDRESS

69$: CMP R5,DSTAD
      BEQ 70$
      ERROR 7 ;*****TEST 6 - ERROR 7*****
;R5 SHOULD STILL BE DESTINATION ADDRESS
;VERIFY STACK POINTER IS RESTORED
;BR IF OK
;COPY BAD SP VALUE

70$: CMP @SAVR6,SP
      BEQ 71$
      MOV SP,@BADR6
      ERROR 10 ;*****TEST 6 - ERROR 10*****

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```
1265                                     :STACK POINTER NOT RESTORED BY INSTRUCTION
1266                                     :EXPECTED SP IS STORED AT 'SAVR6'
1267                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
1268 003146                               71$:
1269                                     :CHECK ANSWER
1270 003146 012700 003204                 MOV  #ANS6,R0      :POINT R0 TO EXPECTED ANSWER
1271 003152 016701 175500                 MOV  DSTAD,R1     :POINT R1 TO RESULTANT ANSWER
1272 003156 016702 175472                 MOV  DSTLN,R2     :STORE ANSWER LENGTH IN R1
1273 003162 122021                       72$:  CMPB  (R0)+,(R1)+ :COMPARE EACH DIGIT
1274 003164 001401                       BEQ   73$          :BR IF EQUAL
1275 003166 104011                       ERROR  11          :*****TEST 6 - ERROR 11*****
1276                                     :ERRONEOUS ANSWER
1277                                     :R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1278                                     :R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1279 003170 005302                       73$:  DEC   R2       :DECREMENT ANSWER LENGTH
1280 003172 001373                       BNE   72$          :BR IF NOT FINISHED
1281 003174 000404                       JR     TST7        :BR TO NEXT TEST
1282 003176                               S1T6:
1283 003176                               .BYTE  60         :SOURCE1 STRING
1284 003177                               .BYTE  60         :MOST SIGNIFICANT DIGIT
1285 003200                               .BYTE  62
1286 003201                               .BYTE  61
1287 003202                               S2T6:
1288 003202                               .BYTE  67         :SOURCE2 STRING
1289 003203                               .BYTE  70         :MOST SIGNIFICANT DIGIT
1290 003204                               ANS6:
1291 003204                               .BYTE  71         :EXPECTED ANSWER
1292 003205                               .BYTE  71
1293                                     .EVEN
1294
1295
1296
1297                                     ::*****
1298                                     :*TEST 7      TEST 'ADDN' WITH NEGATIVE OPERANDS, S2L .GT. S1L, NO OVERFLOW
1299                                     :*****
1300 003206 000004                               TST7:  SCOPE
1301 003210 004567 011516                     JSR   R5,NPREP  :PREPARE ARGUMENTS FOR INSTRUCTION TEST
1302 003214 000002                               2          :SOURCE1 LENGTH
1303 003216 003412                               S1T7        :SOURCE1 ADDRESS
1304 003220 000004                               4          :SOURCE2 LENGTH
1305 003222 003414                               S2T7        :SOURCE2 ADDRESS
1306 003224 000004                               4          :DESTINATION LENGTH
1307 003226 004767 011572                     JSR   PC,CLBUF  :CLEAR BUFFER AREA
1308 003232 004567 011606                     JSR   R5,XPSW
1309 003236 000210                               .WORD  210
1310 003240 004767 011514                     JSR   PC,GENR   :SET UP GENERAL REGISTERS
1311 003244 000277                               SCC          :SET UP THE COMPLEMENT OF EXPECTED CC'S
1312 003246 000250                               CLN
1313 003250 076050                               ADDN
1314
1315 003252 106767 175420                     MFPS  CCODES    :STORE RESULTANT PSW
1316 003256 042767 177400 175412             BIC   #177400 CCODES :CLEAR UNUSED BITS
1317 003264 023767 000700 175404             CMP   @EXPPSW,CCODES :CHECK PSW AGAINST EXPECTED VALUE
1318 003272 001401                               BEQ   6$         :BR, IF EQUAL
1319 003274 104001                               ERROR  1          :*****TEST 7 - ERROR 1*****
1320                                     :PSW ERROR
```

28 TEST "ADDN" WITH NEGATIVE OPERANDS, S2L .GT. S1L, NO OVERFLOW

SEQ 0027

PC	Instruction	Op	Op2	Op3	Op4	Comments
1321						:EXPECTED PSW IS STORED AT 'SAVR6'
1322						:ERRONEOUS SP VALUE IS AT 'BADR6'
1323	003276					
1324	003276	005700				64\$: TST R0
1325	003300	001401				BEQ 65\$
1326	003302	104002				ERROR 2
1327						:CHECK R0=0
1328	003304	005701				
1329	003306	001401				65\$: TST R1
1330	003310	104003				BEQ 66\$
1331						ERROR 3
1332	003312	005702				:CHECK R1=0
1333	003314	001401				
1334	003316	104004				66\$: TST R2
1335						BEQ 67\$
1336	003320	005703				ERROR 4
1337	003322	001401				:CHECK R2=0
1338	003324	104005				
1339						67\$: TST R3
1340	003326	020467	175322			BEQ 68\$
1341	003332	001401				ERROR 5
1342	003334	104006				:CHECK R3=0
1343						
1344	003336	020567	175314			68\$: CMP R4,DSTLN
1345	003342	001401				BEQ 69\$
1346	003344	104007				ERROR 6
1347						:CHECK R4= DESTINATION LENGTH
1348	003346	023706	000702			
1349	003352	001403				69\$: CMP R5,DSTAD
1350	003354	010637	000704			BEQ 70\$
1351	003360	104010				ERROR 7
1352						:CHECK R5= DESTINATION ADDRESS
1353						
1354						70\$: CMP @SAVR6,SP
1355	003362					BEQ 71\$
1356						MOV #ANS7,R0
1357	003362	012700	003420			MOV DSTAD,R1
1358	003366	016701	175264			MOV DSTLN,R2
1359	003372	016702	175256			72\$: CMPB (R0)+,(R1)+
1360	003376	122021				BEQ 73\$
1361	003400	001401				ERROR 11
1362	003402	104011				:CHECK ANSWER
1363						:POINT R0 TO EXPECTED ANSWER
1364						:POINT R1 TO RESULTANT ANSWER
1365						:STORE ANSWER LENGTH IN R1
1366	003404	005302				73\$: DEC R2
1367	003406	001373				BNE 72\$
1368	003410	000405				BR TST10
1369	003412					S1T7: .BYTE 63
1370	003412	063				.BYTE 165
1371	003413	165				S2T7: .BYTE 60
1372	003414					.BYTE 71
1373	003414	060				.BYTE 66
1374	003415	071				.BYTE 165
1375	003416	066				
1376	003417	165				

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 29
 CVKAJB.P11 22-JAN-82 08:49 T7

TEST 'ADDN' WITH NEGATIVE OPERANDS, S2L .GT. S1L, NO OVERFLOW

SEQ 0028

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1377 003420          ANS7:          ;EXPECTED ANSWER
1378 003420          .BYTE 61      ;MOST SIGNIFICANT DIGIT
1379 003421          .BYTE 60
1380 003422          .BYTE 60
1381 003423          .BYTE 160
1382
1383          .EVEN
1384
1385
1386          ;*****
1387          ;*TEST 10      TEST 'ADDN' WITH NEGATIVE OPERANDS, OVERFLOW
1388          ;*****
1389 003424 000004      TST10: SCOPE
1390 003426 004567 011300 JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1391 003432 000004      4          ;SOURCE1 LENGTH
1392 003434 003630      S1T10      ;SOURCE1 ADDRESS
1393 003436 000002      2          ;SOURCE2 LENGTH
1394 003440 003634      S2T10      ;SOURCE2 ADDRESS
1395 003442 000002      2          ;DESTINATION LENGTH
1396 003444 004767 011354 JSR      PC,CLBUF      ;CLEAR BUFFER AREA
1397 003450 004567 011370 JSR      R5,XPSW
1398 003454 000212      .WORD 212
1399 003456 004767 011276 JSR      PC,GENR      ;SET UP GENERAL REGISTERS
1400 003462 000265      +SEZ!SEC      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1401 003464 000252      +CLN!CLV
1402 003466 076050      ADDN
1403
1404 003470 106767 175202 MFPS      CCODES      ;STORE RESULTANT PSW
1405 003474 042767 177400 175174 BIC      #177400,CCODES      ;CLEAR UNUSED BITS
1406 003502 023767 000700 175166 CMP      @EXPPSW,CCODES      ;CHECK PSW AGAINST EXPECTED VALUE
1407 003510 001401      BEQ 64$      ;BR, IF EQUAL
1408 003512 104001      ERROR 1      ;*****TEST 10 - ERROR 1*****
1409          ;PSW ERROR
1410          ;EXPECTED PSW IS STORED AT 'SAVR6'
1411          ;ERRONEOUS SP VALUE IS AT 'BADR6'
1412 003514          64$:          ;CHECK R0=0
1413 003514 005700      TST      R0
1414 003516 001401      BEQ 65$
1415 003520 104002      ERROR 2      ;*****TEST 10 - ERROR 2*****
1416          ;R0 SHOULD BE ZERO
1417 003522 005701      65$:      TST      R1
1418 003524 001401      BEQ 66$
1419 003526 104003      ERROR 3      ;*****TEST 10 - ERROR 3*****
1420          ;R1 SHOULD BE ZERO
1421 003530 005702      66$:      TST      R2
1422 003532 001401      BEQ 67$
1423 003534 104004      ERROR 4      ;*****TEST 10 - ERROR 4*****
1424          ;R2 SHOULD BE ZERO
1425 003536 005703      67$:      TST      R3
1426 003540 001401      BEQ 68$
1427 003542 104005      ERROR 5      ;*****TEST 10 - ERROR 5*****
1428          ;R3 SHOULD BE ZERO
1429 003544 020467 175104      68$:      CMP      R4,DSTLN      ;CHECK R4= DESTINATION LENGTH
1430 003550 001401      BEQ 69$
1431 003552 104006      ERROR 6      ;*****TEST 10 - ERROR 6*****
1432          ;R4 SHOULD STILL BE DESTINATION LENGTH

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MAIN MACY11 30(1046) 22-JAN-82 08:50 PAGE 30
CVKA:8.P11 22-JAN-82 08:49 T10

TEST 'ADDN' WITH NEGATIVE OPERANDS, OVERFLOW

SEQ 0029

```

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$:  CMP      2#SAVR6,SP    ;VERIFY STACK POINTER IS RESTORED
1438 003570 001403              BEQ      71$      ;BR IF OK
1439 003572 010637 000704      MOV      SP,2#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:  .BYTE    60      ;SOURCE1 STRING
1459 003630              .BYTE    61      ;MOST SIGNIFICANT DIGIT
1460 003631              .BYTE    62
1461 003632              .BYTE    63
1462 003633              .BYTE    163
1463 003634              S2T10:  .BYTE    65      ;SOURCE2 STRING
1464 003634              .BYTE    164      ;MOST SIGNIFICANT DIGIT
1465 003635              .BYTE    167
1466 003636              ANS10:  .BYTE    67      ;EXPECTED ANSWER
1467 003636              .BYTE    167      ;MOST SIGNIFICANT DIGIT
1468 003637              .EVEN
1469
1470
1471
1472
1473
1474
1475
1476 003640 000004 011064      ;*****
1477 003642 004567              ;*TEST 11      TEST 'ADDN' WITH POSITIVE OPERANDS, S2L=S1L,OVERFLOW
1478 003646 000002              ;*****
1479 003650 004044      TST11:  SCOPE
1480 003652 000002              JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1481 003654 004046              2      ;SOURCE1 LENGTH
1482 003656 000002              S1T11      ;SOURCE1 ADDRESS
1483 003660 004767 011140      2      ;SOURCE2 LENGTH
1484 003664 004567 011154      S2T11      ;SOURCE2 ADDRESS
1485 003670 000206              2      ;DESTINATION LENGTH
1486 003672 004767 011062      JSR      PC,CLBUF    ;CLEAR BUFFER AREA
1487 003676 000271              JSR      R5,XPSW
1488 003700 000246              .WORD    206
                                JSR      PC,GENR      ;SET UP GENERAL REGISTERS
                                +-----SEC      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
                                + .CLV

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 31
 CVKAJB.P11 22-JAN-82 08:49 T11

TEST 'ADDN' WITH POSITIVE OPERANDS, S2L=S1L,OVERFLOW

SEQ 0030

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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 32
CVKAJB.P11 22-JAN-82 08:49 T11

TEST 'ADDN' WITH POSITIVE OPERANDS, S2L=S1L,OVERFLOW

SEQ 0031

```

1545 004044          S1T11:          ;SOURCE1 STRING
1546 004044          .BYTE 63        ;MOST SIGNIFICANT DIGIT
1547 004045          .BYTE 62
1548 004046          S2T11:          ;SOURCE2 STRING
1549 004046          .BYTE 66        ;MOST SIGNIFICANT DIGIT
1550 004047          .BYTE 70
1551 004050          ANS11:          ;EXPECTED ANSWER
1552 004050          .BYTE 60
1553 004051          .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 004050 000002          .2          ;SOURCE1 LENGTH
1564 004052 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
1582          ;PSW ERROR
1583          ;EXPECTED PSW IS STORED AT 'SAVR6'
1584          ;ERRONEOUS SP VALUE IS AT 'BADR6'
1585 004142          64$:          ;CHECK R0=0
1586 004144 001401          TST      R0
1587 004146 104002          BEQ      65$          *****TEST 12 - ERROR 2*****
1588          ;R0 SHOULD BE ZERO
1589 004150 005701          65$:          ;CHECK R1=0
1590 004152 001401          TST      R1
1591 004154 104003          BEQ      66$          *****TEST 12 - ERROR 3*****
1592          ;R1 SHOULD BE ZERO
1593 004156 005702          66$:          ;CHECK R2=0
1594 004160 001401          TST      R2
1595 004162 104004          BEQ      67$          *****TEST 12 - ERROR 4*****
1596          ;R2 SHOULD BE ZERO
1597 004164 005703          67$:          ;CHECK R3=0
1598 004166 001401          TST      R3
1599 004170 104005          BEQ      68$          *****TEST 12 - ERROR 5*****
1600          ;R3 SHOULD BE ZERO

```

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

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 34
 CVKAJB.P11 22-JAN-82 08:49 T13

TEST 'ADDN' WITH +SRC1 & -SRC2, ZERO RESULT

SEQ 0033

```

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*****
1665                                     ;PSW ERROR
1666                                     ;EXPECTED PSW IS STORED AT 'SAVR6'
1667                                     ;ERRONEOUS SP VALUE IS AT 'BADR6'
1668 004354      64$:      TST      R0      ;CHECK R0=0
1669 004354 005700      BEQ      65$
1670 004356 001401      ERROR      2      ;*****TEST 13 - ERROR 2*****
1671 004360 104002      ;R0 SHOULD BE ZERO
1672                                     ;CHECK R1=0
1673 004362 005701      65$:      TST      R1
1674 004364 001401      BEQ      66$
1675 004366 104003      ERROR      3      ;*****TEST 13 - ERROR 3*****
1676                                     ;R1 SHOULD BE ZERO
1677 004370 005702      66$:      TST      R2
1678 004372 001401      BEQ      67$
1679 004374 104004      ERROR      4      ;*****TEST 13 - ERROR 4*****
1680                                     ;R2 SHOULD BE ZERO
1681 004376 005703      67$:      TST      R3
1682 004400 001401      BEQ      68$
1683 004402 104005      ERROR      5      ;*****TEST 13 - ERROR 5*****
1684                                     ;R3 SHOULD BE ZERO
1685 004404 020467 174244      68$:      CMP      R4,DSTLN
1686 004410 001401      BEQ      69$
1687 004412 104006      ERROR      6      ;*****TEST 13 - ERROR 6*****
1688                                     ;R4 SHOULD STILL BE DESTINATION LENGTH
1689 004414 020567 174236      69$:      CMP      R5,DSTAD
1690 004420 001401      BEQ      70$
1691 004422 104007      ERROR      7      ;*****TEST 13 - ERROR 7*****
1692                                     ;R5 SHOULD STILL BE DESTINATION ADDRESS
1693 004424 023706 000702      70$:      CMP      @#SAVR6,SP
1694 004430 001403      BEQ      71$
1695 004432 010637 000704      MOV      SP,@#BADR6
1696 004436 104010      ERROR      10      ;*****TEST 13 - ERROR 10*****
1697                                     ;STACK POINTER NOT RESTORED BY INSTRUCTION
1698                                     ;EXPECTED SP IS STORED AT 'SAVR6'
1699                                     ;ERRONEOUS SP VALUE IS AT 'BADR6'
1700 004440      71$:      BR      TST14      ;BR TO NEXT TEST
1701 004440 000401      S1T13:      .BYTE      63      ;SOURCE1 STRING
1702 004442      063      S2T13:      .BYTE      163     ;MOST SIGNIFICANT DIGIT
1703 004442      163      ;SOURCE2 STRING
1704 004443      .EVEN      ;MOST SIGNIFICANT DIGIT
1705 004443
1706
1707
1708
1709
1710
1711
1712

```

```

*****
*TEST 14      TEST 'ADDN' WITH -SRC1 & +SRC2, S1L .LT. S2L, /S2/ .GT. /S1/
*****

```

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          E^ROR      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$:
1737 004534 005700          TST      R0          ;CHECK R0=0
1738 004536 001401          BEQ      65$      65$
1739 004540 104002          ERROR      2      ;*****TEST 14 - ERROR 2*****
1740          ;R0 SHOULD BE ZERO
1741 004542 005701          65$: TST      R1          ;CHECK R1=0
1742 004544 001401          BEQ      66$      66$
1743 004546 104003          ERROR      3      ;*****TEST 14 - ERROR 3*****
1744          ;R1 SHOULD BE ZERO
1745 004550 005702          66$: TST      R2          ;CHECK R2=0
1746 004552 001401          BEQ      67$      67$
1747 004554 104004          ERROR      4      ;*****TEST 14 - ERROR 4*****
1748          ;R2 SHOULD BE ZERO
1749 004556 005703          67$: TST      R3          ;CHECK R3=0
1750 004560 001401          BEQ      68$      68$
1751 004562 104005          ERROR      5      ;*****TEST 14 - ERROR 5*****
1752          ;R3 SHOULD BE ZERO
1753 004564 020467 174064          68$: CMP      R4,DSTLN    ;CHECK R4= DESTINATION LENGTH
1754 004570 001401          BEQ      69$      69$
1755 004572 104006          ERROR      6      ;*****TEST 14 - ERROR 6*****
1756          ;R4 SHOULD STILL BE DESTINATION LENGTH
1757 004574 020567 174056          69$: CMP      R5,DSTAD    ;CHECK R5 = DESTINATION ADDRESS
1758 004600 004001          BEQ      70$      70$
1759 004602 104007          ERROR      7      ;*****TEST 14 - ERROR 7*****
1760          ;R5 SHOULD STILL BE DESTINATION ADDRESS
1761 004604 023706 000702          70$: CMP      @SAVR6,SP    ;VERIFY STACK POINTER IS RESTORED
1762 004610 001403          BEQ      71$      71$
1763 004612 010637 000704          MOV      SP,@BADR6
1764 004616 104010          ERROR      10     ;COPY BAD SP VALUE
1765          ;*****TEST 14 - ERROR 10*****
1766          ;STACK POINTER NOT RESTORED BY INSTRUCTION
1767          ;EXPECTED SP IS STORED AT 'SAVR6'
1768 004620          71$:          ;ERRONEOUS SP VALUE IS AT 'BADR6'

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 36
CVKAJB.P11 22-JAN-82 08:49 T14

TEST 'ADDN' WITH -SRC1 & +SRC2, S1L .LT. S2L, /S2/ .GT. /S1/

SEQ 0035

```

1769                                     :CHECK ANSWER
1770 004620 012700 004657                MOV  #ANS14,R0          :POINT R0 TO EXPECTED ANSWER
1771 004624 016701 174026                MOV  DSTAD,R1          :POINT R1 TO RESULTANT ANSWER
1772 004630 016702 174020                MOV  DSTLN,R2          :STORE ANSWER LENGTH IN R1
1773 004634 122021                        72$: CMPB  (R0)+,(R1)+    :COMPARE EACH DIGIT
1774 004636 001401                        BEQ   73$              :BR IF EQUAL
1775 004640 104011                        ERROR 11              :*****TEST 14 - ERROR 11*****
1776                                     :ERRONEOUS ANSWER
1777                                     :R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1778                                     :R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1779 004642 005302                        73$: DEC  R2            :DECREMENT ANSWER LENGTH
1780 004644 001373                        BNE   72$            :BR IF NOT FINISHED
1781 004646 000405                        BR    TST15          :BR TO NEXT TEST
1782 004650                                     :SOURCE1 STRING
1783 004650 067                           S1T14: .BYTE 67      :MOST SIGNIFICANT DIGIT
1784 004651 066                           .BYTE 66
1785 004652 064                           .BYTE 64
1786 004653                                     :SOURCE2 STRING
1787 004653 060                           S2T14: .BYTE 60      :MOST SIGNIFICANT DIGIT
1788 004654 070                           .BYTE 70
1789 004655 063                           .BYTE 63
1790 004656 171                           .BYTE 171
1791 004657                                     :EXPECTED ANSWER
1792 004657 067                           ANS14: .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 010042                TST15: SCOPE
1802 004664 004567                        JSR   R5,NPREP        :PREPARE ARGUMENTS FOR INSTRUCTION TEST
1803 004670 000004                        4
1804 004672 005066                        S1T15                :SOURCE1 LENGTH
1805 004674 000003                        3                    :SOURCE1 ADDRESS
1806 004676 005072                        S2T15                :SOURCE2 LENGTH
1807 004700 000002                        2                    :SOURCE2 ADDRESS
1808 004702 004767 010116                JSR   PC,CLBUF        :DESTINATION LENGTH
1809 004706 004567 010132                JSR   R5,XPSW        :CLEAR BUFFER AREA
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$:

```

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 37
 CVKAJB.P11 22-JAN-82 08:49 T15

TEST 'ADDN' WITH +SRC1 & -SRC2, S1L .GT. S2L, /S2 .GT. /S1/, OVERFLOW

SEQ 0036

1825	004752	005700		TST	R0		:CHECK R0=0
1826	004754	001401		BEQ	65\$		
1827	004756	104002		ERROR	2		:*****TEST 15 - ERROR 2*****
1828							:R0 SHOULD BE ZERO
1829	004760	005701	65\$:	TST	R1		:CHECK R1=0
1830	004762	001401		BEQ	66\$		
1831	004764	104003		ERROR	3		:*****TEST 15 - ERROR 3*****
1832							:R1 SHOULD BE ZERO
1833	004766	005702	66\$:	TST	R2		:CHECK R2=0
1834	004770	001401		BEQ	67\$		
1835	004772	104004		ERROR	4		:*****TEST 15 - ERROR 4*****
1836							:R2 SHOULD BE ZERO
1837	004774	005703	67\$:	TST	R3		:CHECK R3=0
1838	004776	001401		BEQ	68\$		
1839	005000	104005		ERROR	5		:*****TEST 15 - ERROR 5*****
1840							:R3 SHOULD BE ZERO
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*****
1844							:R4 SHOULD STILL BE DESTINATION LENGTH
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*****
1848							:R5 SHOULD STILL BE DESTINATION ADDRESS
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*****
1853							:STACK POINTER NOT RESTORED BY INSTRUCTION
1854							:EXPECTED SP IS STORED AT 'SAVR6'
1855							:ERRONEOUS SP VALUE IS AT 'BADR6'
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*****
1864							:ERRONEOUS ANSWER
1865							:R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1866							:R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 38
CVKAJB.P11 22-JAN-82 08:49 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

*TEST 16 TEST ADDN WITH -SRC1 & +SRC2, S1L .LT. S2L, /S1/ .GT. /S2/, OVERFLOW

```

1889 TST16: CCOPE
1890 005100 000004 JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1891 005102 004567 007624 3 ;SOURCE1 LENGTH
1892 005106 000003 S1T16 ;SOURCE1 ADDRESS
1893 005110 005304 4 ;SOURCE2 LENGTH
1894 005112 000004 S2T16 ;SOURCE2 ADDRESS
1895 005114 005307 2 ;DESTINATION LENGTH
1896 005116 000002 JSR PC,CLBUF ;CLEAR BUFFER AREA
1897 005120 004767 007700 JSR R5,XPSW
1898 005124 004567 007714 .WORD 206
1899 005130 000206 JSR PC,ENR ;SET UP GENERAL REGISTERS
1900 005132 004767 007622 +SEN!SEC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
1901 005136 000271 +CLZ!CLV
1902 005140 000246 ADDN
1903 005142 076050
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 64$ BR, IF EQUAL
1909 005166 104001 ERROR 1 ;*****TEST 16 - ERROR 1*****
1910 ;PSW ERROR
1911 ;EXPECTED PSW IS STORED AT 'SAVR6'
1912 ;ERRONEOUS SP VALUE IS AT 'BADR6'
1913 005170 64$: TST R0 ;CHECK R0=0
1914 005170 005700 BEQ 65$
1915 005172 001401 ERROR 2 ;*****TEST 16 - ERROR 2*****
1916 005174 104002 ;R0 SHOULD BE ZERO
1917 ;CHECK R1=0
1918 005176 005701 65$: TST R1
1919 005200 001401 BEQ 66$
1920 005202 104003 ERROR 3 ;*****TEST 16 - ERROR 3*****
1921 ;R1 SHOULD BE ZERO
1922 ;CHECK R2=0
1922 005204 005702 66$: TST R2
1923 005206 001401 BEQ 67$
1924 005210 104004 ERROR 4 ;*****TEST 16 - ERROR 4*****
1925 ;R2 SHOULD BE ZERO
1925 ;CHECK R3=0
1926 005212 005703 67$: TST R3
1927 005214 001401 BEQ 68$
1928 005216 104005 ERROR 5 ;*****TEST 16 - ERROR 5*****
1929 ;R3 SHOULD BE ZERO
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*****
1933 ;R4 SHOULD STILL BE DESTINATION LENGTH
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*****

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 39
CVKAJB.P11 22-JAN-82 08:49 T16

TEST ADDN WITH -SRC1 & +SRC2,S1L .LT. S2L, /S1/ .GT. /S2/,OVERFLOW

SEQ 0038

```

1937
1938 005240 023706 000702      70$:  CMP      @#SAVR6,SP      ;R5 SHOULD STILL BE DESTINATION ADDRESS
1939 005244 001403              BEQ      71$          ;VERIFY STACK POINTER IS RESTORED
1940 005246 010637 000704      MOV      SP,@#BADR6      ;BR IF OK
1941 005252 104010              ERROR    10          ;COPY BAD SP VALUE
1942                                     ;*****TEST 16 - ERROR 10*****
1943                                     ;STACK POINTER NOT RESTORED BY INSTRUCTION
1944                                     ;EXPECTED SP IS STORED AT 'SAVR6'
1945                                     ;ERRONEOUS SP VALUE IS AT 'BADR6'
1946
1947 005254 012700 005313      71$:
1948 005260 016701 173372      MOV      #ANS16,R0      ;CHECK ANSWER
1949 005264 016702 173364      MOV      DSTAD,R1      ;POINT R0 TO EXPECTED ANSWER
1950 005270 122021              MOV      DSTLN,R2      ;POINT R1 TO RESULTANT ANSWER
1951 005272 001401              CMPB     (R0)+,(R1)+      ;STORE ANSWER LENGTH IN R1
1952 005274 104011              BEQ      73$          ;COMPARE EACH DIGIT
1953                                     ;BR IF EQUAL
1954                                     ;*****TEST 16 - ERROR 11*****
1955                                     ;ERRONEOUS ANSWER
1956                                     ;R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
1957 005276 005302              DEC      R2          ;R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
1958 005300 001373              BNE     72$          ;DECREMENT ANSWER LENGTH
1959 005302 000405              BR      TST17        ;BR IF NOT FINISHED
1960                                     ;BR TO NEXT TEST
1961 005304              .BYTE     61          ;SOURCE1 STRING
1962 005305              .BYTE     67          ;MOST SIGNIFICANT DIGIT
1963 005306              .BYTE     162
1964 005307
1965 005307              .BYTE     60          ;SOURCE2 STRING
1966 005310              .BYTE     60          ;MOST SIGNIFICANT DIGIT
1967 005311              .BYTE     67
1968 005312              .BYTE     62
1969 005313
1970 005314              .BYTE     60          ;EXPECTED ANSWER
1971              .BYTE     60          ;MOST SIGNIFICANT DIGIT
1972              .EVEN
1973
1974
1975
1976
1977
1978 005316 000004              ;*****
1979 005320 004567 007406      ;*TEST 17      TEST ADDN WITH +SRC1 & -SRC2, S1L=S2L, /S1/ .GT./S2/,OVERFLOW
1980 005324 000003              ;*****
1981 005326 005522              TST17:  SCOPE
1982 005330 000003              JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
1983 005332 005525              3
1984 005334 000002              S1T17      ;SOURCE1 LENGTH
1985 005336 004767 007462      3
1986 005342 004567 007476      S2T17      ;SOURCE1 ADDRESS
1987 005346 000202              3
1988 005350 004767 007404      2
1989 005354 000277              JSR      PC,CLBUF      ;SOURCE2 LENGTH
1990 005356 000242              JSR      R5,XPSW      ;SOURCE2 ADDRESS
1991 005360 076050              .WORD    202          ;DESTINATION LENGTH
1992                                     ;CLEAR BUFFER AREA
                                     ;SET UP GENERAL REGISTERS
                                     ;SET UP THE COMPLEMENT OF EXPECTED CC'S

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 40
CVKAJB.P11 22-JAN-82 08:49 T17

TEST ADDN WITH +SRC1 & -SRC2, S1L=S2L, /S1/ .GT./S2/,OVERFLOW

SEQ 0039

1993	005362	106767	173310		MFPS	CCODES	:STORE RESULTANT PSW
1994	005366	042767	177400	173302	BIC	#177400,CCODES	:CLEAR UNUSED BITS
1995	005374	023757	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*****
2005							:R0 SHOULD BE ZERO
2006	005414	005701			65\$:	TST R1	:CHECK R1=0
2007	005416	001401			BEQ	66\$	
2008	005420	104003			ERROR	3	:*****TEST 17 - ERROR 3*****
2009							:R1 SHOULD BE ZERO
2010	005422	005702			66\$:	TST R2	:CHECK R2=0
2011	005424	001401			BEQ	67\$	
2012	005426	104004			ERROR	4	:*****TEST 17 - ERROR 4*****
2013							:R2 SHOULD BE ZERO
2014	005430	005703			67\$:	TST R3	:CHECK R3=0
2015	005432	001401			BEQ	68\$	
2016	005434	104005			ERROR	5	:*****TEST 17 - ERROR 5*****
2017							:R3 SHOULD BE ZERO
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*****
2021							:R4 SHOULD STILL BE DESTINATION LENGTH
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*****
2025							:R5 SHOULD STILL BE DESTINATION ADDRESS
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*****
2030							:STACK POINTER NOT RESTORED BY INSTRUCTION
2031							:EXPECTED SP IS STORED AT 'SAVR6'
2032							:ERRONEOUS SP VALUE IS AT 'BADR6'
2033	005472				71\$:		
2034							:CHECK ANSWER
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*****
2041							:ERRONEOUS ANSWER
2042							:R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2043							:R1 CONTAINS THE PC+1 OF THE RESULTANT DIGIT
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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 41
 C/KAJB.P11 22-JAN-82 08:49 T17

TEST ADDN WITH +SRC1 & -SRC2, S1L=S2L, /S1/ .GT./S2/,OVERFLOW

SEQ 0040

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2049 005523 065 .BYTE 65
2050 005524 067 .BYTE 67
2051 005525 S2T17: .SOURCE2 STRING
2052 005525 060 .MOST SIGNIFICANT DIGIT
2053 005526 063 .BYTE 63
2054 005527 165 .BYTE 165
2055 005530 ANS17: .EXPECTED ANSWER
2056 005530 062 .MOST SIGNIFICANT DIGIT
2057 005531 062 .BYTE 62
2058 .EVEN
2059
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$: TST R0 ;CHECK R0=0
2089 005622 005700 BEQ 65$
2090 005624 001401 ERROR 2 ;*****TEST 20 - ERROR 2*****
2091 005626 104002 ;R0 SHOULD BE ZERO
2092 ;CHECK R1=0
2093 005630 005701 65$: TST R1
2094 005632 001401 BEQ 66$
2095 005634 104003 ERROR 3 ;*****TEST 20 - ERROR 3*****
2096 ;R1 SHOULD BE ZERO
2097 005636 005702 66$: TST R2
2098 005640 001401 BEQ 67$
2099 005642 104004 ERROR 4 ;CHECK R2=0
2100 ;*****TEST 20 - ERROR 4*****
2101 005644 005703 67$: TST R3
2102 005646 001401 BEQ 68$
2103 005650 104005 ERROR 5 ;CHECK R3=0
2104 ;*****TEST 20 - ERROR 5*****
2105 ;R3 SHOULD BE ZERO

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 42
CVKAJB.P11 22-JAN-82 08:49 T20

TEST ADDN WITH POSITIVE OPERANDS, OVERFLOW, NO CARRY OUT OF OVERFLOW

SEQ 0041

```

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$:
2121                                ;CHECK ANSWER
2122 005706 012700 005744      MOV      #ANS20,R0      ;POINT R0 TO EXPECTED ANSWER
2123 005712 016701 172740      MOV      DSTAD,R1      ;POINT R1 TO RESULTANT ANSWER
2124 005716 016702 172732      MOV      DSTLN,R2      ;STORE ANSWER LENGTH IN R1
2125 005722 122021              CMPB     (R0)+,(R1)+      ;COMPARE EACH DIGIT
2126 005724 001401              BEQ      73$      ;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$:  DEC      R2      ;DECREMENT ANSWER LENGTH
2132 00573 001373              BNE      72$      ;BR IF NOT FINISHED
2133 005734 000404              BR       TST21      ;BR TO NEXT TEST
2134 005736              S1T20:
2135 005736 070              .BYTE     70      ;SOURCE1 STRING
2136 005737 062              .BYTE     62      ;MOST SIGNIFICANT DIGIT
2137 005740 064              .BYTE     64
2138 005741              S2T20:
2139 005741 061              .BYTE     61      ;SOURCE2 STRING
2140 005742 070              .BYTE     70      ;MOST SIGNIFICANT DIGIT
2141 005743 065              .BYTE     65
2142 005744              ANS20:
2143 005744 060              .BYTE     60      ;EXPECTED ANSWER
2144 005745 071              .BYTE     71      ;MOST SIGNIFICANT DIGIT
2145
2146              .EVEN
2147
2148
2149
2150      ;*****
2151      ;*TEST 21      TEST INTERRUPTABILITY OF 'ADDN'
2152      ;*****
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

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 43
 CVKAJB.P11 22-JAN-82 08:49 T21 TEST: INTERRUPTABILITY OF 'ADDN'

SEQ 0042

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2161 006004                                T21CONT:
2162 006004 004567 006722                JSR    R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2163 006010 000004                        4          ;SOURCE1 LENGTH
2164 006012 006260                        S1T21        ;SOURCE1 ADDRESS
2165 006014 000004                        4          ;SOURCE2 LENGTH
2166 006016 006264                        S2T21        ;SOURCE2 ADDRESS
2167 006020 000005                        5          ;DESTINATION LENGTH
2168 006022 004767 006776                JSR    PC,CLBUF      ;CLEAR BUFFER AREA
2169 006026 012767 006106 172640          MOV    #ADDNPC,PCI    ;STORE PC OF TEST INSTRUCTION
2170 006034 012777 015114 172626          MOV    #INTR,@TVECT  ;POINT TTY VECTOR TO INTERRUPT ROUTINE
2171 006042 005077 172624                CLR    @TPSW        ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
2172 006046 004767 007016                JSR    PC,TDONE       ;WAIT FOR SLU READY
2173 006052 013777 000554 172606          MOV    @#NULL,@TBUF  ;SEND NULL CHARACTER
2174 006060 004567 006760                JSR    R5,XPSW        ;STORE EXPECTED PSW
2175 006064 000000                        .WORD    0
2176 006066 106427 000000                MTPS    #0          ;ALLOW INTERRUPTS
2177 006072 052777 000100 172564          BIS    #100,@TCSR    ;ENABLE TTY INTERRUPTS
2178 006100 004767 006654          READDN: JSR    PC,GENR      ;SET UP GENERAL REGISTERS
2179 006104 000277                        SCC
2180 006106 076050          ADDNPC: ADDN      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2181
2182 006110 106767 172562                MFPS    CCODES      ;STORE RESULTANT PSW
2183 006114 032777 000100 172542          BIT    #100,@TCSR  ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
2184 006122 001366                        BNE    READDN      ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
2185 006124 042767 177400 172544          BIC    #177400,CCODES ;CLEAR UNUSED BITS
2186 006132 023767 000700 172536          CMP    @#EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
2187 006140 001401                        BEQ    64$          ;BR, IF EQUAL
2188 006142 104001                        ERROR    1          ;*****TEST 21 - ERROR 1*****
2189                                     ;PSW ERROR
2190                                     ;EXPECTED PSW IS STORED AT 'SAVR6'
2191                                     ;ERRONEOUS SP VALUE IS AT 'BADR6'
2192
2192 006144                                64$:
2193 006144 005700                        TST     R0          ;CHECK R0=0
2194 006146 001401                        BEQ    65$
2195 006150 104002                        ERROR    2          ;*****TEST 21 - ERROR 2*****
2196                                     ;R0 SHOULD BE ZERO
2197 006152 005701                                65$:
2198 006154 001401                        TST     R1          ;CHECK R1=0
2199 006156 104003                        BEQ    66$
2200                                     ;*****TEST 21 - ERROR 3*****
2201                                     ;R1 SHOULD BE ZERO
2202 006160 005702                                66$:
2203 006162 001401                        TST     R2          ;CHECK R2=0
2204 006164 104004                        BEQ    67$
2205                                     ;*****TEST 21 - ERROR 4*****
2206 006166 005703                                67$:
2207 006170 001401                        TST     R3          ;CHECK R3=0
2208 006172 104005                        BEQ    68$
2209                                     ;*****TEST 21 - ERROR 5*****
2210 006174 020467 172454                                68$:
2211 006200 001401                        CMP     R4,DSTLN      ;CHECK R4= DESTINATION LENGTH
2212 006202 104006                        BEQ    69$
2213                                     ;*****TEST 21 - ERROR 6*****
2214 006204 020567 172446                                69$:
2215 006210 001401                        CMP     R5,DSTAD      ;CHECK R5 = DESTINATION ADDRESS
2216 006212 104007                        BEQ    70$
2217                                     ;*****TEST 21 - ERROR 7*****
2218                                     ;R5 SHOULD STILL BE DESTINATION ADDRESS

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 44
 CVKAJB.P11 22-JAN-82 08:49 T21 TEST INTERRUPTABILITY OF 'ADDN'

SEQ 0043

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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$:
2225                                ;CHECK ANSWER
2226 006230 01270C 006270      MOV      #ANS21,R0      ;POINT R0 TO EXPECTED ANSWER
2227 006234 016701 172416      MOV      DSTAD,R1      ;POINT R1 TO RESULTANT ANSWER
2228 006240 016702 172410      MOV      DSTLN,R2      ;STORE ANSWER LENGTH IN R1
2229 006244 122021              72$:  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:
2239 006260          061      .BYTE    61              ;SOURCE1 STRING
2240 006261          062      .BYTE    62              ;MOST SIGNIFICANT DIGIT
2241 006262          063      .BYTE    63
2242 006263          064      .BYTE    64
2243 006264              S2T21:
2244 006264          065      .BYTE    65              ;SOURCE2 STRING
2245 006265          066      .BYTE    66              ;MOST SIGNIFICANT DIGIT
2246 006266          067      .BYTE    67
2247 006267          070      .BYTE    70
2248 006270              ANS21:
2249 006270          060      .BYTE    60              ;EXPECTED ANSWER
2250 006271          066      .BYTE    66              ;MOST SIGNIFICANT DIGIT
2251 006272          071      .BYTE    71
2252 006273          061      .BYTE    61
2253 006274          062      .BYTE    62
2254
2255 006276 006276          .EVEN
2256 006276 016777 172370 172364  ENDT21: MOV      TPSW,@TVECT
2257 006304 106427 000200      MTPS      #200
2258
2259
2260
2261
2262
2263 006310 000004              ::*****
2264 006312 004567 006414      ;*TEST 22      TEST 'SUBN' WITH POSITIVE OPERANDS, SRC1 .GT. SRC2
2265 006316 000004              ;*****
2266 006320 006514      TST22:  SCOPE
2267 006322 000003              JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2268 006324 006520              4              ;SOURCE1 LENGTH
2269 006326 000003              S1T22      ;SOURCE1 ADDRESS
2270 006330 004767 006470              3              ;SOURCE2 LENGTH
2271 006334 004567 006504              S2T22      ;SOURCE2 ADDRESS
2272 006340 000210              3              ;DESTINATION LENGTH
              JSR      PC,CLBUF      ;CLEAR BUFFER AREA
              JSR      R5,XPSW
              .WORD    210

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 45
 CVKAJB.P11 22-JAN-82 08:49 T22 TEST 'SUBN' WITH POSITIVE OPERANDS, SRC1 .GT. SRC2

SEQ 0044

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*****
2283						:PSW ERROR
2284						:EXPECTED PSW IS STORED AT 'SAVR6'
2285						:ERRONEOUS SP VALUE IS AT 'BADR6'
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*****
2290						:R0 SHOULD BE ZERO
2291	006406	005701		65\$:	TST R1	:CHECK R1=0
2292	006410	001401		BEQ	66\$	
2293	006412	104003		ERROR	3	:*****TEST 22 - ERROR 3*****
2294						:R1 SHOULD BE ZERO
2295	006414	005702		66\$:	TST R2	:CHECK R2=0
2296	006416	001401		BEQ	67\$	
2297	006420	104004		ERROR	4	:*****TEST 22 - ERROR 4*****
2298						:R2 SHOULD BE ZERO
2299	006422	005703		67\$:	TST R3	:CHECK R3=0
2300	006424	001401		BEQ	68\$	
2301	006426	104005		ERROR	5	:*****TEST 22 - ERROR 5*****
2302						:R3 SHOULD BE ZERO
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*****
2306						:R4 SHOULD STILL BE DESTINATION LENGTH
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*****
2310						:R5 SHOULD STILL BE DESTINATION ADDRESS
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*****
2315						:STACK POINTER NOT RESTORED BY INSTRUCTION
2316						:EXPECTED SP IS STORED AT 'SAVR6'
2317						:ERRONEOUS SP VALUE IS AT 'BADR6'
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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 46
CVKAJB.P11 22-JAN-82 08:49 T22

TEST 'SUBN' WITH POSITIVE OPERANDS, SRC1 .GT. SRC2

SEQ 0045

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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 BIC #177400,CCODES ;CLEAR UNUSED BITS
2367 006602 023767 000700 172074 CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
2368 006610 001401 172066 BEQ 64$ ;BR, IF EQUAL
2369 006612 104001      ERROR 1 ;*****TEST 23 - ERROR 1*****
2370
2371      ;PSW ERROR
2372      ;EXPECTED PSW IS STORED AT 'SAVR6'
2373      ;ERRONEOUS SP VALUE IS AT 'BADR6'
2374 006614           64$: TST R0 ;CHECK R0=0
2375 006616 005700      BEQ 65$
2376 006620 001401      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*****

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 47
 CVKAJB.P11 22-JAN-82 08:49 T23 TEST "SUBN" WITH NEGATIVE OPERANDS, SRC1 .GTT. SRC2

SEQ 0046

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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$:
2406                                ;CHECK ANSWER
2407 006700 012700 006737    MOV    #ANS23,R0    ;POINT R0 TO EXPECTED ANSWER
2408 006704 016701 171746    MOV    DSTAD,R1    ;POINT R1 TO RESULTANT ANSWER
2409 006710 016702 171740    MOV    DSTLN,R2    ;STORE ANSWER LENGTH IN R1
2410 006714 122021          CMPB   (R0)+,(R1)+   ;COMPARE EACH DIGIT
2411 006716 001401          BEQ    73$          ;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:  .BYTE  71          ;SOURCE1 STRING
2420 006730          .BYTE  66          ;MOST SIGNIFICANT DIGIT
2421 006731          .BYTE  162
2422 006732          .BYTE  162
2423 006733          S2T23:  .BYTE  60          ;SOURCE2 STRING
2424 006733          .BYTE  70          ;MOST SIGNIFICANT DIGIT
2425 006734          .BYTE  63
2426 006735          .BYTE  161
2427 006736          .BYTE  161
2428 006737          ANS23:  .BYTE  61          ;EXPECTED ANSWER
2429 006737          .BYTE  63          ;MOST SIGNIFICANT DIGIT
2430 006740          .BYTE  61
2431 006741          .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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MAIN. MACY11 30(1046) 22-JAN-92 08:50 PAGE 48
 CVKAJB.P11 22-JAN-82 08:49 T24 TEST INTERRUPTABILITY OF 'SUBN'

SEQ 0047

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2441 006752 026767 171572 171704      CMP      STPS,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,$FNV    ;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: JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2448 007000 004567 005726              JSR      4              ;SOURCE1 LENGTH
2449 007004 000004                    JSR      S1T24          ;SOURCE1 ADDRESS
2450 007006 007256                    JSR      4              ;SOURCE2 LENGTH
2451 007010 000004                    JSR      S2T24          ;SOURCE2 ADDRESS
2452 007012 007262                    JSR      5              ;DESTINATION LENGTH
2453 007014 000005                    JSR      PC,CLBUF        ;CLEAR BUFFER AREA
2454 007016 004767 006002              MOV      #SUBNPC,PCI    ;STORE PC OF TEST INSTRUCTION
2455 007022 012767 007104 171644      MOV      #INTR,@TVECT  ;POINT TTY VECTOR TO INTERRUPT ROUTINE
2456 007030 012777 015114 171632      CLR      @IPSW        ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
2457 007036 005077 171630              JSR      PC,TDONE       ;WAIT FOR SLU READY
2458 007042 004767 006022              MOV      @NULL,@TBUF   ;SEND NULL CHARACTER
2459 007046 013777 000554 171612      JSR      R5,XPSW       ;STORE EXPECTED PSW
2460 007054 004567 005764              .WORD    10
2461 007060 000010                    MTPS      #0              ;ALLOW INTERRUPTS
2462 007062 106427 000000              BIS      #100,@TCSR   ;ENABLE TTY INTERRUPTS
2463 007066 052777 000100 171570      JSR      PC,GENR      ;SET UP GENERAL REGISTERS
2464 007074 004767 005660      RESUBN: SCC          ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2465 007100 000277                    CLN
2466 007102 000250                    SUBNPC: SUBN
2467 007104 076051
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
2477
2478
2479
2480
2481
2482
2483
2484
2485
2486
2487
2488
2489
2490
2491
2492
2493
2494
2495
2496
007142
007142 005700
007144 001401
007146 104002
007150 005701
007152 001401
007154 104003
007156 005702
007160 001401
007162 104004
007164 005703
007166 001401
007170 104005
007172 020467 171456
64$:
65$:
66$:
67$:
68$:
TST      R0
BEQ      65$
ERROR    2
TST      R1
BEQ      66$
ERROR    3
TST      R2
BEQ      67$
ERROR    4
TST      R3
BEQ      68$
ERROR    5
CMP      R4,DSTLN
;CHECK R0=0
;*****TEST 24 - ERROR 2*****
;R0 SHOULD BE ZERO
;CHECK R1=0
;*****TEST 24 - ERROR 3*****
;R1 SHOULD BE ZERO
;CHECK R2=0
;*****TEST 24 - ERROR 4*****
;R2 SHOULD BE ZERO
;CHECK R3=0
;*****TEST 24 - ERROR 5*****
;R3 SHOULD BE ZERO
;CHECK R4= DESTINATION LENGTH

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 49
 CVKAJB.P11 22-JAN-82 08:49 T24 TEST INTERRUPTABILITY OF 'SUBN'

SEQ 0048

```

2497 007176 001401      BEQ      69$
2498 007200 104006      ERROR    6
2499                                     :*****TEST 24 - ERROR 6*****
2500 007202 020567 171450 69$:    CMP      R5,DSTAD
2501 007206 001401      BEQ      70$
2502 007210 104007      ERROR    7
2503                                     :*****TEST 24 - ERROR 7*****
2504 007212 023706 000702 70$:    CMP      @#SAVR6,SP
2505 007216 001403      BEQ      71$
2506 007220 010637 000704      MOV      SP,@#BADR6
2507 007224 104010      ERROR    10
2508                                     :*****TEST 24 - ERROR 10*****
2509                                     :STACK POINTER NOT RESTORED BY INSTRUCTION
2510                                     :EXPECTED SP IS STORED AT 'SAVR6'
2511                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
2512 007226                                     71$:
2513 007226 012700 007266      MOV      #ANS24,R0
2514 007232 016701 171420      MOV      DSTAD,R1
2515 007236 016702 171412      MOV      DSTLN,R2
2516 007242 122021 72$:    CMPB     (R0)+,(R1)+
2517 007244 001401      BEQ      73$
2518 007246 104011      ERROR    11
2519                                     :*****TEST 24 - ERROR 11*****
2520                                     :ERRONEOUS ANSWER
2521                                     :R0 CONTAINS THE PC+1 OF THE EXPECTED DIGIT
2522 007250 005302 73$:    DEC      R2
2523 007252 001373      BNE      72$
2524 007254 000407      BR       ENDT24
2525 007256 S1T24:
2526 007256 061          .BYTE    61
2527 007257 062          .BYTE    62
2528 007260 063          .BYTE    63
2529 007261 064          .BYTE    64
2530 007262 S2T24:
2531 007262 065          .BYTE    65
2532 007263 066          .BYTE    66
2533 007264 067          .BYTE    67
2534 007265 170          .BYTE    170
2535 007266 ANS24:
2536 007266 060          .BYTE    60
2537 007267 066          .BYTE    66
2538 007270 071          .BYTE    71
2539 007271 061          .BYTE    61
2540 007272 162          .BYTE    162
2541
2542 007274 007274 .EVEN
2543 007274 016777 171372 171366 ENDT24: MOV      TPSW,@TVECT
2544 007302 106427 000200      MTPS     #200
2545
2546                                     :*****
2547                                     :*TEST 25      TEST 'CMPN' WITH ALL ZEROES IN BOTH SOURCE STRINGS
2548                                     :*****
2549
2550 007306 000004 005416 fST25:  SCOPE
2551 007310 004567      JSR      R5,NPREP
2552 007314 000003      3

```

:PREPARE ARGUMENTS FOR INSTRUCTION TEST
 :SOURCE1 LENGTH

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 50
 CVKAJB.P11 22-JAN-82 08:49 T25 TEST 'CMPN' WITH ALL ZEROES IN BOTH SOURCE STRINGS

SEQ 0049

```

2553 007316 007460          S1T25 ;SOURCE1 ADDRESS
2554 007320 000003          3      ;SOURCE2 LENGTH
2555 007322 007463          S2T25      ;SOURCE2 ADDRESS
2556 007324 000377          377      ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN
2557 007326 004567 005512    JSR      R5,XPSW
2558 007332 000204          .WORD    204
2559 007334 004767 005420    JSR      PC,GENR      ;SET UP GENERAL REGISTERS
2560 007340 000277          SCC      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
2561 007342 000244          CLZ
2562
2563 007344 076052          CMPN
2564
2565 007346 106767 171324    MFPS      CCODES      ;STORE RESULTANT PSW
2566 007352 042767 177400 171316 BIC      #177400,CCODES ;CLEAR UNUSED BITS
2567 007360 023767 000700 171310 CMP      @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
2568 007366 001401          BEQ      64$      ;BR, IF EQUAL
2569 007370 104001          ERROR    1      ;*****TEST 25 - ERROR 1*****
2570          ;PSW ERROR
2571          ;EXPECTED PSW IS STORED AT 'SAVR6'
2572          ;ERRONEOUS SP VALUE IS AT 'BADR6'
2573          64$:
2574 007372 005700          TST      R0      ;CHECK R0=0
2575 007374 001401          BEQ      65$
2576 007376 104002          ERROR    2      ;*****TEST 25 - ERROR 2*****
2577          ;R0 SHOULD BE ZERO
2578 007400 005701          65$: TST      R1      ;CHECK R1=0
2579 007402 001401          BEQ      66$
2580 007404 104003          ERROR    3      ;*****TEST 25 - ERROR 3*****
2581          ;R1 SHOULD BE ZERO
2582 007406 005702          66$: TST      R2      ;CHECK R2=0
2583 007410 001401          BEQ      67$
2584 007412 104004          ERROR    4      ;*****TEST 25 - ERROR 4*****
2585          ;R2 SHOULD BE ZERO
2586 007414 005703          67$: TST      R3      ;CHECK R3=0
2587 007416 001401          BEQ      68$
2588 007420 104005          ERROR    5      ;*****TEST 25 - ERROR 5*****
2589          ;R3 SHOULD BE ZERO
2590 007422 020467 171226    68$: CMP      R4,DSTLN ;CHECK R4 UNCHANGED
2591 007426 001401          BEQ      69$
2592 007430 104006          ERROR    6      ;BR IF OK
2593          ;*****TEST 25 - ERROR 6*****
2594          ;R4 CHANGED
2595          ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'
2596 007432 020567 171220    69$: CMP      R5,DSTAD ;CHECK R5 UNCHANGED
2597 007436 001401          BEQ      70$
2598 007440 104007          ERROR    7      ;*****TEST 25 - ERROR 7*****
2599          ;R5 CHANGED
2600          ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
2601 007442 023706 000702    70$: CMP      @SAVR6,SP ;VERIFY STACK POINTER IS RESTORED
2602 007446 001403          BEQ      71$
2603 007450 010637 000704    MOV      SP,@BADR6 ;COPY BAD SP VALUE
2604 007454 104010          ERROR    10      ;*****TEST 25 - ERROR 10*****
2605          ;STACK POINTER NOT RESTORED BY INSTRUCTION
2606          ;EXPECTED SP IS STORED AT 'SAVR6'
2607          ;ERRONEOUS SP VALUE IS AT 'BADR6'
2608 007456 000403          71$: BR      TST26      ;BR TO NEXT TEST

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 51
CVKAJB.P11 22-JAN-82 08:49 T25

TEST 'CMPN' WITH ALL ZEROES IN BOTH SOURCE STRINGS

SEQ 0050

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2609 007460          S1T25:          ;SOURCE1 STRING
2610 007460          ;MOST SIGNIFICANT DIGIT
2611 007461          .BYTE 60
2612 007462          .BYTE 60
2613 007463          .BYTE 60
2614 007463          S2T25:          ;SOURCE2 STRING
2615 007464          ;MOST SIGNIFICANT DIGIT
2616 007465          .BYTE 60
2617                .BYTE 60
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
2635 007522 000244      CLZ          ;SET UP THE COMPLEMENT OF EXPECTED CR'S
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*****
2663      ;R3 SHOULD BE ZERO
2664 007602 020467 171046 68$: CMP      R4,DSTLN          ;CHECK R4 UNCHANGED

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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\$: BR	TST27	:BR TO NEXT TEST
2682	007636	000404		S1T26:		:SOURCE1 STRING
2683	007640			.BYTE	71	:MOST SIGNIFICANT DIGIT
2684	007640	071		.BYTE	66	
2685	007641	066		.BYTE	62	
2686	007642	062		.BYTE	63	
2687	007643	063		S2T26:		:SOURCE2 STRING
2688	007644			.BYTE	71	:MOST SIGNIFICANT DIGIT
2689	007644	071		.BYTE	66	
2690	007645	066		.BYTE	62	
2691	007646	062		.BYTE	63	
2692	007647	063		.EVEN		
2693						
2694						
2695						
2696						
2697						:*****
2698				*TEST 27	TEST "CMPN" WITH IDENTICAL NON-ZERO MAGNITUDES, NEGATIVE SOURCE2, POSITIVE	
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'

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, NEGATIVE SOURCE2, POSITIV SEQ 0052

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2721                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
2722 007732                                     :CHECK R0=0
2723 007732 005700 64$: TST R0
2724 007734 001401 BEQ 65$
2725 007736 104002 ERROR 2
2726                                     :*****TEST 27 - ERROR 2*****
2727 007740 005701 65$: TST R1
2728 007742 001401 BEQ 66$
2729 007744 104003 ERROR 3
2730                                     :*****TEST 27 - ERROR 3*****
2731 007746 005702 66$: TST R2
2732 007750 001401 BEQ 67$
2733 007752 104004 ERROR 4
2734                                     :*****TEST 27 - ERROR 4*****
2735 007754 005703 67$: TST R3
2736 007756 001401 BEQ 68$
2737 007760 104005 ERROR 5
2738                                     :*****TEST 27 - ERROR 5*****
2739 007762 020467 170666 68$: CMP R4,DSTLN
2740 007766 001401 BEQ 69$
2741 007770 104006 ERROR 6
2742                                     :*****TEST 27 - ERROR 6*****
2743 007772 020567 170660 69$: CMP R5,DSTAD
2744 007776 001401 BEQ 70$
2745 010000 104007 ERROR 7
2746                                     :*****TEST 27 - ERROR 7*****
2747 010002 023706 000702 70$: CMP 2#SAVR6,SP
2748 010006 001403 BEQ 71$
2749 010010 010637 000704 MOV SP,2#BADR6
2750 010014 104010 ERROR 10
2751                                     :*****TEST 27 - ERROR 10*****
2752                                     :STACK POINTER NOT RESTORED BY INSTRUCTION
2753                                     :EXPECTED SP IS STORED AT 'SAVR6'
2754                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
2755 010016 000404 71$: BR TST30
2756 010020 071 S1T27: .BYTE 71
2757 010021 067 .BYTE 67
2758 010022 065 .BYTE 65
2759 010023 063 .BYTE 63
2760 010024 071 S2T27: .BYTE 71
2761 010025 067 .BYTE 67
2762 010026 065 .BYTE 65
2763 010027 163 .BYTE 163
2764                                     :SOURCE2 STRING
2765                                     :MOST SIGNIFICANT DIGIT
2766                                     :SOURCE2 STRING
2767                                     :MOST SIGNIFICANT DIGIT
2768 .EVEN
2769
2770
2771
2772 :*****
2773 :*TEST 30 TEST "CMPN" WITH IDENTICAL NON-ZERO MAGNITUDES, POSITIVE SOURCE2, NEGATI
2774 :*****
2775 010030 000004 TST30: SCOPE
2776 010032 004567 004674 JSR R5,NPREP
                                     :PREPARE ARGUMENTS FOR INSTRUCTION TEST

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 54
 CVKAJB.P11 22-JAN-82 08:49 T30 TEST 'CMPN' WITH IDENTI AL NON-ZERO MAGNITUDES, POSITIVE SOURCE2, NEGATIV SEQ 0053

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						
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			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			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			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		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		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		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						

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 55
 CVKAJB.P11 22-JAN-82 08:49 T30 TEST 'CMPN' WITH IDENTICAL NON-ZERO MAGNITUDES, POSITIVE SOURCE2, NEGATIV SEQ 0054

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2833 010200 000404
2834 010202
2835 010202 070
2836 010203 066
2837 010204 064
2838 010205 162
2839 010206
2840 010206 070
2841 010207 066
2842 010210 064
2843 010211 062
2844
2845
2846
2847
2848
2849
2850
2851
2852 010212 000004
2853 010214 004567 004512
2854 010220 000002
2855 010222 010364
2856 010224 000002
2857 010226 010366
2858 010230 000377
2859 010232 004567 004606
2860 010236 000200
2861 010240 004767 004514
2862 010244 000277
2863 010246 000250
2864
2865 010250 076052
2866
2867 010252 106767 170420
2868 010256 042767 177400 170412
2869 010264 023767 000700 170404
2870 010272 001401
2871 010274 104001
2872
2873
2874
2875 010276
2876 010276 005700
2877 010300 001401
2878 010302 104002
2879
2880 010304 005701
2881 010306 001401
2882 010310 104003
2883
2884 010312 005702
2885 010314 001401
2886 010316 104004
2887
2888 010320 005703

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

S2T30: .BYTE 70 ;SOURCE2 STRING
        .BYTE 66 ;MOST SIGNIFICANT DIGIT
        .BYTE 64
        .BYTE 62

        .EVEN

*****
*TEST 31 TEST 'CMPN' WITH +SRC1 & -SRC2, S1L = S2L, /S1/ .GT. /S2/
*****
TST31: SCOPE
        JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
        2 ;SOURCE1 LENGTH
        S1T31 ;SOURCE1 ADDRESS
        2 ;SOURCE2 LENGTH
        S2T31 ;SOURCE2 ADDRESS
        377 ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN
        JSR R5,XPSW
        .WORD 200
        JSR PC,GENR ;SET UP GENERAL REGISTERS
        SCC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
        CLN

        CMPN

        MFPS CCODES ;STORE RESULTANT PSW
        BIC #177400,CCODES ;CLEAR UNUSED BITS
        CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
        BEQ 64$ ;BR, IF EQUAL
        ERROR 1 *****TEST 31 - ERROR 1*****
        PSW ERROR
        EXPECTED PSW IS STORED AT 'SAVR6'
        ERRONEOUS SP VALUE IS AT 'BADR6'

64$: TST R0 ;CHECK R0=0
     BEQ 65$
     ERROR 2 *****TEST 31 - ERROR 2*****
     ;R0 SHOULD BE ZERO
     ;CHECK R1=0

65$: TST R1
     BEQ 66$
     ERROR 3 *****TEST 31 - ERROR 3*****
     ;R1 SHOULD BE ZERO
     ;CHECK R2=0

66$: TST R2
     BEQ 67$
     ERROR 4 *****TEST 31 - ERROR 4*****
     ;R2 SHOULD BE ZERO
     ;CHECK R3=0

67$: TST R3

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 57
 CVKAJB.P11 22-JAN-82 08:49 T32

TEST 'CMPN' WITH -SRC1 & +SRC2, S1L = S2L, /S1/ .GT. /S2/

SEQ 0056

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2945                                     ;EXPECTED PSW IS STORED AT 'SAVR6'
2946                                     ;ERRONEOUS SP VALUE IS AT 'BADR6'
2947 010454 005700 64$: TST R0                                     ;CHECK R0=0
2948 010454 001401 BEQ 65$                                         ;*****TEST 32 - ERROR 2*****
2949 010456 001401 ERROR 2                                         ;R0 SHOULD BE ZERO
2950 010460 104002                                     ;CHECK R0=0
2951
2952 010462 005701 65$: TST R1                                     ;*****TEST 32 - ERROR 3*****
2953 010464 001401 BEQ 66$                                         ;R1 SHOULD BE ZERO
2954 010466 104003 ERROR 3                                         ;CHECK R1=0
2955
2956 010470 005702 66$: TST R2                                     ;*****TEST 32 - ERROR 4*****
2957 010472 001401 BEQ 67$                                         ;R2 SHOULD BE ZERO
2958 010474 104004 ERROR 4                                         ;CHECK R2=0
2959
2960 010476 005703 67$: TST R3                                     ;*****TEST 32 - ERROR 5*****
2961 010500 001401 BEQ 68$                                         ;R3 SHOULD BE ZERO
2962 010502 104005 ERROR 5                                         ;CHECK R3=0
2963
2964 010504 020467 170144 68$: CMP R4,DSTLN                       ;*****TEST 32 - ERROR 6*****
2965 010510 001401 BEQ 69$                                         ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'
2966 010512 104006 ERROR 6                                         ;CHECK R4 UNCHANGED
2967
2968 010514 020567 170136 69$: CMP R5,DSTAD                       ;*****TEST 32 - ERROR 7*****
2969 010520 001401 BEQ 70$                                         ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
2970 010522 104007 ERROR 7                                         ;VERIFY STACK POINTER IS RESTORED
2971
2972 010524 023706 000702 70$: CMP @SAVR6,SP                       ;BR IF OK
2973 010530 001403 BEQ 71$                                         ;R5 CHANGED
2974 010532 010637 000704 MOV SP,@BADR6                           ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
2975 010536 104010 ERROR 10                                         ;VERIFY STACK POINTER IS RESTORED
2976
2977                                     ;BR IF OK
2978                                     ;COPY BAD SP VALUE
2979                                     ;*****TEST 32 - ERROR 10*****
2980                                     ;STACK POINTER NOT RESTORED BY INSTRUCTION
2981 010540 000403 71$: BR TST33                                     ;EXPECTED SP IS STORED AT 'SAVR6'
2982 010540 000403 S1T32: .BYTE 70                                   ;ERRONEOUS SP VALUE IS AT 'BADR6'
2983 010542 070 .BYTE 63
2984 010543 063 .BYTE 161
2985 010544 161
2986 010545
2987 010545 061 S2T32: .BYTE 61
2988 010546 063 .BYTE 63
2989 010547 070 .BYTE 70
2990
2991 .EVEN
2992
2993
2994
2995
2996
2997
2998 010550 000004 004154 iST33: SCOPE
2999 010552 004567 JSR R5,NPREP
3000 010556 000^04 4
                                     ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
                                     ;SOURCE1 LENGTH
                                     ;*****
                                     ;*TEST 32* TEST 'CMPN' WITH S1L = S2L, POSITIVE SOURCE2, SOURCE2 MAGNITUDE IS GREAT
                                     ;*****

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 58
 CVKAJB.P11 22-JAN-82 08:49 T33 TEST 'CMPN' WITH S1L = S2L, POSITIVE SOURCE2, SOURCE2 MAGNITUDE IS GREATER SEQ 0057

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		R5,XPSW	
3006	010574	000210			210	
3007	010576	004767	004156		PC,GENR	;SET UP GENERAL REGISTERS
3008	010602	000277				;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 ZF^0
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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 59
 CVKAJB.P11 22-JAN-82 08:49 T33 TEST 'CMPN' WITH S1L = S2L, POSITIVE SOURCE2, SOURCE2 MAGNITUDE IS GREATER SEQ 0058

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				*****		
3073				:TEST 34		TEST 'CMPN' WITH S2L .GT. S1L, SUCCESSFUL COMPARE
3074	010732	000004		*****		
3075	010734	004567	003772	TST34: SCOPE		
3076	010740	000002		JSR	R5,NPREP	:PREPARE ARGUMENTS FOR INSTRUCTION TEST
3077	010742	011104		2		:SOURCE1 LENGTH
3078	010744	000004		S1T34	:SOURCE1 ADDRESS	
3079	010746	011106		4		:SOURCE2 LENGTH
3080	010750	000377		S2T34	:SOURCE2 ADDRESS	
3081	010752	004567	004066	377		:STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN
3082	010756	000204		JSR	R5,XPSW	
3083	010756	000204		.WORD	204	
3084	010760	004767	003774	JSR	PC,GENR	:SET UP GENERAL REGISTERS
3085	010764	000277		SCC		:SET UP THE COMPLEMENT OF EXPECTED CC'S
3086	010766	000244		CLZ		
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\$:		
3103	011026	001401		TST	R1	:CHECK R1=0
3104	011030	104003		BEQ	66\$	
3105				ERROR	3	:*****TEST 34 - ERROR 3*****
3106	011032	005702				:R1 SHOULD BE ZERO
3107	011034	001401		66\$:		
3108	011036	104004		TST	R2	:CHECK R2=0
3109				BEQ	67\$	
3110	011040	005703		ERROR	4	:*****TEST 34 - ERROR 4*****
3111	011042	001401				:R2 SHOULD BE ZERO
3112	011044	104005		67\$:		
				TST	R3	:CHECK R3=0
				BEQ	68\$	
				ERROR	5	:*****TEST 34 - ERROR 5*****

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 41
 CVKAJB.P11 22-JAN-82 08:49 T35 TEST 'CMPN' WITH NEGATIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-ZE SEQ 0060

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3169
3170 011174
3171 011174 005700
3172 011176 001401
3173 011200 104002
3174
3175 011202 005701
3176 011204 001401
3177 011206 104003
3178
3179 011210 005702
3180 011212 001401
3181 011214 104004
3182
3183 011216 005703
3184 011220 001401
3185 011222 104005
3186
3187 011224 020467 167424
3188 011230 001401
3189 011232 104006
3190
3191
3192 011234 020567 167416
3193 011240 001401
3194 011242 104007
3195
3196
3197 011244 023706 000702
3198 011250 001403
3199 011252 010637 000704
3200 011256 104010
3201
3202
3203
3204 011260
3205 011260 000403
3206 011262
3207 011262 070
3208 011263 161
3209 011264
3210 011264 061
3211 011265 060
3212 011266 070
3213 011267 161
3214
3215
3216
3217
3218
3219
3220
3221 011270 000004
3222 011272 004567 003434
3223 011276 000002
3224 011300 011442

64$: TST R0
      BEQ 65$
      ERROR 2
      ;ERRONEOUS SP VALUE IS AT 'BADR6'
      ;CHECK R0=0
      ;*****TEST 35 - ERROR 2*****
      ;R0 SHOULD BE ZERO
      ;CHECK R1=0

65$: TST R1
      BEQ 66$
      ERROR 3
      ;*****TEST 35 - ERROR 3*****
      ;R1 SHOULD BE ZERO
      ;CHECK R2=0

66$: TST R2
      BEQ 67$
      ERROR 4
      ;*****TEST 35 - ERROR 4*****
      ;R2 SHOULD BE ZERO
      ;CHECK R3=0

67$: TST R3
      BFO 68$
      ERROR 5
      ;*****TEST 35 - ERROR 5*****
      ;R3 SHOULD BE ZERO
      ;CHECK R4 UNCHANGED
      ;BR IF OK
      ;*****TEST 35 - ERROR 6*****
      ;R4 CHANGED
      ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'
      ;CHECK R5 UNCHANGED

68$: CMP R4,DSTLN
      BEQ 69$
      ERROR 6
      ;*****TEST 35 - ERROR 7*****
      ;R5 CHANGED
      ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
      ;VERIFY STACK POINTER IS RESTORED
      ;BR IF OK
      ;COPY BAD SP VALUE
      ;*****TEST 35 - ERROR 10*****
      ;STACK POINTER NOT RESTORED BY INSTRUCTION
      ;EXPECTED SP IS STORED AT 'SAVR6'
      ;ERRONEOUS SP VALUE IS AT 'BADR6'

69$: CMP R5,DSTAD
      BEQ 70$
      ERROR 7
      ;*****TEST 35 - ERROR 10*****
      ;STACK POINTER NOT RESTORED BY INSTRUCTION
      ;EXPECTED SP IS STORED AT 'SAVR6'
      ;ERRONEOUS SP VALUE IS AT 'BADR6'

70$: CMP @SAVR6,SP
      BEQ 71$
      MOV SP,@BADR6
      ERROR 10
      ;*****TEST 35 - ERROR 10*****
      ;STACK POINTER NOT RESTORED BY INSTRUCTION
      ;EXPECTED SP IS STORED AT 'SAVR6'
      ;ERRONEOUS SP VALUE IS AT 'BADR6'

71$: BR TST36
      ;BR TO NEXT TEST
      ;SOURCE1 STRING
      ;MOST SIGNIFICANT DIGIT

S1T35: .BYTE 70
        .BYTE 161
      ;SOURCE2 STRING
      ;MOST SIGNIFICANT DIGIT

S2T35: .BYTE 61
        .BYTE 60
        .BYTE 70
        .BYTE 161
      ;SOURCE1 ADDRESS

      .EVEN

;*****
;*TEST 36 TEST 'CMPN' WITH POSITIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-Z
;*****
TST36: SCOPE R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
        JSR 2 ;SOURCE1 LENGTH
        S1T36 ;SOURCE1 ADDRESS

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 62		CVKAJB.P11 22-JAN-82 08:49 T36		TEST 'CMPN' WITH POSITIVE OPERANDS & SRC2 LENGTH .GT. SRC1 LENGTH, NON-ZE SEQ 0061	
---	--	--------------------------------	--	--	--

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*****
3241						:PSW ERROR
3242						:EXPECTED PSW IS STORED AT 'SAVR6'
3243						:ERRONEOUS SP VALUE IS AT 'BADR6'
3244	011354					
3245	011354	005700		TST	R0	:CHECK R0=0
3246	011356	001401		BEQ	65\$	
3247	011360	104002		ERROR	2	:*****TEST 36 - ERROR 2*****
3248						:R0 SHOULD BE ZERO
3249	011362	005701				:CHECK R1=0
3250	011364	001401		TST	R1	
3251	011366	104003		BEQ	66\$	
3252				ERROR	3	:*****TEST 36 - ERROR 3*****
3253	011370	005702				:R1 SHOULD BE ZERO
3254	011372	001401		TST	R2	:CHECK R2=0
3255	011374	104004		BEQ	67\$	
3256				ERROR	4	:*****TEST 36 - ERROR 4*****
3257	011376	005703				:R2 SHOULD BE ZERO
3258	011400	001401		TST	R3	:CHECK R3=0
3259	011402	104005		BEQ	68\$	
3260				ERROR	5	:*****TEST 36 - ERROR 5*****
3261	011404	020467	167244			:R3 SHOULD BE ZERO
3262	011410	001401		CMP	R4,DSTLN	:CHECK R4 UNCHANGED
3263	011412	104006		BEQ	69\$	:BR IF OK
3264				ERROR	6	:*****TEST 36 - ERROR 6*****
3265						:R4 CHANGED
3266	011414	020567	167236			:R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'
3267	011420	001401		CMP	R5,DSTAD	:CHECK R5 UNCHANGED
3268	011422	104007		BEQ	70\$	
3269				ERROR	7	:*****TEST 36 - ERROR 7*****
3270						:R5 CHANGED
3271	011424	023706	000702			:R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
3272	011430	001403		CMP	@SAVR6,SP	:VERIFY STACK POINTER IS RESTORED
3273	011432	010637	000704	BEQ	71\$	:BR IF OK
3274	011436	104010		MOV	SP,@BADR6	:COPY BAD SP VALUE
3275				ERROR	10	:*****TEST 36 - ERROR 10*****
3276						:STACK POINTER NOT RESTORED BY INSTRUCTION
3277						:EXPECTED SP IS STORED AT 'SAVR6'
3278	011440					:ERRONEOUS SP VALUE IS AT 'BADR6'
3279	011440	000403				
3280	011442			71\$: BR	TST37	:BR TO NEXT TEST
				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 006

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
3294
3295 011450 000004
3296 011452 004567 003254
3297 011456 000004
3298 011460 011622
3299 011462 000002
3300 011464 011626
3301 011466 000377
3302 011470 004567 003350
3303 011474 000204
3304 011476 004767 003256
3305 011502 000277
3306 011504 000244
3307
3308 011506 076052
3309
3310 011510 106767 167162
3311 011514 042767 177400 167154
3312 011522 023767 000700 167146
3313 011530 001401
3314 011532 104001
3315
3316
3317
3318 011534
3319 011534 005700
3320 011536 001401
3321 011540 104002
3322
3323 011542 005701
3324 011544 001401
3325 011546 104003
3326
3327 011550 005702
3328 011552 001401
3329 011554 104004
3330
3331 011556 005703
3332 011560 001401
3333 011562 104005
3334
3335 011564 020467 167064
3336 011570 001401

TST37: SCOPE
JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
4 ;SOURCE1 LENGTH
S1T37 ;SOURCE1 ADDRESS
2 ;SOURCE2 LENGTH
S2T37 ;SOURCE2 ADDRESS
377 ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN

JSR R5,XPSW
.WORD 204
JSR PC,GENR ;SET UP GENERAL REGISTERS
SCC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
CLZ

CMPN

MFPS CCODES ;STORE RESULTANT PSW
BIC #177400,CCODES ;CLEAR UNUSED BITS
CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
BEQ 64$ ;BR, IF EQUAL
ERROR 1 ;*****TEST 37 - ERROR 1*****
;PSW ERROR
;EXPECTED PSW IS STORED AT 'SAVR6'
;ERRONEOUS SP VALUE IS AT 'BADR6'

64$: TST R0 ;CHECK R0=0
BEQ 65$
ERROR 2 ;*****TEST 37 - ERROR 2*****
;R0 SHOULD BE ZERO
;CHECK R1=0

65$: TST R1
BEQ 66$
ERROR 3 ;*****TEST 37 - ERROR 3*****
;R1 SHOULD BE ZERO
;CHECK R2=0

66$: TST R2
BEQ 67$
ERROR 4 ;*****TEST 37 - ERROR 4*****
;R2 SHOULD BE ZERO
;CHECK R3=0

67$: TST R3
BEQ 68$
ERROR 5 ;*****TEST 37 - ERROR 5*****
;R3 SHOULD BE ZERO
;CHECK R4 UNCHANGED
;BR IF OK

68$: CMP R4,DSTLN
BEQ 69$

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 64
 CVKAJB.P11 22-JAN-82 08:49 T37

TES- 'CMPN' WITH S1L .GT. S2L, SUCCESSFUL COMPARE

SEQ 0063

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

```

PC	Instruction	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	Op418	Op419	Op420	Op421	Op422	Op423	Op424	Op425	Op426	Op427	Op428	Op429	Op430	Op431	Op432	Op433	Op434	Op435	Op436	Op437	Op438	Op439	Op440	Op441	Op442	Op443	Op444	Op445	Op446	Op447	Op448	Op449	Op450	Op451	Op452	Op453	Op454	Op455	Op456	Op457	Op458	Op459	Op460	Op461	Op462	Op463	Op464	Op46
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MAIN. MACY11 30(104c) 22-JAN-82 08:50 PAGE 66
 CVKAJB.P11 22-JAN-82 08:49 T41

TEST "'CMPN'" WITH S1L .GT. S2L, POSITIVE SOURCE1, NON-ZERO IN EXCESS

SEQ 0065

3449	012026	000377			377		:STORE NON-ZERO VALU 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\$: TST	R0		:CHECK R0=0
3466	012072	005700		BEQ	65\$		
3467	012074	001401		ERROR	2		:*****TEST 41 - ERROR 2*****
3468	012076	104002					:R0 SHOULD BE ZERO
3469							:CHECK R1=0
3470	012100	005701		65\$: TST	R1		
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\$: BR	TST42		:BR TO NEXT TEST
3500	012156	000403		S1T41:			:SOURCE1 STRING
3501	012160						:MOST SIGNIFICANT DIGIT
3502	012160	061		.BYTE	61		
3503	012161	060		.BYTE	60		
3504	012162	063		.BYTE	63		

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 67
 CVKAJE.P11 22-JAN-82 08:49 T41 TEST 'CMPN' WITH S1L .GT. S2L, POSITIVE SOURCE1, NON-ZERO IN EXCESS

SEQ 0066

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3505 012163 067
3506 012164
3507 012164 063
3508 012165 067
3509
3510
3511
3512
3513
3514
3515
3516
3517 012166 000004
3518 012170 004567 002536
3519 012174 000003
3520 012176 012336
3521 012200 000003
3522 012202 012341
3523 012204 000777
3524 012206 004567 002632
3525 012212 000200
3526 012214 004767 002540
3527 012220 000277
3528
3529 012222 076052
3530
3531 012224 106767 166446
3532 012230 042767 177400 166440
3533 012236 023767 000700 166432
3534 012244 001401
3535 012246 104001
3536
3537
3538
3539 012250
3540 012250 005700
3541 012252 001401
3542 012254 104002
3543
3544 012256 005701
3545 012260 001401
3546 012262 104003
3547
3548 012264 005702
3549 012266 001401
3550 012270 104004
3551
3552 012272 005703
3553 012274 001401
3554 012276 104005
3555
3556 012300 020467 166350
3557 012304 001401
3558 012306 104006
3559
3560

S2T41: .BYTE 67
        .BYTE 63
        .BYTE 67
        .EVEN

;*****
;*TEST 42 TEST 'CMPN' WITH POSITIVE OPERANDS, /S1/ .GT. /S2/
;*****
TST42: SCOPE
        JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
        3 ;SOURCE1 LENGTH
        S1T42 ;SOURCE1 ADDRESS
        3 ;SOURCE2 LENGTH
        S2T42 ;SOURCE2 ADDRESS
        377 ;STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN
        JSR R5,XPSW
        .WORD 200
        JSR PC,GENR ;SET UP GENERAL REGISTERS
        SCC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
        CMPN
        MFPS CCODES ;STORE RESULTANT PSW
        BIC #177400,CCODES ;CLEAR UNUSED BITS
        CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
        BEQ 64$ ;BR, IF EQUAL
        ERROR 1 ;*****TEST 42 - ERROR 1*****
        ;PSW ERROR
        ;EXPECTED PSW IS STORED AT 'SAVR6'
        ;ERRONEOUS SP VALUE IS AT 'BADR6'

64$: TST R0 ;CHECK R0=0
     BEQ 65$
     ERROR 2 ;*****TEST 42 - ERROR 2*****
        ;R0 SHOULD BE ZERO
        ;CHECK R1=0

65$: TST R1
     BEQ 66$
     ERROR 3 ;*****TEST 42 - ERROR 3*****
        ;R1 SHOULD BE ZERO
        ;CHECK R2=0

66$: TST R2
     BEQ 67$
     ERROR 4 ;*****TEST 42 - ERROR 4*****
        ;R2 SHOULD BE ZERO
        ;CHECK R3=0

67$: TST R3
     BEQ 68$
     ERROR 5 ;*****TEST 42 - ERROR 5*****
        ;R3 SHOULD BE ZERO
        ;CHECK R4 UNCHANGED
        ;BR IF OK

68$: CMP R4,DSTLN
     BEQ 69$
     ERROR 6 ;*****TEST 42 - ERROR 6*****
        ;R4 CHANGED
        ;R4 SHOULD STILL EQUAL CONTENTS OF 'FILL'

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3561 012310 020567 166342      69$:  CMP      R5,DSTAD      :CHECK R5 UNCHANGED
3562 012314 001401              BEQ      70$
3563 012316 104007              ERROR    7
3564                                :*****TEST 42 - ERROR 7*****
3565                                :R5 CHANGED
3566 012320 023706 000702      70$:  CMP      @SAVR6,SP      :R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
3567 012324 001403              BEQ      71$
3568 012326 010637 000704      MOV      @BADR6
3569 012332 104010              ERROP   10
3570                                :VERIFI STACK POINTER IS RESTORED
3571                                :BR IF OK
3572                                :COPY BAD SP VALUE
3573 012334                                :*****TEST 42 - ERROR 10*****
3574 012334 000403      71$:  BR          TST43          :STACK POINTER NOT RESTORED BY INSTRUCTION
3575 012336                                :EXPECTED SP IS STORED AT 'SAVR6'
3576 012336 067              .BYTE    67
3577 012337 065              .BYTE    65
3578 012340 064              .BYTE    64
3579 012341                                :SOURCE2 STRING
3580 012341 067      S1T42:  .BYTE    67
3581 012342 065              .BYTE    65
3582 012343 063              .BYTE    63
3583                                :MOST SIGNIFICANT DIGIT
3584                                :SOURCE2 STRING
3585                                :MOST SIGNIFICANT DIGIT
3586                                :EVEN
3587                                :*****
3588                                :*TEST 43      TEST 'CMPN' WITH NEGATIVE OPERANDS, /S1/ .GT. /S2/
3589                                :*****
3590 012344 000004      TST43:  SCOPE
3591 012346 004567 002360      JSR      R5,NPREP      :PREPARE ARGUMENTS FOR INSTRUCTION TEST
3592 012352 000003              3
3593 012354 012514      S1T43  :SOURCE1 LENGTH
3594 012356 000003              3
3595 012360 012517      S2T43  :SOURCE2 LENGTH
3596 012362 000377      377      :SOURCE2 ADDRESS
3597 012364 004567 002454      JSR      R5,XPSW      :STORE NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CMPN' IN
3598 012370 000210      .WORD    210
3599 012372 004767 002362      JSR      PC,GENR      :SET UP GENERAL REGISTERS
3600 012376 000277      SCC
3601                                :SET UP THE COMPLEMENT OF EXPECTED CC'S
3602 012400 076052      CMPN
3603
3604 012402 106767 166270      MFPS      CCODES      :STORE RESULTANT PSW
3605 012406 042767 177400 166262      BIC      #177400,CCODES :CLEAR UNUSED BITS
3606 012414 023767 000700 166254      CMP      @EXPPSW,CCODES :CHECK PSW AGAINST EXPECTED VALUE
3607 012422 001401      BEQ      64$
3608 012424 104001      ERROR    1
3609                                :*****TEST 43 - ERROR 1*****
3610                                :PSW ERROR
3611                                :EXPECTED PSW IS STORED AT 'SAVR6'
3612                                :ERRONEOUS SP VALUE IS AT 'BADR6'
3613 012426 005700      64$:  TST      R0
3614 012426 001401      BEQ      65$
3615 012432 104002      ERROR    2
3616                                :*****TEST 43 - ERROR 2*****
3617                                :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

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3617 012434 005701      65$:  TST      R1      :CHECK R1=0
3618 012436 001401      BEQ      66$
3619 012440 104003      ERROR    3      :*****TEST 43 - ERROR 3*****
3620                                     :R1 SHOULD BE ZERO
3621 012442 005702      66$:  TST      R2      :CHECK R2=0
3622 012444 001401      BEQ      67$
3623 012446 104004      ERROR    4      :*****TEST 43 - ERROR 4*****
3624                                     :R2 SHOULD BE ZERO
3625 012450 005703      67$:  TST      R3      :CHECK R3=0
3626 012452 001401      BEQ      68$
3627 012454 104005      ERROR    5      :*****TEST 43 - ERROR 5*****
3628                                     :R3 SHOULD BE ZERO
3629 012456 020467 166172 68$:  CMP      R4,DSTLN :CHECK R4 UNCHANGED
3630 012462 001401      BEQ      69$
3631 012464 104006      ERROR    6      :BR IF OK
3632                                     :*****TEST 43 - ERROR 6*****
3633                                     :R4 CHANGED
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*****
3637                                     :R5 CHANGED
3638                                     :R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
3639 012476 023706 000702 70$:  CMP      @SAVR6,SP :VERIFY STACK POINTER IS RESTORED
3640 012502 001403      BEQ      71$
3641 012504 010637 000704      MOV     SP,@BADR6 :BR IF OK
3642 012510 104010      ERROR    10      :COPY BAD SP VALUE
3643                                     :*****TEST 43 - ERROR 10*****
3644                                     :STACK POINTER NOT RESTORED BY INSTRUCTION
3645                                     :EXPECTED SP IS STORED AT 'SAVR6'
3646                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
3646 012512      71$:      BR      TST44      :BR TO NEXT TEST
3647 012512 000403      S1T43:  .BYTE    67      :SOURCE1 STRING
3648 012514      .BYTE    65      :MOST SIGNIFICANT DIGIT
3649 012514      067      .BYTE    164
3650 012515      065
3651 012516      164
3652 012517      S2T43:  .BYTE    67      :SOURCE2 STRING
3653 012517      067      .BYTE    65      :MOST SIGNIFICANT DIGIT
3654 012520      065
3655 012521      163      .BYTE    163
3656                                     .EVEN
3657
3658
3659
3660
3661
3662
3663 012522 000004      :*****
3664 012524 105777 166010 :*TEST 44      TEST INTERRUPTABILITY OF 'CMPN'
3665 012530 100535      :*****
3666 012532 026767 166012 166124 TST44:  SCOPE
3667 012540 001007      TSTB      @SWR      :TEST BIT 7 OF SWR
3668 012542 032767 000001 166036 BMI      TST45      :SKIP TO NEXT TEST IF SET
3669 012550 001403      CMP      $TPS,TCSR :IS SLU USED FOR INTERRUPTS THE CONSOLE?
3670 012552 005767 166016      BNE      T44CONT :BR, IF NOT & PERFORM INTERRUPTABILITY TEST
3671 012556 001122      BIT      #BIT0,$ENV :IF YES, IS PROGRAM UNDER APT?
3672 012560      BEQ      T44CONT      :BR, IF NOT
3673                                     :IF YES,CHECK IF NOT ON FIRST PASS
3674                                     :IF NOT, BR & SKIP TEST
3675 T44CONT:

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3729
3730 012764 023706 000702      70$:  CMP      24SAVR6,SP      ;R5 SHOULD STILL EQUAL CONTENTS OF 'DSTAD'
3731 012770 001403              BEQ      71$          ;VERIFY STACK POINTER IS RESTORED
3732 012772 010637 000704      MOV      SP,24BADR6      ;BR IF OK
3733 012776 104010              ERROR    10          ;COPY BAD SP VALUE
3734
3735
3736
3737 013000              71$:
3738 013000 000404              S1T44:  BR      ENDT44      ;BR TO END OF THIS TEST
3739 013002              .BYTE    71          ;SOURCE1 STRING
3740 013002 071          .BYTE    70          ;MOST SIGNIFICANT DIGIT
3741 013003 070          .BYTE    67
3742 013004 067          .BYTE    66
3743 013005 066          S2T44:
3744 013006              .BYTE    71          ;SOURCE2 STRING
3745 013006 071          .BYTE    70          ;MOST SIGNIFICANT DIGIT
3746 013007 070          .BYTE    67
3747 013010 067          .BYTE    65
3748 013011 065
3749
3750
3751 013012 016777 165654 165650  ENDT44: .EVEN      TPSW,2TVECT
3752 013020 106427 000200      MTPS      #200
3753
3754
3755
3756
3757
3758
3759 013024 000004              :*****
3760 013026 004567 001700      :*TEST 45      TEST 'CVTNL' WITH SRC = +2,147,483,647
3761 013032 000012              :*****
3762 013034 013164      TST45:  SCOPE
3763 013036 177777              JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3764 013040 177777              12          ;SOURCE LENGTH
3765 013042 000377              ST45          ;SOURCE ADDRESS
3766 013044 004567 001774      177777      ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
3767 013050 000200              177777
3768 013052 004767 001702      377          ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
3769 013056 000277              JSR      R5,XPSW
3770
3771 013060 076053              .WORD    200
3772
3773 013062 106767 165610      JSR      PC,GENR      ;SET UP GENERAL REGISTERS
3774 013066 042767 177400 165602      SCC
3775 013074 023767 000700 165574      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
3776 013102 001401
3777 013104 104001      CVTNL
3778
3779
3780
3781 013106              MFPS      CCODES      ;STORE RESULTANT PSW
3782 013106 005700      BIC      #177400,CCODES      ;CLEAR UNUSED BITS
3783 013110 001401      CMP      24EXPPSW,CCODES      ;CHECK PSW AGAINST EXPECTED VALUE
3784 013112 104002      BEQ      64$          ;BR, IF EQUAL
3785
3786
3787
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3800
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3785                                     ;R0 SHOULD BE ZERO
3786 013114 005701                      65$: TST      R1      ;CHECK R1=0
3787 013116 001401                      BEQ      66$
3788 013120 104003                      ERROR    3
3789                                     ;*****TEST 45 - ERROR 3*****
3790 013122 020227 077777              66$: CMP      R2, #077777 ;R1 SHOULD BE ZERO
3791 013126 001401                      BEQ      67$ ;CHECK UPPER WORD OF ANSWER
3792 013130 104004                      ERROR    4 ;BR IF OK
3793                                     ;*****TEST 45 - ERROR 4*****
3794                                     ;UPPER WORD OF ANSWER IS IN ERROR
3795                                     ;EXPECTED VALUE IS 077777
3796 013132 020327 177777              67$: CMP      R3, #177777 ;ERRONEOUS ANSWER VALUE IS IN R2
3797 013136 001401                      BEQ      68$ ;CHECK LOWER WORD OF ANSWER
3798 013140 104005                      ERROR    5 ;BR IF OK
3799                                     ;*****TEST 45 - ERROR 5*****
3800                                     ;LOWER WORD OF ANSWER IS IN ERROR
3801                                     ;EXPECTED VALUE IS 177777
3802 013142 020467 165506              68$: CMP      R4, DSTLN ;ERRONEOUS ANSWER IS IN R3
3803 013146 001401                      BEQ      69$ ;CHECK R4 UNCHANGED
3804 013150 104006                      ERROR    6
3805                                     ;*****TEST 45 - ERROR 6*****
3806                                     ;R4 CHANGED
3807 013152 020567 165500              69$: CMP      R5, DSTAD ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL'
3808 013156 001401                      BEQ      70$ ;CHECK R5 UNCHANGED
3809 013160 104007                      ERROR    7 ;BR IF OK
3810                                     ;*****TEST 45 - ERROR 7*****
3811                                     ;R5 CHANGED
3812                                     ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
3813 013162 000405                      70$: BR       TST46 ;BR TO NEXT TEST
3814 013164                                     ;SOURCE STRING
3815 013164 062                         ST45: .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
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3832 013176 000004 001526              ;*****
3833 013200 004567                      ;*TEST 46 TEST "CVTNL" WITH SRC= +2,687,483,648, OVERFLOW WITH CORRECT SIGN
3834 013204 000012                      ;*****
3835 013206 013340                      TST46: SCOPE
3836 013210 177777                      JSR      R5, NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
3837 013212 177777                      12      ;SOURCE LENGTH
3838 013214 000377                      ST46    ;SOURCE ADDRESS
3839 013216 004567 001622              177777 ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
3840 013222 000202                      177777
3841                                     ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY "CVTZL"
3842                                     377
3843                                     JSR      R5, XPSW
3844                                     .WORD    202

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 73
 CVKAJB.P11 22-JAN-82 08:49 T46

TEST 'CVTNL' WITH SRC= +2,687,483,648, OVERFLOW WITH CORRECT SIGN

SEQ 0072

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	CMF	#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\$:	CMF	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\$:	CMF	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							:ERRONEOUS ANSWER IS IN R3
3876	013316	020467	165332	68\$:	CMF	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\$:	CMF	R5,DSTAD	:CHECK R5 UNCHANGED
3882	013332	001401			BEQ	70\$	:BR IF OK
3883	013334	104007			ERROR	7	:*****TEST 46 - ERROR 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	

3897 013350 071 .BYTE 71
 3898 013351 066 .BYTE 66
 3899
 3900
 3901
 3902

 :TEST 47 TEST 'CVTNL' WITH SRC = +2,147,483,648, OVERFLOW

3905 013352 000004
 3906 013354 004567 001352
 3907 013360 000012
 3908 013362 013514
 3909 013364 177777
 3910 013366 177777
 3911 013370 000377
 3912 013372 004567 001446
 3913 013376 000212
 3914 013400 004767 001354
 3915 013404 000277
 3916 013406 000242
 3917
 3918 013410 076053
 3919

TST47: SCOPE
 JSR R5,NPREP

:PREPARE ARGUMENTS FOR INSTRUCTION TEST
 :SOURCE LENGTH
 :SOURCE ADDRESS
 :STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
 :STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'

JSR R5,XPSW
 .WORD 212
 JSR PC,GENR
 SCC
 CLV

:SET UP GENERAL REGISTERS
 :SET UP THE COMPLEMENT OF EXPECTED CC'S

3920 013412 106767 165260
 3921 013416 042767 177400 165252
 3922 013424 023767 000700 165244
 3923 013432 001401
 3924 013434 104001
 3925
 3926
 3927
 3928 013436
 3929 013436 005700
 3930 013440 001401
 3931 013442 104002
 3932
 3933 013444 005701
 3934 013446 001401
 3935 013450 104003
 3936
 3937 013452 020227 100000
 3938 013456 001401
 3939 013460 104004
 3940
 3941
 3942
 3943 013462 020327 000000
 3944 013466 001401
 3945 013470 104005
 3946
 3947
 3948
 3949 013472 020467 165156
 3950 013476 001401
 3951 013500 104006
 3952

CVTNL
 MFPS CCODES
 BIC #177400,CCODES
 CMP #EXPPSW,CCODES
 BEQ 64\$
 ERROR 1

:STORE RESULTANT PSW
 :CLEAR UNUSED BITS
 :CHECK PSW AGAINST EXPECTED VALUE
 :BR, IF EQUAL
 :*****TEST 47 - ERROR 1*****
 :PSW ERROR
 :EXPECTED PSW IS STORED AT 'SAVR6'
 :ERRONEOUS SP VALUE IS AT 'BADR6'

64\$: TST R0
 BEQ 65\$
 ERROR 2

:CHECK R0=0
 :*****TEST 47 - ERROR 2*****
 :R0 SHOULD BE ZERO
 :CHECK R1=0

65\$: TST R1
 BEQ 66\$
 ERROR 3

:*****TEST 47 - ERROR 3*****
 :R1 SHOULD BE ZERO
 :CHECK UPPER WORD OF ANSWER
 :BR IF OK

66\$: CMP R2,#100000
 BEQ 67\$
 ERROR 4

:*****TEST 47 - ERROR 4*****
 :UPPER WORD OF ANSWER IS IN ERROR
 :EXPECTED VALUE IS 100000
 :ERRONEOUS ANSWER VALUE IS IN R2

67\$: CMP R3,#0
 BEQ 68\$
 ERROR 5

:CHECK LOWER WORD OF ANSWER
 :BR IF OK
 :*****TEST 47 - ERROR 5*****
 :LOWER WORD OF ANSWER IS IN ERROR
 :EXPECTED VALUE IS 0
 :ERRONEOUS ANSWER IS IN R3
 :CHECK R4 UNCHANGED

68\$: CMP R4,DSTLN
 BEQ 69\$
 ERROR 6

:*****TEST 47 - ERROR 6*****
 :R4 CHANGED

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 75
CVKAJB.P11 22-JAN-82 08:49 T47

TEST 'CVTNL' WITH SRC = +2,147,483,648, OVERFLOW

SEQ 0074

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3953                                     :R4 SHOULD STILL EQUAL THE CONTENTS OF 'FILL'
3954 013502 020567 165150          69$: CMP      R5,DSTAD      :CHECK R5 UNCHANGED
3955 013506 001401                BEQ      70$              :BR IF OK
3956 013510 104007                ERROR    7                :*****TEST 47 - ERROR 7*****
3957                                     :R5 CHANGED
3958                                     :R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
3959 013512          000405          70$: BR      TST50        :BR TO NEXT TEST
3960 013512          000405          ST47:                :SOURCE STRING
3961 013514                .BYTE    62                    :MOST SIGNIFICANT DIGIT
3962 013514                .BYTE    61
3963 013515                .BYTE    64
3964 013516                .BYTE    67
3965 013517                .BYTE    64
3966 013520                .BYTE    70
3967 013521                .BYTE    63
3968 013522                .BYTE    66
3969 013523                .BYTE    64
3970 013524                .BYTE    70
3971 013525                .BYTE    70
3972
3973
3974
3975 ::*****
3976 :*TEST 50          TEST 'CVTNL' WITH SRC = -2,147,483,648
3977 :*****
3978 013526 000004          TST50: SCOPE
3979 013530 004567 001176    JSR      R5,NPREP      :PREPARE ARGUMENTS FOR INSTRUCTION TEST
3980 013534 000012          12                    :SOURCE LENGTH
3981 013536 013670          ST50                    :SOURCE ADDRESS
3982 013540 177777          177777                  :STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
3983 013542 177777          177777
3984 013544 000377          377                    :STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
3985 013546 004567 001272    JSR      R5,XPSW
3986 013552 000210          .WORD    210
3987 013554 004767 001200    JSR      PC,GENR      :SET UP GENERAL REGISTERS
3988 013560 000277          SCC
3989 013562 000250          CLN                    :SET UP THE COMPLEMENT OF EXPECTED CC'S
3990
3991 013564 076053          CVTNL
3992
3993 013566 106767 165104    MFPS    CCODES          :STORE RESULTANT PSW
3994 013572 042767 177400 165076    BIC      #177400,CCODES :CLEAR UNUSED BITS
3995 013600 023767 000700 165070    CMP      @EXPPSW,CCODES :CHECK PSW AGAINST EXPECTED VALUE
3996 013606 001401          BEQ      64$              :BR, IF EQUAL
3997 013610 104001          ERROR    1                :*****TEST 50 - ERROR 1*****
3998                                     :PSW ERROR
3999                                     :EXPECTED PSW IS STORED AT 'SAVR6'
4000                                     :ERRONEOUS SP VALUE IS AT 'BADR6'
4001          013612          64$: TST      R0          :CHECK R0=0
4002 013612 005700          BEQ      65$              :*****TEST 50 - ERROR 2*****
4003 013614 001401          ERROR    2                :R0 SHOULD BE ZERO
4004 013616 104002
4005          013620 005701          65$: TST      R1          :CHECK R1=0
4006 013622 001401          BEQ      66$
4007 013624 104003          ERROR    3                :*****TEST 50 - ERROR 3*****
4008

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4009
4010 013626 020227 100000      66$:  CMP      R2,#100000      ;R1 SHOULD BE ZERO
4011 013632 001401              BEQ      67$           ;CHECK UPPER WORD OF ANSWER
4012 013634 104004              ERROR    4             ;BR IF OK
4013                                     ;*****TEST 50 - ERROR 4*****
4014                                     ;UPPER WORD OF ANSWER IS IN ERROR
4015                                     ;EXPECTED VALUE IS 100000
4016 013636 020327 000000      67$:  CMP      R3,#0       ;CHECK LOWER WORD OF ANSWER
4017 013642 001401              BEQ      68$           ;BR IF OK
4018 013644 104005              ERROR    5             ;*****TEST 50 - ERROR 5*****
4019                                     ;LOWER WORD OF ANSWER IS IN ERROR
4020                                     ;EXPECTED VALUE IS 0
4021                                     ;ERRONEOUS ANSWER IS IN R3
4022 013646 020467 165002      68$:  CMP      R4,DSTLN     ;CHECK R4 UNCHANGED
4023 013652 001401              BEQ      69$           ;*****TEST 50 - ERROR 6*****
4024 013654 104006              ERROR    6             ;R4 CHANGED
4025                                     ;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL'
4026                                     ;CHECK R5 UNCHANGED
4027 013656 020567 164774      69$:  CMP      R5,DSTAD     ;BR IF OK
4028 013662 001401              BEQ      70$           ;*****TEST 50 - ERROR 7*****
4029 013664 104007              ERROR    7             ;R5 CHANGED
4030                                     ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
4031
4032 013666                    70$:  BR          TST51      ;BR TO NEXT TEST
4033 013666 000405              ST50:  .BYTE    62        ;SOURCE STRING
4034 013670                    .BYTE    61        ;MOST SIGNIFICANT DIGIT
4035 013670                    .BYTE    64
4036 013671                    .BYTE    67
4037 013672                    .BYTE    64
4038 013673                    .BYTE    70
4039 013674                    .BYTE    63
4040 013675                    .BYTE    66
4041 013676                    .BYTE    64
4042 013677                    .BYTE    170
4043 013700
4044 013701
4045
4046
4047
4048
4049
4050
4051 013702 000004              ;*****
4052 013704 004567 001022      ;*TEST 51      TEST 'CVTNL' WITH SRC = -2,147,483,649, OVERFLOW
4053 013710 000012              ;*****
4054 013712 014044              TST51: SCOPE
4055 013714 177777              JSR      R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
4056 013716 177777              12              ;SOURCE LENGTH
4057 013720 000377              ST51              ;SOURCE ADDRESS
4058 013722 004567 001116      177777          ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
4059 013726 000202              177777          ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
4060 013730 004767 001024      377              JSR      R5,XPSW
4061 013734 000265              .WORD    202          ;SET UP GENERAL REGISTERS
4062 013736 000252              JSR      PC,GENR      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
4063
4064 013740 076053              +SEZ!SEC
                          +CLN!CLV
                          CVTNL

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Line	Address	Instruction	Comments
4065			
4066	013742	106767	164730
4067	013746	042767	177400 164722
4068	013754	023767	000700 164714
4069	013762	001401	
4070	013764	104001	
4071			
4072			
4073			
4074	013766		64\$:
4075	013766	005700	
4076	013770	001401	
4077	013772	104002	
4078			
4079	013774	005701	65\$:
4080	013776	001401	
4081	014000	104003	
4082			
4083	014002	020227	077777 66\$:
4084	014006	001401	
4085	014010	104004	
4086			
4087			
4088			
4089	014012	020327	177777 67\$:
4090	014016	001401	
4091	014020	104005	
4092			
4093			
4094			
4095	014022	020467	164626 68\$:
4096	014026	001401	
4097	014030	104006	
4098			
4099			
4100	014032	020567	164620 69\$:
4101	014036	001401	
4102	014040	104007	
4103			
4104			
4105	014042		70\$:
4106	014042	000405	
4107	014044		ST51:
4108	014044	062	
4109	014045	061	
4110	014046	064	
4111	014047	067	
4112	014050	064	
4113	014051	070	
4114	014052	063	
4115	014053	066	
4116	014054	064	
4117	014055	171	
4118			
4119			
4120			

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4121
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4123
4124 014056 000004
4125 014060 004567 000646
4126 014064 000002
4127 014066 014220
4128 014070 177777
4129 014072 177777
4130 014074 000377
4131 014076 004567 000742
4132 014102 000204
4133 014104 004767 000650
4134 014110 000277
4135 014112 000244
4136
4137 014114 076053
4138
4139 014116 106767 164554
4140 014122 042767 177400 164546
4141 014130 023767 000700 164540
4142 014136 001401
4143 014140 104001
4144
4145
4146
4147 014142
4148 014142 005700
4149 014144 001401
4150 014146 104002
4151
4152 014150 005701
4153 014152 001401
4154 014154 104003
4155
4156 014156 020227 000000
4157 014162 001401
4158 014164 104004
4159
4160
4161
4162 014166 020327 000000
4163 014172 001401
4164 014174 104005
4165
4166
4167
4168 014176 020467 164452
4169 014202 001401
4170 014204 104006
4171
4172
4173 014206 020567 164444
4174 014212 001401
4175 014214 104007
4176

;*****
;*TEST 52 TEST 'CVTNL' WITH SRC LENGTH = 1, SOURCE= 60,60
;*****
TST52: SCOPE
JSR R5,NPREP ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
2 ;SOURCE LENGTH
ST52 ;SOURCE ADDRESS
177777 ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
177777
377 ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
JSR R5,XPSW
WORD 204
JSR PC,GENR ;SET UP GENERAL REGISTERS
SCC ;SET UP THE COMPLEMENT OF EXPECTED CC'S
CLZ

CVTNL

MFPS CCODES ;STORE RESULTANT PSW
BIC #177400,CCODES ;CLEAR UNUSED BITS
CMP @EXPPSW,CCODES ;CHECK PSW AGAINST EXPECTED VALUE
BEQ 64$ ;BR, IF EQUAL
ERROR 1 ;*****TEST 52 - ERROR 1*****
;PSW ERROR
;EXPECTED PSW IS STORED AT 'SAVR6'
;ERRONEOUS SP VALUE IS AT 'BADR6'

64$: TST R0 ;CHECK R0=0
BEQ 65$
ERROR 2 ;*****TEST 52 - ERROR 2*****
;R0 SHOULD BE ZERO
;CHECK R1=0

65$: TST R1
BEQ 66$
ERROR 3 ;*****TEST 52 - ERROR 3*****
;R1 SHOULD BE ZERO
;CHECK UPPER WORD OF ANSWER
66$: CMP R2,#0 ;CHECK UPPER WORD OF ANSWER
BEQ 67$ ;BR IF OK
ERROR 4 ;*****TEST 52 - ERROR 4*****
;UPPER WORD OF ANSWER IS IN ERROR
;EXPECTED VALUE IS 0
;ERRONEOUS ANSWER VALUE IS IN R2
67$: CMP R3,#0 ;CHECK LOWER WORD OF ANSWER
BEQ 68$ ;BR IF OK
ERROR 5 ;*****TEST 52 - ERROR 5*****
;LOWER WORD OF ANSWER IS IN ERROR
;EXPECTED VALUE IS 0
;ERRONEOUS ANSWER IS IN R3
68$: CMP R4,DSTLN
BEQ 69$ ;CHECK R4 UNCHANGED
ERROR 6 ;*****TEST 52 - ERROR 6*****
;R4 CHANGED
;R4 SHOULD STILL EQUAL TH CONTENTS OF 'FILL'
69$: CMP R5,DSTAD
BEQ 70$ ;CHECK R5 UNCHANGED
ERROR 7 ;BR IF OK
;*****TEST 52 - ERROR 7*****
;R5 CHANGED

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4177                                     ;R5 SHOULD STILL EQUAL THE CONTENTS OF 'DSTAD'
4178 014216                                     70$:
4179 014216 000401                                     BR      TST53      ;BR TO NEXT TEST
4180 014220                                     ST52:      ;SOURCE STRING
4181 014220 060                                     .BYTE 60      ;MOST SIGNIFICANT DIGIT
4182 014221 060                                     .BYTE 60
4183
4184
4185 ::*****
4186 :*TEST 53      TEST INTERRUPTABILITY OF 'CVTNL'
4187 ::*****
4188 014222 000004      TST53:  SCOPE
4189 014224 105777 164310      TSTB  @SWR      ;TEST BIT 7 OF SWR
4190 014230 100532      BMI  @EOP      ;SKIP TO NEXT TEST IF SET
4191 014232 026767 164312 164424      CMP  $TPS,TCSR      ;IS SLU USED FOR INTERRUPTS THE CONSOLE?
4192 014240 001007      BNE  CVTCONT      ;BR, IF NOT & PERFORM INTERRUPTABILITY TEST
4193 014242 032767 000001 164336      BIT  @BIT0,$ENV      ;IF YES, IS PRGMM UNDER APT?
4194 014250 001403      BEQ  CVTCONT      ;BR, IF NOT
4195 014252 005767 164316      TST  $PASS      ;IF YES,CHECK IF NOT ON FIRST PASS
4196 014256 001117      BNE  @EOP      ;IF NOT, BR & SKIP TEST
4197 014260      CVTCONT:
4198 014260 004567 000446      JSR  R5,NPREP      ;PREPARE ARGUMENTS FOR INSTRUCTION TEST
4199 014264 000012      12      ;SOURCE LENGTH
4200 014266 014472      ST53      ;SOURCE ADDRESS
4201 014270 177777      177777      ;STORE ALL ONES TO LOAD INTO R2 & R3 REGISTERS
4202 014272 177777      177777
4203 014274 000377      377      ;STORE A NON-ZERO VALUE TO TEST R4 UNAFFECTED BY 'CVTZL'
4204 014276 012767 014356 164370      MOV  @CVTPC,PC      ;STORE PC OF TEST INSTRUCTION
4205 014304 012777 015114 164356      MOV  @INT@,@TVECT      ;POINT TTY VECTOR TO INTERRUPT ROUTINE
4206 014312 005077 164354      CLR  @TPSW      ;ALLOW INTERRUPTS AFTER TTY INTERRUPT
4207 014316 004767 000546      JSR  PC,TDONE      ;WAIT FOR SLU READY
4208 014322 013777 000554 164336      MOV  @NULL,@TBUF      ;SEND NULL CHARACTER
4209 014330 004567 000510      JSR  R5,XPSW      ;STORE EXPECTED PSW
4210 014334 000000      .WORD 0
4211 014336 106427 000000      MTPS  #0      ;ALLOW INTERRUPTS
4212 014342 052777 000100 164314      BIS  #100,@TCSR      ;ENABLE TTY INTERRUPTS
4213 014350 004767 000404      RECVTN: JSR  PC,GENR      ;SET UP GENERAL REGISTERS
4214 014354 000277      SCC      ;SET UP THE COMPLEMENT OF EXPECTED CC'S
4215
4216 014356 076053      CVTPC:  CVTNL
4217
4218 014360 106767 164312      MFPS  CCODES      ;STORE RESULTANT PSW
4219 014364 032777 000100 164272      BIT  #100,@TCSR      ;IF INTERRUPTS ARE DISABLED, INSTRUCTION WAS INTERRUPTED
4220 014372 001366      BNE  RECVTN      ;BR & DO TEST AGAIN, IF INSTRUCTION WAS NOT INTERRUPTED
4221 014374 042767 177400 164274      BIC  #177400,CCODES      ;CLEAR UNUSED BITS
4222 014402 023767 000700 164266      CMP  @EXPPSW,CCODES      ;CHECK PSW AGAINST EXPECTED VALUE
4223 014410 001401      BEQ  64$      ;BR, IF EQUAL
4224 014412 104001      ERROR  1      ;*****TEST 53 - ERROR 1*****
4225      ;PSW ERROR
4226      ;EXPECTED PSW IS STORED AT 'SAVR6'
4227      ;ERRONEOUS SP VALUE IS AT 'BADR6'
4228 014414      64$:
4229 014414 005700      TST  R0      ;CHECK R0=0
4230 014416 001401      BEQ  65$      ;*****TEST 53 - ERROR 2*****
4231 014420 104002      ERROR  2      ;R0 SHOULD BE ZERO
4232

```

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

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

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4289	014540	000001				\$EOPCT: .WORD	1		
4290	014542	003024				BGT	\$DOAGN	::YES	
4291	014544	012737				MOV	(PC)+,a(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	a#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	a#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	00024C				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,aSWR	::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	a(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: .ASCII	<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),a#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),a#OLDPC	:GET PC+2 WHERE UNEXPECTED TIMEOUT TRAP OCCURRED	
4343	014716	104204				ERROR	204	:*****ERROR 204*****	
4344								:UNEXPECTED TRAP TO LOCATION 4	

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 82
 CVKAJB.P11 22-JAN-82 08:49 END OF PASS ROUTINE

SEQ 0081

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4345                                ;'OLDPC' CONTAINS THE PC+2 OF THE TRAP OCCURRENCE
4346 014720 000000                  HALT                                ;PROGRAM MUST BE RESTARTED AT THIS POINT
4347
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
4383                                ;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

```

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 83
 CVKAJB.P11 22-JAN-82 08:49 END OF PASS ROUTINE

SEQ 0082

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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      ;SUBROUTINE TO HANDLE TTY INTERRUPTS IN INSTRUCTION
4413      ;INTERRUPTABILITY TESTS
4414
4415
4416 015114      INTR:          CMP      (SP),PC1      ;WAS PC AT INSTRUCTION UNDER TEST?
4417 015114 021667 163554      BNE      SEND      ;BR, IF NO
4418 015120 001003              CKR4:  BIT      #177400,R4 ;IF YES, CHECK UPPER BYTE OF R4
4419 015122 032704 177400      BNE      CLRINT     ;IF ZERO, INSTRUCTION WAS NOT INTERRUPTED-TRY AGAIN
4420 015126 001004              SEND:  MOV      @R$NULLI,@TBUF ;SEND ANOTHER CHARACTER
4421 015130 013777 000554 163530 RTI              ;RETURN
4422 015136 000002              CLRINT: BIC      #100,@TCSR ;IF NON-ZERO, CLEAR INTERRUPT ENABLE
4423 015140 042777 000100 163516 RTI              ;CONTINUE INSTRUCTION
4424 015146 000002
4425
4426
4427
4428      .SBTTL  SCOPE HANDLER ROUTINE
4429
4430      ;*****
4431      ;THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
4432      ;AND LOAD THE TEST NUMBER($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?

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MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 84
CVKAJB.P11 22-JAN-82 08:49 SCOPE HANDLER ROUTINE

SEQ 0083

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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      #SSWRMK,(SP)    ;;STRIP AWAY UNDESIRED BITS
4460 015236 122667 163240  CMPB     (SP)+,$STNM     ;;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      $SVLAD       ;;BR IF NO
4464 015252 032777 001000 163260  BIT      #BIT09,@SWR    ;;LOOP C? ERROR?
4465 015260 001404      BEQ      4$          ;;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     $STNM     ;;COUNT TEST NUMBERS
4470 015302 116767 163174 163262  MOVB     $STNM,$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      $STNM,@DISPLAY  ;;DISPLAY TEST NUMBER
4476 015340 016716 163142      MOV      $LPADR,(SP)    ;;FUDGE RETURN ADDRESS
4477 015344 000002      RTI          ;;FIXES PS

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.SBTTL POWER DOWN AND UP ROUTINES

:POWER DOWN ROUTINE

```

4483 015346 012737 015530 000024 $PWRDN: MOV      #ILLUP,@PWRVEC  ;;SET FOR FAST UP
4484 015354 012737 000340 000026  MOV      #340,@PWRVEC+2  ;;PRIO:7
4485 015362 010046      MOV      R0,-(SP)      ;;PUSH R0 ON STACK
4486 015364 010146      MOV      R1,-(SP)      ;;PUSH R1 ON STACK
4487 015366 010246      MOV      R2,-(SP)      ;;PUSH R2 ON STACK
4488 015370 010345      MOV      R3,-(SP)      ;;PUSH R3 ON STACK
4489 015372 010446      MOV      R4,-(SP)      ;;PUSH R4 ON STACK
4490 015374 010546      MOV      R5,-(SP)      ;;PUSH R5 ON STACK
4491 015376 017746 163136      MOV      @SWR,-(SP)    ;;PUSH @SWR ON STACK
4492 015402 010667 000126      MOV      SP,$SAVR6     ;;SAVE SP
4493 015406 012737 015420 000024  MOV      #SPWRUP,@PWRVEC  ;;SET UP VECTOR
4494 015414 000000      HALT
4495 015416 000776      BR       -2          ;;HANG UP

```

: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      $STNM     ;;
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

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4513 015476 012737 000340 000026      MOV      #340,@#PWRVEC+2  ;;PRIO:7
4514 015504 104401                      TYPE                      ;;REPORT THE POWER FAILURE
4515 015506 015536      SPWRMG: .WORD  $POWER                      ;;POWER FAIL MESSAGE POINTER
4516 015510 012716      MOV      (PC)+,(SP)                      ;;RESTART AT $LOOP
4517 015512 014652      SPWRAD: .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: .ASCIIZ <15><12>'POWER'
4525 015544 000122
4526
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
4554 015626 104402                      ;;ERROR ADDRESS
4555 015630 104401 000563          TYPE      $CRLF              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
4556 015634
4557 015634 122767 000001 162744 20$:      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$:      BIT      #BIT09,@SWR  ;;LOOP ON ERROR SWITCH SET?
4568 015670 001402          BEQ      4$              ;;BR IF NO
```

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

SEQ 0085

```

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    $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
4573 015720             5$:   CMP     #SENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
4574 015720 022737 014604 000042 BNE    6$          ;;BRANCH IF NO
4575 015726 001001             HALT                    ;;YES
4576 015730 000000             6$:   RTI                    ;;RETURN
4577 015732             RTI
4578 015732 000002
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    MESADR
4594 ;*
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    #APTPOOL,$ENVM    ;;SPOOL MESSAGE TO APT
4606 015772 001405             BEQ     62$          ;;NO,GO CHECK FOR CONSOLE
4607 015774 010067 000004     MOV    R0,61$      ;;SETUP MESSAGE ADDRESS FOR APT
4608 016000 004767 000520     JSR     PC,$ATY3    ;;SPOOL MESSAGE TO APT
4609 016004 000000             .WORD    0          ;;MESSAGE ADDRESS
4610 016006 132767 000040 162573 62$:   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$:   CMPB    #HT,(SP)    ;;BRANCH IF <H>
4619 016040 001430             BEQ     8$          ;;BRANCH IF NOT <CRLF>
4620 016042 122716 000200     CMPB    #CRLF,(SP)
4621 016046 001006             BNE    5$          ;;POP <CR><LF> EQUIV
4622 016050 005726             TST     (SP)+      ;;TYPE A CR AND LF
4623 016052 104401             TYPE
4624 016054 000563             $CRLF

```

```

4625 016056 105067 000202          CLRB  $CHARCNT      ;;CLEAR CHARACTER COUNT
4626 016062 000755          BR  2$                ;;GET NEXT CHARACTER
4627 016064 004767 000056      5$: JSR  PC,$TYPECL      ;;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          MGV  $NULL,-(SP)    ;;GET # OF FILLER CHARS. NEEDED
4631                                ;;AND THE NULL CHAR.
4632 016102 105366 000001      7$: 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,$TYPECL      ;;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,$TYPECL      ;;TYPE A SPACE
4642 016132 132767 000077 000124 BITB  #7,$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
4647 016146 105777 162372      $TYPECL: TSTB  @STKS      ;;CHAR IN KYBD BUFFER?
4648 016152 100022          BPL  10$                ;;BR IF NOT
4649 016154 017746 162366          MOV  @STKB,-(SP)    ;;GET CHAR
4650 016160 042716 177600          BIC  #177600,(SP)   ;;STRIP EXTRANEIOUS BITS
4651 016164 122716 000023          CMPB  #$XOFF,(SP)   ;;WAS CHAR XOFF
4652 016170 001012          BNE  102$               ;;BR IF NOT
4653 016172
4654 016172 105777 162346      101$: TSTB  @STKS      ;;WAIT FOR CHAR
4655 016176 100375          BPL  101$               ;;BR IF NOT
4656 016200 117716 162342          MOVB  @STKB,(SP)    ;;GET CHAR
4657 016204 042716 177600          BIC  #177600,(SP)   ;;STRIP IT
4658 016210 122716 000021          CMPB  #$XON,(SP)    ;;WAS IT XON?
4659 016214 001366          BNE  101$               ;;BR IF NOT
4660 016216
4661 016216 005726          102$: TST  (SP)+          ;;FIX STACK
4662 016220          10$: TSTB  @STPS      ;;WAIT UNTIL PRINTER IS READY
4663 016220 105777 162324          BPL  10$                ;;BR IF NOT
4664 016224 100375          MOVB  2(SP),@STPB        ;;LOAD CHAR TO BE TYPED INTO DATA REG.
4665 016226 116677 000002 162316 000002 CMPB  #CR,2(SP)  ;;IS CHARACTER A CARRIAGE RETURN?
4666 016234 122766          BNE  1$                ;;BRANCH IF NO
4667 016242 001003          CLRB  $CHARCNT          ;;YES--CLEAR CHARACTER COUNT
4668 016244 105067 000014          BR  $TYPECL        ;;EXIT
4669 016250 000406          1$: CMPB  #LF,2(SP)      ;;IS CHARACTER A LINE FEED?
4670 016252 122766 000012 000002      BEQ  $TYPECL    ;;BRANCH IF YES
4671 016260 001402          INCB  (PC)+              ;;COUNT THE CHARACTER
4672 016262 105227          $CHARCNT: .WORD 0        ;;CHARACTER COUNT STORAGE
4673 016264 000000          $TYPECL: RTS  PC
4674 016266 000207
4675
4676                                .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
4677
4678                                ;;*****
4679                                ;;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
4680

```

```

4681      ;*OCTAL (ASCII) NUMBER AND TYPE IT.
4682      ;*STYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
4683      ;*CALL:
4684      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
4685      ;*      TYPOS      ;;CALL FOR TYPEOUT
4686      ;*      .BYTE      N      ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
4687      ;*      .BYTE      M      ;;M=1 OR 0
4688      ;*      ;;1=TYPE LEADING ZEROS
4689      ;*      ;;0=SUPPRESS LEADING ZEROS
4690      ;*
4691      ;*STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
4692      ;*STYPOS OR STYPOC
4693      ;*CALL:
4694      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
4695      ;*      TYPON      ;;CALL FOR TYPEOUT
4696      ;*
4697      ;*STYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
4698      ;*CALL:
4699      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
4700      ;*      TYPOC      ;;CALL FOR TYPEOUT
4701
4702      016270 017646 000000      STYPOS: MOV      @ (SP),-(SP)      ;;PICKUP THE MODE
4703      016274 116667 000001 000211      MOV      1(SP), $OFILL      ;;LOAD ZERO FILL SWITCH
4704      016302 112667 000207      MOV      (SP)+, $OMODE+1      ;;NUMBER OF DIGITS TO TYPE
4705      016306 062716 000002      ADD      #2, (SP)      ;;ADJUST RETURN ADDRESS
4706      016312 000406      BR      STYPON
4707      016314 112767 000001 000171      STYPOC: MOV      #1, $OFILL      ;;SET THE ZERO FILL SWITCH
4708      016322 112767 000006 000165      MOV      #6, $OMODE+1      ;;SET FOR SIX(6) DIGITS
4709      016330 112767 000005 000154      STYPON: MOV      #5, $OCNT      ;;SET THE ITERATION COUNT
4710      016336 010346      MOV      R3, -(SP)      ;;SAVE R3
4711      016340 010446      MOV      R4, -(SP)      ;;SAVE R4
4712      016342 010546      MOV      R5, -(SP)      ;;SAVE R5
4713      016344 116704 000145      MOV      $OMODE+1, R4      ;;GET THE NUMBER OF DIGITS TO TYPE
4714      016350 005404      NEG      R4
4715      016352 062704 000006      ADD      #6, R4      ;;SUBTRACT IT FOR MAX. ALLOWED
4716      016356 110467 000132      MOV      R4, $OMODE      ;;SAVE IT FOR USE
4717      016362 116704 000125      MOV      $OFILL, R4      ;;GET THE ZERO FILL SWITCH
4718      016366 016605 000012      MOV      12(SP), R5      ;;PICKUP THE INPUT NUMBER
4719      016372 005003      CLR      R3      ;;CLEAR THE OUTPUT WORD
4720      016374 006105      1$: ROL      R5      ;;ROTATE MSB INTO 'C'
4721      016376 000404      BR      3$      ;;GO DO MSB
4722      016400 006105      2$: ROL      R5      ;;FORM THIS DIGIT
4723      016402 006105      ROL      R5
4724      016404 006105      ROL      R5
4725      016406 010503      MOV      R5, R3
4726      016410 006103      3$: ROL      R3      ;;GET LSB OF THIS DIGIT
4727      016412 105367 000076      DECB      $OMODE      ;;TYPE THIS DIGIT?
4728      016416 100016      BPL      7$      ;;BR IF NO
4729      016420 042703 177770      BIC      #177770, R3      ;;GET RID OF JUNK
4730      016424 001002      BNE      4$      ;;TEST FOR 0
4731      016426 005704      TST      R4      ;;SUPPRESS THIS 0?
4732      016430 001403      BEQ      5$      ;;BR IF YES
4733      016432 005204      4$: INC      R4      ;;DON'T SUPPRESS ANYMORE 0'S
4734      016434 052703 000060      BIS      #'0, R3      ;;MAKE THIS DIGIT ASCII
4735      016440 052703 000040      5$: BIS      #' , R3      ;;MAKE ASCII IF NOT ALREADY
4736      016444 110367 000040      MOV      R3, 8$      ;;SAVE FOR TYPING

```

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	#APTPOOL,\$ENV	::SHOULD SPOOL MESSAGES?
4770	016572	001425			BEQ	3\$	::IF NOT: BR
4771	016574	017600	000004		MOV	24(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 LGTH IN WORDS
4780	016632	010067	161746		MOV	R0,\$MSGGLT	::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	24(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

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 90
 CVKAJB.P11 22-JAN-82 08:49 APT COMMUNICATIONS ROUTINE

SEQ 0089

```

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

```

.SBTTL TRAP DECODER

```

*****
*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE 'TRAP' INSTRUCTION
*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
*GO TO THAT ROUTINE.

```

```

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      MOV      (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

```

```

;;THIS IS USE TO HANDLE THE 'GETPRI' MACRO

```

```

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

```

.SBTTL TRAP TABLE

```

*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
*BY THE 'TRAP' INSTRUCTION.

```

```

:      ROUTINE
:      -----
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			

[illegible]

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 94
CVKAJB.P11 22-JAN-82 08:49 CROSS REFERENCE

CVKAJB.P11 22-JAN-82 08:49

CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 95

CVKAJB.P11 22-JAN-82 08:49

CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0093

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	017656	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									
		383#	587											
DSWR =	177570	472#	703*	704*										
EMTVEC=	000030	4294	4327#											
ENDMSG	014664	783	840	850#										
ENDT1	001552	879	936	946#										
ENDT2	002034	2237	2256#											
ENDT21	006276	2524	2543#											
ENDT24	007274	975	1032	1042#										
ENDT3	002316	1071	1128	1138#										
ENDT4	002600	3738	3751#											
ENDT44	013012	4260	4273#											
ENDT53	014504	465#	4447	4448*	4450*	4453*								
ERRVEC=	000004	679#	819	841	915	937	1011	1033	1107	1129	1162	1230	1317	1406
EXPPSW	000700	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*		
		671#	806	902	998	1094								
FILL	000660	775	871	967	1063	1155	1224	1310	1399	1486	1571	1655	1723	1811
GENR	014760	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#								
		501	4844	4845	4846	4847								
		375#	4618	4676										
GNS =	***** U	511	4350#											
HT =	000011	2170	2456	3680	4205	4416#								
ILLTRP	014722	470#	701*	702*										
INTR	015114	376#	4670	4676										
IOTVEC=	000020	485#	762#	780	781#	788	789#	793	794#	798	799#	803	804#	808
LF =	000012	809#	813	814#	821	822#	828	829#	836	837#	858#	876	877#	884
N =	000010	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#	1627	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												
NPREP	014732												
	740	4851#											
	762	858	954	1050	1146	1215	1301	1390	1477	1562	1646	1714	1802

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 98

CVKAJB.P11 22-JAN-82 08:49

CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0096

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#					

[illegible]

MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 100
 CVKAJB.P11 22-JAN-82 08:49 CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0098

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#																
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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#															
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.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 101
 CVKAJB.P11 22-JAN-82 08:49

CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0099

	1898	1986	2073	2174	2271	2359	2460	2557	2631	2707	2782	2859	2931
	3005	3081	3155	3228	3302	3376	3450	3524	3597	3684	3766	3839	3912
	3985	4058	4131	4209	4392#								
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\$ATYC 016542	4760	4762#											
\$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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\$CMTAG 000500	567#	695											
\$CM3 = 000000	597#												
\$CPUOP 000614	620#												
\$CRLF 000563	599#	4551	4555	4579	4624	4676							
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\$DOAGN 014614	4290	4296	4303	4309#									
\$ENDAD 014604	532	738	4305#	4574									
\$ENDCT 014546	709	4292#											
\$ENULL 014660	4325#												
\$ENV 000606	616#	2157	2443	3668	4193	4557	4603	4767	4791				
\$ENVN 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#											
\$ERRPC 000516	577#	4546*	4547*	4548	4552	4579							
\$ERRTB 000644	663#												
\$ERTTL 000512	574#	4545*	4579										
\$ESCAP 000560	597#	710*	4473*	4570	4572	4579							
\$ETABL 000606	615#												
\$ETENC 000644	557	647#											
\$FATAL 000570	608#	690*	4795*										
\$FFLG 016762	4758*	4761*	4789	4798*	4806#								
\$FILLC 000556	595#	4623	4676										
\$FILLS 000555	594#	4676											
\$GDADR 000520	578#												
\$GDDAT 000524	580#												
\$GET42 014556	4295#												
\$GTSWR= ***** U	4849												
\$HIBTS 000400	552#												
\$ICNT 000504	571#												
\$ILLUP 015530	4483	4499	4521#										
\$INTAG 000535	585#												
\$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							

.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 102
CVKAJB.P11 22-JAN-82 08:49 CROSS REFER

CVKAJB.P11 22-JAN-82 08:49

CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

CATCH	342#	4334	4342	4350											
CMPNIN	358#	3664													
CMPNTS	357#	2551	2625	2701	2776	2853	2925	2999	3075	3149	3222	3296	3370	3444	3518
	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	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
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	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
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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
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	3951	3956	3997	4004	4008	4012	4018	4024	4029	4070	4077	4081	4085	4091	4097
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	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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	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
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	2662	2666	2671	2677	2718	2725	2729	2733	2737	2741	2746	2752	2794	2801	2805
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	4102	4143	4150	4154	4158	4164	4170	4175	4224	4231	4235	4239	4245	4251	4256
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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
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	1979	2066	2162	2264	2352	2448									
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	2047	2134	2238	2332	2419	2525	2609	2683	2758	2834	2911	2983	3057	3133	3206
	3280	3354	3428	3501	3575	3648	3739								
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NEWST	1#	477#	758	854	950	1046	1142	1211	1297	1386	1473	1558	1612	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	4601	4802								
PUSH	1#	336#	477#	4485	4491	4762	4764	4785							
REPORT	1#	477#													
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	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
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.MAIN. MACY11 30(1046) 22-JAN-82 08:50 PAGE 109
 CVKAJB.P11 22-JAN-82 08:49 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0106

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.SMULT	1#		
.SPOWE	1#	336#	4479
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.SRDDE	1#		
.SRDOC	1#		
.SREAD	1#		
.SR2AZ	1#		
.SSAVE	1#		
.SSB2D	1#		
.SSB2O	1#		
.SSCOP	1#	336#	4428
.SSIZE	1#		
.SSUPR	1#		
.STRAP	1#	336#	4813
.STYPB	1#		
.STYPD	1#		
.STYPE	1#	336#	4580
.STYPO	1#	336#	4677
.S4OCA	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)